Authority Figures and the Polarization of Gender Norms*

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Abstract

This paper examines how authority figures in higher education shape long-run gender norms. We exploit the random assignment of first-year students to faculty advisors at an elite university in the Middle East and combine administrative records with an alumni survey measuring gender attitudes up to 24 years after enrollment. Women assigned to female advisors adopt more egalitarian views on gender roles in politics and the labor market, while men become more conservative. Effects are strongest among religious students and in male-dominated STEM fields, where female authority is most counter-stereotypical. The impacts persist through reinforcement: women with female advisors subsequently sort toward female instructors. By contrast, randomized exposure to high-achieving female peers has little effect, highlighting the distinct role of salient authority. A simple model combining belief updating and identity-based status concerns rationalizes empowerment for women and backlash among men. Overall, the findings shed new light on the origins of polarizing gender norms in traditionally hierarchical settings.

JEL Classifications: J16, I23, Z13, Z12, J24

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1 Introduction

In many societies, young men and young women are moving in opposite political directions. Survey evidence points to a widening gender gap in ideology among recent cohorts, with young women becoming more liberal while young men shift less (or even move rightward), producing a historically large divergence in views on gender, politics, and social change (The Economist, May 13, 2024).At the same time, the last few decades have witnessed an equally striking transformation in who occupies high-status positions. Women have surpassed men in college completion in the United States and many other countries (Goldin et al., 2006; Organisation for Economic Co-operation and Development, 2021), and their presence has grown in elite, traditionally male-dominated occupations and institutions—including academia (Baker and Koedel, 2024). These two developments have largely been studied in isolation. Yet they may be closely connected.

A natural hypothesis is that rising female representation in positions of authority reshapes beliefs about gender roles. But such exposure need not generate convergence. For women, seeing women in authority may legitimize aspiration and expand perceived opportunity sets. For men, the same exposure can threaten status, triggering defensive reactions and backlash (Rudman et al., 2012). If authority exposure pushes women toward egalitarianism while simultaneously hardening conservative views among some men, then the expansion of women in authority—an achievement often celebrated as unambiguously progressive—may also be an underappreciated driver of polarizing gender norms.

This paper provides causal evidence on this mechanism by studying a naturally occurring and high-stakes form of authority exposure in higher education: first-year academic advising. We exploit a unique institutional setting in which first-year students at the American University of Beirut (AUB) are randomly assigned to *faculty advisors* within department and entry cohort. Faculty advisors are not peripheral figures. They approve course registration, guide major academic decisions, and serve as formal institutional gatekeepers throughout students' early university experience.[1] Because advisor assignment is randomized and occurs at the moment students first enter the university, it generates exogenous variation in exposure to female versus male authority at a formative stage of early adulthood.

We combine two data sources that allow us to trace this early exposure shock far into adulthood. First, we use comprehensive administrative records covering the universe of undergraduates entering AUB between 2001 and 2018, including baseline student characteristics, academic outcomes, and the gender and department of students' first-year advisors. Second, we link these records to a new alumni survey fielded in 2025 that measures gender attitudes 7–24 years after enrollment. The survey elicits beliefs about women's roles in politics and the labor market as well as perceptions of women's status in society; we summarize these responses using standardized indices of (i) *gender role attitudes* and (ii) *gender status perceptions*. This design directly addresses two central challenges in the study of role models and norm formation: selection into exposure—students typically choose mentors, supervisors, or workplaces—and the difficulty of measuring persistent beliefs long after the initial exposure window.

The setting is substantively informative. AUB is an elite pipeline into high-skilled careers and public

[1]These faculty advising roles are common across universities in the U.S.: at more than half of universities, faculty serve as advisors for a large majority of entering freshman (The College Board, 2011)

life across the Middle East, and Lebanon is characterized by sharp gaps between women's educational attainment and their representation in political and economic leadership. In such contexts, female authority remains relatively rare and highly salient, especially in male-dominated fields and among socially conservative groups. At the same time, Lebanon shares key features with many societies undergoing rapid educational expansion: rising female attainment alongside persistent gender hierarchies in labor markets and politics. As a result, the mechanisms we study are not unique to this context, even if their salience is amplified within it.

To guide interpretation, we develop a simple conceptual framework linking authority exposure to polarizing beliefs through two forces. First, students use the gender of an early authority figure as a signal about the legitimacy and prevalence of female authority within elite institutions. Second, attitudes are shaped not only by learning but also by identity and status concerns. Building on identity-based models (Akerlof and Kranton, 2000; Bénabou and Tirole, 2006, 2011) and work on stereotype salience (Bordalo et al., 2016, 2019), the framework predicts that exposure to counter-stereotypical female authority can generate empowerment for women and backlash among men—producing polarization rather than convergence—especially in settings where gender hierarchy is salient and female authority is rare.

The results are consistent with these predictions. Women assigned to female advisors adopt more egalitarian views on women's participation in politics and the labor market. Men assigned to female advisors, by contrast, become more conservative on the same dimensions. The resulting increase in polarization is large: for gender role attitudes in particular, assignment to a female advisor widens the gender gap by more than one-half of a standard deviation. Strikingly, these effects persist up to two decades after students leave university, illustrating how brief but salient institutional interactions during early adulthood can durably shape beliefs.

These divergent responses vary systematically in ways that sharpen interpretation and speak to alternative explanations. Polarization is substantially larger in male-dominated STEM departments than in non-STEM fields and is driven primarily by backlash among men in STEM. A parallel pattern emerges for cultural conservatism: effects are markedly stronger among religious students, again reflecting backlash among men alongside larger egalitarian shifts for women. These heterogeneity patterns align closely with the model's comparative statics, which imply greater polarization in hierarchical settings where female authority is more counter-stereotypical. The patterns also align with related evidence that integration can shift attitudes when exposure is salient—but that the direction of change depends on identity stakes and the social meaning of the exposure (Dahl et al., 2021).

We next shed light on mechanisms that help explain persistence and distinguish authority-based influence from broader exposure to successful women. First, women assigned to female advisors subsequently sort into courses with female instructors, consistent with reinforcement through endogenous exposure over time at the university. Second, using the same randomized assignment structure, we show that comparable variation in exposure to high-performing female peers within advising groups has little effect on long-run gender attitudes. This contrast is difficult to reconcile with a generic "exposure to successful women" explanation and instead points to the distinct role of *oblique* transmission through authority—counter-stereotypical examples endowed with institutional legitimacy and hierar-

chical meaning—rather than horizontal peer effects. Moreover, polarization is strongest when the female advisor holds higher rank (professorial, especially senior), suggesting that the hierarchical salience of the authority figure is a key part of the mechanism.

This paper makes four contributions. First, we identify a concrete and policy-relevant driver of gender polarization. A large literature shows that gender norms are both persistent and transmitted across generations (e.g., Alesina et al., 2013; Giuliano and Nunn, 2021), yet also responsive to social and institutional change (see, e.g., Miho et al. (2024), and Giuliano (2018, 2020) for reviews). What remains poorly understood is why recent change has coincided with widening gender divides. We show that expanding female authority can generate exactly this outcome: women update toward more egalitarian beliefs, while men respond with backlash, producing polarization rather than convergence. More broadly, our results highlight a "progress paradox": institutional advances that elevate women into elite authority can simultaneously empower women and harden resistance among men. Importantly, we find that polarization arises not from greater exposure to successful women in general, but from exposure to women in counter-stereotypical, high-status authority roles, where the symbolic meaning of gender change is most acute.

Second, we contribute to a growing literature on how exposure to women in positions of influence shapes beliefs and behavior. Prior work shows that female political leadership can shift perceptions and aspirations (Beaman et al., 2009, 2012), and that integrating women into traditionally male settings can change men's gender attitudes (Dahl et al., 2021). More recent work emphasizes workplace channels for norm transmission and adjustment (Aneja et al., forthcoming; Greenberg et al., forthcoming; Minni et al., 2025). We add evidence from a foundational but understudied institution: an elite educational pipeline in which authority relationships are formal, repeated, and consequential at the transition into adulthood. As college access expands globally, such encounters are poised to become substantially more common in the years ahead.

Our design separately identifies exposure to female versus male authority and traces its effects on both women and men over an unusually long time horizon. Relative to the workplace studies above, we provide a distinctive lens on long-run gender attitudes—complementing their emphasis on labor-market outcomes, workplace conditions, and firm behavior. Our design and findings are most similar to Greenberg et al. (forthcoming) in two respects. First, we distinguish exposure to peers from exposure to authority figures of a different gender, and find that male backlash is driven primarily by the latter. Second, we study first exposure to authority at a formative moment of socialization into independent life akin to the initial introduction of female officers (alongside female peers) in the military.

Together, our findings provide new evidence on mechanisms of cultural transmission by cleanly separating oblique influence from authority figures from horizontal peer effects (Bisin and Verdier, 2011). This distinction is central to models of norm persistence but is especially challenging to identify empirically in naturally occurring contexts. In our setting, authority exposure polarizes long-run beliefs even though randomized exposure to high-performing female peers does not, and the effect strengthens sharply with the advisor's rank, underscoring the role of hierarchical meaning in cultural change. This contribution complements related work that contrasts exposure to one's own working mother with expo-

sure to working mothers among one's peers (Olivetti et al., 2020). Whereas peer exposure in that setting can combine horizontal transmission from classmates with oblique transmission from their mothers, our design isolates the transmission mode directly, with potential implications for policy design.

Finally, we deepen the evidence base on gender role models in education. A large literature studies the effects of (i) same-gender teachers and instructors (Carrell et al., 2010; Muralidharan and Sheth, 2016; Lim and Meer, 2017; Mansour et al., 2022), (ii) advisors (Canaan and Mouganie, 2023), and (iii) external role models (Breda et al., 2023; Porter and Serra, 2020) on student achievement, persistence, and educational choices. Related work also emphasizes that educators' gender–science stereotypes and implicit biases can shape students' performance and subsequent educational trajectories, and that making such biases salient can reduce discriminatory grading Alesina et al. (2024); Carlana (2019). We shift the lens from contemporaneous academic outcomes to the long-run formation of gender norms, using random assignment, rich administrative records, and novel linked data on beliefs up to 24 years later.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting and advisor assignment. Section 3 details the administrative and survey data and our measures of gender norms. Section 4 presents the empirical strategy and validates the randomization and survey selection. Section 5 develops the conceptual framework to guide interpretation of the empirical findings. Section 6 reports the main effects and heterogeneity. Section 7 investigates mechanisms for persistence and distinguishes authority from peer channels. Section 8 concludes.

2 Background: Institutional Setting

2.1 An Elite University in the Middle East

The American University of Beirut (AUB) is a private, secular university in Lebanon that provides a liberal arts education. Its degrees are registered with the New York Board of Regents, and the vast majority of courses are taught in English. AUB is a mid-sized university, with an undergraduate enrollment of 7,338 students in Fall 2018.[2] It maintains an 11:1 student–faculty ratio, with average class sizes under 25 students, and 83% of full-time faculty hold doctoral degrees. The student body is 49% female, while women constitute 40% of full-time faculty (American University of Beirut, 2018).[3] AUB is the most selective university in Lebanon. Admission is based on a composite score that equally weighs SAT scores and high school grades. Each major has its own admissions cutoff, which can vary by cohort, and students enroll in their chosen major from their first year. Tuition is relatively high, averaging $20,000 to $25,000 per year depending on the major. AUB offers merit- and need-based financial aid, which helps foster greater socioeconomic diversity among its student body.

AUB was founded in 1866 by American Protestant missionaries, but by the mid-20th century it had evolved from a missionary college into a secular university. It was among the earliest coeducational universities in the region, and admitted women starting in 1920 (Anderson, 2011). AUB is one of the most

[2] AUB primarily focuses on undergraduate education, though it also offers master's degrees and a limited number of PhD programs. In Fall 2018, graduate enrollment totaled 1,471 students (American University of Beirut, 2018).

[3] In Fall 2017, women accounted for 57% of undergraduate enrollment and 46% of full-time faculty at U.S. degree-granting postsecondary institutions (National Center for Education Statistics, 2019, 2021).

prestigious universities in the Middle East. Its alumni have had an outsized impact across many fields. In particular, AUB played a critical role in the formation of political elites who have shaped politics throughout the region. In 2019, AUB graduates constituted 18 percent of members of the Lebanese Parliament (Abou Melhem, 2019). Its alumni have served as presidents or prime ministers in several countries, including Sudan, Afghanistan, Syria, Palestine, Jordan, and Lebanon.[4] Jordan alone has had ten prime ministers who graduated from AUB (Seeni, 2022).[5] AUB's female alumni have been pioneers in politics across the region, occupying some of the first high-ranking government positions held by women.[6]

Women's educational attainment in Lebanon is relatively high. In 2024, Lebanon's share of women in tertiary education was 57%, higher than both the global and Middle East and North Africa (MENA) region's averages of 53% and 52%. In contrast, Lebanon consistently ranks among the lowest countries in the world in terms of gender gaps in political and economic participation.[7] The female labor force participation is 27.5%, which exceeds the MENA region's average of 20% but is far below the global average of 49%. Women's political participation is well below the regional average, with only 6.3% of parliamentary seats held by women compared with 18.3% across the MENA (World Bank, 2025).

Focusing on Lebanon provides a unique opportunity to examine how the impact of authority figures on gender norms varies by religion and degree of religiosity. Lebanon is deeply divided along religious lines, and religion is a central component of individuals' social identity. The two dominant religious groups in Lebanon, and at AUB, are Muslims and Christians. Religion permeates everyday life and is embedded in institutions, greatly influencing women's experiences. Lebanon has a sectarian power-sharing system, whereby the highest government offices are divided between sects.[8] Moreover, in the Lebanese judicial system, religious courts handle all family affairs including marriages, divorces, child custody, and inheritances. This not only gives religious groups significant influence over policy-making, but also creates some variation in women's rights across religions.[9] Despite this, the low labor force participation rates do not differ significantly between Muslim and Christian women (Hajj and Panizza, 2002), suggesting equally conservative gender norms across both groups.

[4]These include: Ismail al-Azhari, Sudan prime minister (1954–56) and president (1965-1969); Ashraf Ghani, president of Afghanistan (2014-21); Iraq prime ministers Fadhel al-Jamali (1953-54) and Sa'dun Hammadi (1991); Lebanese prime ministers Salim al-Huss (1998-2000), Fouad Siniora (2005-09), Najib Mikati (2021-25); Syrian president Nazim al-Qudsi (1961-63); Salam Fayyad, the first prime minister of Palestine (2013).

[5]The most recent is Abdallah an-Nasur, who was prime minister of Jordan from 2012 to 2016.

[6]These include: Raya al-Hassan (2019), the first female Interior Minister in Lebanon and the Arab World; Zeina Akar (2020), first female Defense Minister in Lebanon and the Arab World; Rima Khalaf, Jordanian minister and the first Arab woman to lead a UN regional commission; Nabeela Abdulla Al Mulla (1993), first woman from Kuwait and GCC to be appointed as ambassador.

[7]In 2025, Lebanon ranked 136th out of 148 countries on the World Economic Forum's Global Gender Gap Index. This index measures how far women are from parity with men across health, educational attainment, political participation, and economic empowerment. While Lebanon has achieved near parity in education and health, its low levels of political and economic participation drive down its overall ranking (World Economic Forum, 2025).

[8]The President has to be Christian Maronite, the prime minister Sunni Muslim and the speaker of the Parliament Shi'ia Muslim.

[9]For example, under Muslim personal status law, men have unilateral divorce rights, whereas women must petition the court. In contrast, under Christian law, neither men nor women have unilateral divorce rights.

2.2 The Academic Advising System

Our analysis focuses on students enrolled in AUB's undergraduate programs. Upon admission, students enroll directly in their intended major and are randomly assigned to an academic advisor from the professorial faculty within their department at the beginning of the academic year. We exploit this advising program structure to identify the causal impact of advisor gender on students' long-run beliefs and attitudes regarding gender norms. Advisor assignment follows a systematic randomization process that ensures causal identification. Students are sorted alphabetically by surname or numerically by ID (with the sorting method consistent within each year), while advisors are randomly ordered on a separate list. Administrators then sequentially match students to advisors from these ordered lists. This process ensures that student–advisor assignments are independent of students' or advisors' gender, beliefs, preferences, or academic ability.

Faculty advisors play a central role in students' academic experience and are an important determinant of student success (Canaan et al., 2022). Their primary responsibilities include helping students choose courses and monitoring academic progress. Major academic decisions—such as course withdrawals, changing majors, selecting a minor, applying for exchange programs, taking a semester leave, or applying to graduate school—are discussed with advisors. The advising system design ensures substantial student—advisor interaction. Students must meet in person with their advisor at least once per semester to discuss their course registration plan, as the registration pin required to enroll is provided only by the advisor. Advisors also approve all academic petitions initiated by students, typically following an in-person meeting. In sum, academic advisors serve as key mentors and role models, whose interactions can shape students' outcomes and perspectives both immediately and over the long term.

3 Data: A Novel Linked Alumni Survey

This study relies on two merged primary data sources. The first is novel survey data that we collected from alumni of the American University of Beirut (AUB). The second is administrative student-level data obtained from AUB's Registrar's Office. In what follows, we describe each dataset in detail and present summary statistics.

3.1 Survey Design and Registrar Record Linkage

The first component of our data consists of newly collected survey measures. The survey elicited demographic information, current place of residence, and a broad range of social, political, religious and gender attitudes and beliefs. Measures of gender norms constitute the primary outcome variables analyzed in this paper. To elicit these measures, we designed and administered an online survey targeting individuals who first enrolled at the American University of Beirut between 2001 and 2018. The survey was fielded from March to May 2025.[10] The university registrar provided a comprehensive roster of alumni meeting our inclusion criteria—namely, first-time undergraduate enrollment between the years

[10] A pilot survey was conducted a few months earlier on a smaller, randomly selected subset of eligible alumni.

2001 and 2018. The AUB Alumni Office implemented a three-wave contact protocol: an initial invitation, followed by two reminder emails at three-week intervals. Survey administration concluded on May 30, 2025. To encourage participation, respondents were offered a $15 gift card upon survey completion. Alternatively, respondents could choose to donate the equivalent amount to one of three designated local medical institutions. The incentive options were disclosed in the initial invitation.

The Alumni Office maintains a database of permanent email addresses provided during the graduation clearance process. The alumni roster that included our eligibility criteria contained 25,530 former students. After the initial invitation, 923 emails were reported as undeliverable by the survey platform, effectively making 24,607 individuals our upper-bound sample frame for this study. It is important to note that, according to the Alumni Office, some of the email addresses on record were likely outdated, including accounts that graduates no longer monitor. Indeed, for many alumnae, the contact email on file was their AUB student email account. Although these accounts remain active indefinitely, many graduates discontinue their use after leaving university. While the exact number of outdated emails is unknown, the 24,607 individuals in the sampling frame should be viewed as an upper-bound estimate of the true population available for contact in our study.

We received 1,287 complete responses and 170 partial responses, for a total of 1,457 responses. This corresponds to a response rate of approximately 6 percent relative to our sample frame of 24,607 individuals (1,457/24,607). Figure 1 shows that response rates—relative to all students enrolled between 2001 to 2018, i.e., not just our sample frame—were relatively stable across entry cohorts from 2001 to 2018, ranging between 4 and 5 percent.[11] Such stability may be explained by alumni at elite universities remaining consistently attached, over time, to their alma mater and keen to stay engaged in outreach such as our survey.

We successfully merge 1,396 students from the survey to administrative data from the AUB Registrar's Office.The registrar data include students' SAT scores, high school of graduation, year and semester of first enrollment, gender, major or department of study, graduation GPA, and, crucially, the gender of the student's first-year academic advisor. A de-identified merged dataset was then made available to the research team for analysis.

To assess compositional differences, Table 1 compare pre-AUB characteristics and AUB course choices of survey respondents from the alumni sample with those of the full population of AUB undergraduates (excluding respondents) who first enrolled between 2001 and 2018. Panel A shows that there are minimal differences in baseline characteristics to the survey as compared to those in the overall AUB population. Panel B shows that the respondents and non-respondents took elective and non-elective courses with a similar likelihood of being taught by women. Additionaly, to gauge compositional differences by student gender we look at whether men and women who responded to the survey look similar to men and women in the AUB population respectively. Table 2 summarizes this finding; we find no meaningful differences between either gender. In Section 4.3, we provide further, systematic evidence against bias due to selection into the survey.

[11] Due to data merger protocols and anonymity agreements, we cannot identify the specific 24,607 students included in the survey sampling frame. Instead, we observe the universe of AUB undergraduates who enrolled between 2001 and 2018 (31,483 students) and the subset who completed the survey.

In Table 3, we report gender-specific summary statistics for survey participants, regardless of which major they were enrolled in. Women make up 52 percent of the sample. Panel A shows that, on average, male students scored higher on the SAT Math section (659.9) compared to female students (619.3), while the gender gap in SAT Verbal scores was negligible (548.8 for men versus 545.9 for women). Most participants responded either to the initial invitation or after the first reminder, with an average of 0.947 reminders received. The average completion time for the 46-question survey was approximately 10 minutes (575 seconds). Panel B shows that male students were less likely than female students to take courses taught by women.

3.2 Characterizing Gender Norms

Our primary outcomes measure gender norms and beliefs, which the literature conceptualizes as multidimensional, encompassing both prescriptive views about appropriate roles for men and women and descriptive beliefs about women's status and position in society. Existing survey-based work typically operationalizes gender norms using questions covering political leadership, labor market participation, household roles, and perceptions of gender equality (e.g., the World Values Survey, Arab Barometer, and General Social Survey).

We organize seven gender-related survey questions into two conceptually distinct outcome families. The first captures prescriptive beliefs about gender roles: normative views regarding what men and women should do in politics, work, and the household. The second captures perceptions of gender status: beliefs about whether women's position in society and the economy is already adequate or has gone "too far." This distinction is well established in the literature, which emphasizes that beliefs about women's appropriate roles need not coincide with beliefs about women's current status, and that these dimensions can respond differently to social and institutional shocks (see, e.g., Alesina et al., 2013; Bursztyn et al., 2020; Giuliano, 2020).

The *Gender Role Attitudes* family consists of four binary indicators capturing deeply held normative beliefs. Respondents are coded as one if they answered "Strongly agree" or "Agree," and zero otherwise, to statements asserting that: (i) men are better political leaders than women; (ii) only men should hold the highest political offices (e.g., president or prime minister); (iii) women should stop working after marriage; and (iv) men should be the sole providers for their families. Panel C of Table 3 summarizes these outcomes: 15.4% agree that men are better political leaders, 6.0% support male-only political leadership, 5.2% believe women should stop working after marriage, and 12.1% endorse exclusive male breadwinning. However, gender gaps emerge for three of the four outcomes, with the largest difference observed for political leadership: 25.4% of male students agree that men are better political leaders, compared to only 6.3% of female students.

The *Gender Status Perceptions* family comprises three questions measuring beliefs about women's current position in Lebanese society and the economy. Specifically, respondents were asked whether women's participation in the Lebanese labor market is already sufficient (21.2% agree, Panel D of Table 3), whether women's role in society does not need further improvement (8.5%), and whether women in Lebanon have become "too progressive" (17.3%). As with gender role attitudes, male students are

generally more likely than female students to express conservative views along this dimension.

When turning to causal analysis, we follow Kling et al. (2007) and construct standardized indices for each of the two families of outcomes. Each index is defined as the equally weighted average of the z-scores of its component questions. Z-scores are constructed by subtracting the mean and dividing by the standard deviation among students initially assigned to male advisors, and the resulting indices are re-standardized relative to this same reference group. Higher index values indicate more conservative gender attitudes. While the two indices are positively correlated, we allow exposure to female authority to affect each dimension differently, and we also consider a pooled index aggregating all seven outcomes for completeness.

4 Empirical Strategy

This section develops empirical strategy in three steps. First, we propose an estimating equation to identify the causal effects of advisor gender. Second, we validate the randomization process. Third, we rule out systematic non-response bias in our alumni survey.

4.1 Estimating Equation

To identify the impacts of exposure to female versus male role models, we exploit the random assignment of advisors to first-year students. We estimate the following linear regression model for first-year students enrolled at the university between the years 2001 and 2018:

$$\begin{aligned} Y_{idgat} &= \beta_1 \cdot \text{female advisor}_a + \beta_2 \cdot \text{female student}_i + \beta_3 \cdot (\text{female advisor}_a \times \text{female student}_i) \\ &\quad + \gamma_{dgt} + \varepsilon_{idgat}, \end{aligned} \tag{1}$$

where Y_{idgat} refers to the outcome of interest—long-run survey-data outcomes or short-run administrative-data outcomes—for student i of gender g in department d matched to advisor a in academic year t. $female\ advisor_a$ is an indicator equal to 1 if advisor a is female and 0 otherwise. $female\ student_i$ is a binary indicator for whether student i is a woman. All specifications include a department-by-year fixed effect (FE), γ_{dt}, which is essential for identification since randomization occurs within the same department and year. We further interact these FE with student gender g, γ_{dgt}, to account for differential trends in gender norms over time within departments. Our simplest specification includes only these variables, with ε_{idgat} being the error term. As a baseline, we cluster standard errors at the level of treatment, advisor-by-year, and show robustness to randomization inference.

We focus on three main parameters of interest. First, β_1 measures the effect of assignment to a female versus male advisor for male students. Second, $(\beta_1 + \beta_3)$ measures this effect for female students. Finally, -β_3 is our estimate of the polarization effect, which captures the differential impact on the gender gap in outcomes when students are assigned to male rather than female advisors.[12]

[12]Meanwhile, β_2 is the average difference in outcomes between female and male students when matched to male advisors.

In alternative specifications, we add further controls for predetermined student and advisor characteristics besides gender. For students, these include SAT scores, type of high school, legacy admission status, survey reminders, time taken on the survey, and birth-year fixed effects. We interact these controls with student gender, which can help improve precision by reducing residual variation in the outcome. For advisors, these include rank, university or department leadership roles, and academic value-added for students (Canaan et al., 2022). We interact these controls with student gender, which helps ensure that the findings are driven by student–advisor gender matches rather than other advisor characteristics correlated with gender.

When exploring mechanisms, we also consider an alternative measure of students' exposure to female advisors that captures cumulative exposure over all years of enrollment at AUB. As noted above, some students experience advisor changes over time due to sabbaticals, faculty exits, departmental switches, or—very rarely—student-initiated requests. Exploiting this variation, we re-estimate equation (1), replacing the indicator for having a female initial advisor, $female\ advisor_a$, with the share of female advisors a student is exposed to over their enrollment spell, $\left(\frac{female\ advisors_a}{total\ advisors_a}\right)$. This specification provides an intensive-margin, repeated-exposure analogue to our baseline extensive-margin design, allowing us to assess whether exposure beyond the first year generates additional or distinct effects among students whose advisor composition changes for reasons unrelated to initial assignment.

4.2 Randomization Checks

Under random assignment of students to advisors, the β coefficients in equation (1) should be unbiased and admit a causal interpretation. This section validates that random assignment process in two ways.

First, we show that predetermined student characteristics are independent of advisor gender within department–year (i.e., randomization strata), for both male and female students. To do so, we estimate equation (1) using students' Math and Verbal SAT scores as outcomes of interest for the sample of students who responded to our survey. Appendix Table B.1 summarizes the results, separately reporting coefficients for male and female students (rows 1–2), and the gender gap (row 3). Panel A reports results based on the gender of the first-year advisor, and Panel B reports results based on cumulative exposure to female advisors across all years of enrollment. Across all comparisons, we find quantitatively small and statistically indistinguishable differences in Math and Verbal SAT scores.

To further assess consistency with random assignment, we complement the regression-based balance checks with formal randomization tests following Carrell and West (2010). Within each department–year cell, we draw 10,000 random samples without replacement, matching the observed size of each advisor group. For each simulated draw, we compute the total number of female students and the sums of Math and Verbal SAT scores. We then construct empirical p-values as the share of simulations in which the given simulated statistic is smaller than its observed counterpart. Under random assignment, these p-values should be uniformly distributed.

We test the uniformity of the empirical p-value distributions using χ^2 goodness-of-fit tests, conducting the analysis separately for the full sample and for survey respondents. Results are reported in Appendix Table 5. For survey respondents, we fail to reject random assignment for all three characteristics:

0 of 99 tests for female students, 0 of 131 for Math SAT scores, and 0 of 132 for Verbal SAT scores.[13] In the full sample, only 3 of 921 tests reject the null. Overall, these results provide no evidence of systematic non-random assignment by gender or academic ability, consistent with the institutional assignment process.

4.3 Selection into the Alumni Survey

A second critical identification concern is whether selection into the alumni survey is orthogonal to advisor gender. Selection would threaten identification if (i) advisor gender affects the likelihood of survey response, and (ii) the same factors that influence response also directly shape gender attitudes. For example, if female students assigned to female advisors were more likely to respond—perhaps due to greater satisfaction with their undergraduate experience—our estimates could overstate the long-run effects of female advisor assignment by disproportionately sampling more egalitarian respondents.

We first address this concern by directly testing whether advisor gender predicts survey participation. Specifically, we estimate equation (1) using an indicator for survey response as the outcome, restricting the sample to all students enrolled at AUB between 2001 and 2018. Table 6 reports the results. Across both the binary (female advisor in the first year) and continuous measures (share of female advisors over all years), we find no evidence that advisor gender affects response probabilities for either male or female students. Point estimates are small in magnitude, ranging from 0.001 to 0.005, and statistically indistinguishable from zero. Importantly, we also find no evidence of differential selection by student gender: the implied polarization in response rates is essentially zero across specifications, with estimates between 0 and 0.2 percentage points (p.p.).

Together, these results suggest that survey participation is orthogonal to advisor gender and unlikely to bias our main findings. We further probe the robustness of this conclusion using a complementary exercise that not only bolsters the case for internal validity but also suggests that our findings among survey respondents may generalize to non-respondent alumni. Our approach exploits variation in the timing of survey submission. If advisor gender affected survey participation in a way correlated with gender norms, we might expect such selection to vary across survey rounds. We therefore conduct three related checks: (i) we test whether advisor gender predicts the timing of survey submission and find no evidence of such effects (Panel A, Appendix Table B.2); (ii) we show that the effects of advisor gender are stable across survey-response rounds (Panel B, Appendix Table B.2); and (iii) we re-estimate our baseline specifications controlling for survey-round fixed effects, with no meaningful change in the estimated effects (see the discussion of robustness checks in Section 6.1). Together, these results support the view that selective survey participation is unlikely to drive our main conclusions.

[13] The smaller number of tests for female students reflects the absence of within-cell variation in some department–year cells in the respondent sample.

5 Conceptual Framework: Authority, Learning, and Polarizing Norms

Having established the validity of the randomized advisor assignment and long-run survey data, we introduce a simple conceptual framework to guide interpretation of equation (1). The framework combines two forces: (i) belief updating about the institutional legitimacy of female authority and (ii) identity- and status-motivated choice of gender attitudes. The identity component follows Akerlof and Kranton (2000) and related work emphasizing how social image and identity maintenance can distort learning and information processing (Bénabou and Tirole, 2006, 2011).

The model shows how exposure to counter-stereotypical female authority can produce divergent long-run responses among men and women and clarifies the conditions under which such divergence—and resulting polarization—is most pronounced. Our treatment of counter-stereotypical authority is motivated by work on stereotype formation and salience (Bordalo et al., 2016, 2019). This section presents the model's key ingredients and predictions; additional details and proofs are provided in the appendix.

5.1 A Latent Institutional Regime and Advisor Gender as a Signal

Individuals enter university with incomplete information about how legitimate and feasible female authority is within elite educational pipelines. Formally, let there be an unobserved institutional regime, $\theta \in \{0, 1\}$, where $\theta = 1$ denotes an *egalitarian regime* in which female authority is legitimate and relatively common, and $\theta = 0$ denotes a *patriarchal regime* in which female authority is viewed as illegitimate or rare. A student begins with a prior belief $\pi_0 \equiv \Pr(\theta = 1)$, which we allow to vary across student types and contexts.[14] For example, students in male-dominated fields or with stronger religious identity may hold more patriarchal priors (lower π_0), consistent with with documented heterogeneity in gender attitudes across social groups and contexts (e.g., Jayachandran, 2021; Lundberg, 2025).

Students receive a salient signal about the regime from their initial interaction with a faculty advisor. Let $s \in \{0, 1\}$ denote the gender of the assigned advisor, where $s = 1$ indicates a female advisor. We assume the signal is informative about the regime:

$$\begin{aligned} &\Pr(s = 1 \mid \theta = 1) = q_1, \\ &\Pr(s = 1 \mid \theta = 0) = q_0, \qquad q_1 > q_0. \end{aligned} \tag{2}$$

Even though advisor assignment is random within department–year, students may treat the gender of a first authority figure as a diagnostic cue about the institutional environment, consistent with cue-based learning and stereotype salience. They may treat their first encounter as informative about what types of people occupy authority positions in the institution.

Although advisor assignment is random *conditional on the department–year strata*, students may not know the realized composition of authority figures they will encounter. More broadly, they may treat the gender of a first authority figure as informative about who occupies positions of authority in the institution. The key assumption is therefore not non-random assignment, but that advisor gender is

[14] Key insights extend to a Gaussian model with closed-form posteriors, where $\theta \sim \mathcal{N}(\mu, \sigma)$ and parameters vary by context.

interpreted as a diagnostic cue about the broader environment.

Upon observing s, students update beliefs by Bayes' rule:

$$\pi(s) \equiv \Pr(\theta = 1 \mid s) = \frac{\pi_0 \Pr(s \mid \theta = 1)}{\pi_0 \Pr(s \mid \theta = 1) + (1 - \pi_0) \Pr(s \mid \theta = 0)}. \tag{3}$$

A female advisor shifts beliefs toward an egalitarian regime whenever $q_1 > q_0$. The informativeness of this signal is captured by the likelihood ratio $LR \equiv q_1/q_0$. When female authority is perceived to be especially rare under a patriarchal regime (small q_0), LR is large, and the posterior shift induced by a female advisor is correspondingly stronger. Thus, belief updating is amplified precisely in contexts where female authority is more counter-stereotypical.

5.2 Attitudes as a Tradeoff between Accuracy and Identity

Let $a \in [0, 1]$ denote a student's long-run *support for gender equality*, where larger a indicates more egalitarian attitudes. Students choose a by balancing an "accuracy" motive (aligning attitudes with beliefs about the regime) against an identity-and-status motive (aligning with a gender-typed ideal). We capture this using a quadratic loss representation, following (Akerlof and Kranton, 2000):

$$\min_{a \in [0,1]} \; (a - \pi(s))^2 + \rho_g(s) \, (a - \iota_g)^2, \tag{4}$$

where $g \in \{F, M\}$ indexes student gender, ι_g is the identity ideal,no and $\rho_g(s) \geq 0$ is the weight placed on identity-and-status considerations relative to accuracy.

We take the gender-typed ideals to be polarized in the simplest possible way:

$$\iota_F = 1 \quad \text{and} \quad \iota_M = 0,$$

which can be interpreted as women privately benefiting from and aspiring to gender equality, while men may face status losses or identity threats from egalitarian shifts. This stark normalization is without loss of generality for the comparative statics we emphasize; the key requirement is that $\iota_F > \iota_M$.

A key mechanism is that counter-stereotypical female authority increases the *salience* of gender identity—through empowerment and aspiration for women, and status threat and norm enforcement for men. We model this as an increase in $\rho_g(s)$ when $s = 1$, especially when female authority is perceived to be rare:

$$\rho_g(s) = \rho_{g0} + \alpha_g \cdot s \cdot (1 - p), \qquad \alpha_g \geq 0. \tag{5}$$

Here, ρ_{g0} is the common baseline weight for all g individuals, and the latter composite term captures the salience effect: α_g is the loading on the salience term, $s \cdot (1 - p)$, where $p \in [0, 1]$ is the perceived prevalence of female authority in the relevant environment (e.g., department or field). When p is low (female authority is counter-stereotypical), the term $(1 - p)$ is large, and a female advisor is more surprising. As a diagnostic cue, this surprise thus generates a stronger identity response. This formulation captures the idea emphasized by stereotype and salience-based models (Bordalo et al., 2016, 2019): atypical examples

are more attention-grabbing and more identity-relevant.

5.3 Closed-form Solution and Core Predictions

The objective in equation (4) is strictly convex, and yields a unique interior optimum:

$$a_g^*(s) = \frac{\pi(s) + \rho_g(s)\,\iota_g}{1 + \rho_g(s)}. \tag{6}$$

Thus, attitudes are a weighted average of (i) the belief-driven component, $\pi(s)$, and (ii) the identity ideal ι_g, with weights governed by $\rho_g(s)$.

Prediction 1 (Women become more egalitarian). For women ($\iota_F = 1$), equation (6) becomes

$$a_F^*(s) = \frac{\pi(s) + \rho_F(s)}{1 + \rho_F(s)} = 1 - \frac{1 - \pi(s)}{1 + \rho_F(s)}.$$

A female advisor increases $\pi(s)$ through belief updating and increases $\rho_F(s)$ through empowerment and role-model salience. Both effects raise $a_F^*(s)$, implying $a_F^*(1) > a_F^*(0)$ whenever $q_1 > q_0$ and $\alpha_F \geq 0$.

Prediction 2 (Men may exhibit backlash). For men ($\iota_M = 0$),

$$a_M^*(s) = \frac{\pi(s)}{1 + \rho_M(s)}.$$

A female advisor increases $\pi(s)$, pushing attitudes toward egalitarianism, but also increases $\rho_M(s)$, strengthening identity- and status-based resistance. Backlash occurs when the latter effect dominates:

$$a_M^*(1) < a_M^*(0) \quad \Longleftrightarrow \quad \frac{\pi(1)}{\pi(0)} < \frac{1 + \rho_M(1)}{1 + \rho_M(0)}. \tag{7}$$

Thus, male backlash is more likely when (i) female authority is highly salient (low p, high α_M), (ii) baseline identity concerns are already strong (high ρ_{M0}), and/or (iii) the informational content of the signal is limited (e.g., because LR is small). This is consistent with identity maintenance overriding learning in the Bénabou and Tirole (2006) framework.

In a learning-only benchmark where the identity weight does not respond to exposure ($\alpha_F = \alpha_M = 0$), observing a female advisor shifts beliefs toward an egalitarian regime ($\pi(1) > \phi(0)$) and therefore moves both men and women toward more egalitarian attitudes, implying convergence rather than polarization. Polarization arises only when counter-stereotypical female authority also raises the salience of gender identity and status concerns, so that for men the increase in identity weight can outweigh informational updating (inequality 7). The framework therefore does not assume backlash; it identifies the conditions under which it emerges and predicts it should be strongest precisely where female authority is rare and gender hierarchy is salient (low p, high ρ_{M0}, high α_M).

Prediction 3 (Polarization). Define polarization as the gender gap in egalitarian attitudes:

$$\Delta(s) \equiv a_F^*(s) - a_M^*(s).$$

When women become more egalitarian and men exhibit backlash, the gender gap widens: $\Delta(1) - \Delta(0) > 0$. Thus, under these conditions, exposure to female authority can polarize gender attitudes.

6 Long-Run Effects of Advisors on Gender Norms

We now turn to estimates of the effects of advisors on gender norms, guided by three key insights from the preceding conceptual framework. First, exposure to a female authority figure should shift women toward more egalitarian gender-role attitudes through learning and identity channels. Second, similar exposure may generate backlash among men when the identity- and status-salience induced by counter-stereotypical female authority dominates informational updating. Third, polarization should be strongest in contexts where female authority is most counter-stereotypical or norms are most rigid—in our setting, male-dominated STEM fields and among more religious students.

6.1 Baseline Results: Empowerment and Backlash

We begin by reporting baseline estimates for men, women, and the implied gender gap (polarization) from equation (1). The coefficients in Table 7—reproduced graphically in Figure 2—capture the long-run effect of being assigned a female rather than a male advisor in the first year of university, measured 7–24 years after enrollment. All outcomes are oriented so that higher values correspond to more conservative gender attitudes.

The results reveal stark and asymmetric long-run responses to early exposure to female authority. Column 1 reports estimates for the *Gender Role Attitudes* index. Male students assigned to a female advisor exhibit more conservative attitudes, with a point estimate of 0.22 standard deviations (s.d.), though this effect is imprecisely estimated (s.e. 0.18). In contrast, female students assigned to a female advisor display a large and statistically significant shift toward more egalitarian views, with an estimated effect of –0.31 s.d. The resulting increase in gender polarization is substantial and precisely estimated at 0.53 s.d. We find qualitatively similar, though less precisely estimated, patterns for the *Gender Status Perceptions* index in column 6: 0.22 s.d. for men, -0.14 for women, and 0.37 for polarization. Appendix Table B.3 (column 1) reports results for an omnibus index combining all seven gender-related survey questions, with the point estimates mirroring those for the *Gender Role Attitudes* index in Table 7.: 0.27 (s.e.=0.19) for men, -0.28 (0.13)** for women, and 0.55 (0.22)** for polarization.

While informative, the composite indices mask heterogeneity across specific beliefs. Columns 2–5 of Table 7 therefore disaggregate the *Gender Role Attitudes* index into its individual components. Nearly all outcomes display directional patterns consistent with the aggregate index, but the magnitudes and precision are largest for attitudes related to women's participation in politics and the labor market. Female students exposed to female advisors are 7 percentage points (p.p.) less likely to agree that men are better

suited for politics (column 3) and 5.9 p.p. less likely to believe that women should stop working when they get married (column 4). Among male students, the corresponding estimates are noisier but similarly sized: exposure to a female advisor increases agreement with these statements by 7.1 p.p. and 5.0 p.p., respectively. These are large effects relative to the counterfactual of being assigned to male advisors (means reported at the bottom of the table), and they also translate into sizable increases in polarization of 14.1 p.p. and 10.8 p.p., respectively. Comparable patterns emerge for beliefs about political leadership more broadly (column 2), while for the statement that "men should be the sole providers for their families," the male response reverses sign but remains small and statistically insignificant (column 5).

We observe analogous, though less precisely estimated, effects for perceptions of women's status in society. Exposure to female advisors makes men more likely to believe that women's labor force participation in Lebanon is already sufficient, while women become less likely to hold this view (column 7). Similarly, men grow more inclined to view women's current societal role as appropriate, whereas women develop more critical assessments (column 8). Men also become more likely to perceive women in Lebanon as "too progressive," with women shifting in the opposite direction (column 9).

Interpreted through the lens of the model in Section 5, the baseline patterns point to distinct mechanisms for women and men. For women, assignment to a female advisor increases both the perceived legitimacy of female authority and the salience of aspirational identity, generating durable shifts toward more egalitarian gender attitudes. For men, the estimates suggest that any learning about female competence is offset—or even dominated—by identity- and status-based concerns, consistent with the backlash condition in equation (7). In Section 6.2, we provide further evidence in line with this interpretation, showing that these divergent trajectories are amplified in male-dominated STEM fields and among religious students. Before turning to these heterogeneity analyses, we first present additional evidence supporting the causal interpretation of the baseline findings.

Robustness and Placebo Checks. We provide two pieces of evidence that further bolster the case for randomization leading to unbiased point estimates and inference. First, Appendix Tables B.11 shows that the baseline estimates in Table 7 are robust to including controls for student characteristics fully interacted with student gender. These additional controls—SAT scores, religious vs. secular high school attendance, time taken to answer the survey, number of survey reminders, birth year, and AUB legacy status—leave the core findings unchanged in terms of sign, magnitude, and precision. Second, Tables B.4 and B.5 show that our baseline inference—clustering on the level of treatment, advisor×year—is robust to a randomization inference procedure.

A growing concern in the culture literature is that changes in a focal attitude may reflect a broader shift in a bundled set of cultural attributes, rather than movement in the targeted or hypothesized mechanism itself.[15] To assess this concern, we re-estimate our baseline specification (1) across a wide set of non-gender outcomes spanning religiosity, sectarian tolerance, trust, political identity, and incentivized behaviors. Appendix Table B.6 reports treatment effects for men (column 1), women (column 2), and

[15]See Acemoglu and Robinson (2025) for a framework in which culture and institutions are jointly sustained as social equilibria, implying that cultural traits may move together. For related discussions of multidimensional culture and correlated norms, see, e.g., Alesina and Giuliano (2015), Bisin and Verdier (2011), Fernández (2011), Guiso et al. (2006), and Tabellini (2008).

the implied polarization gap (column 3), alongside each outcome's raw correlation with our two gender indices (columns 4–5). Outcomes are oriented so that higher values indicate greater support, and are ordered by the strength of their raw correlation with the *Gender Role Attitudes* index.

Across outcomes that are empirically distant from gender norms—including trust measures, political engagement, and donation and prize-claiming behaviors—estimated effects in Table B.6 are uniformly small and statistically indistinguishable from zero. By contrast, the few statistically significant estimates are concentrated among outcomes that are most strongly correlated with our gender attitude indices, such as support for civil and interreligious marriage. This pattern argues against a diffuse "bundled culture" interpretation in which exposure to female authority figures induces broad shifts across social, political, and behavioral domains. Instead, it points to changes that are tightly concentrated in the domain of gender norms, consistent with limited spillovers rather than generalized cultural change.

6.2 Heterogeneity: Male-Dominated Fields and Conservative Backgrounds

The baseline results above suggest that female advisors cause polarization of gender norms between male and female students. Underlying this divergence is a strong shift towards egalitarian norms among women and a somewhat weaker backlash response among men. While these results pool across heterogeneous student populations and contexts within the university, the model in Section 5 delivers clear comparative statics for when polarization should be strongest. This section explores two key dimensions of heterogeneity that shape female empowerment and male backlash. First, we compare fields of study where female authority is more versus less counter-stereotypical based on prevailing gender representation. Second, we distinguish more versus less religious students to capture variation in patriarchal norms and the strength of identity concerns.[16]

STEM versus non-STEM Departments. The model highlights two reasons why effects should be amplified in male-dominated STEM fields. First, female authority is more counter-stereotypical (lower perceived prevalence p), so a female advisor generates a larger salience shock and thus a larger identity-based response (equation 5). Second, encountering a female advisor may convery more information about the institutional regime (a larger likelihood ratio q_1/q_0), producing a larger belief update. Both channels strengthen women's egalitarian response and increase the likelihood of backlash among men (equation 7), resulting in greater polarization. We test this implication by splitting the sample into STEM and non-STEM fields, which differ sharply in the scope for counter-stereotypical exposure (see Tables 9 and 11 as well as Figure 3).

Consistent with the model, effects are substantially larger in departments where women are traditionally underrepresented. Table 9 shows that, for both men and women, responses to female advisor assignment are stronger and more precisely estimated among students in STEM fields. Male backlash is entirely driven by STEM majors: men assigned to female advisors in STEM exhibit a 0.48 s.d. increase

[16]Several heterogeneity analyses in this section and below rely on relatively small subsamples, which limits statistical power. We therefore emphasize patterns and magnitudes, and interpret these results as suggestive rather than definitive where appropriate.

in conservative *Gender Role Attitudes* relative to those assigned to male advisors (column 1). In contrast, there is no evidence of backlash in non-STEM fields; if anything, men display a weak and imprecise progressive shift ($\widehat{\beta}_1 = -0.19$, s.e. 0.27; column 3).

Female students, by contrast, exhibit similarly sized progressive shifts in both STEM and non-STEM fields (columns 1 and 3 of Table 9). As a result, polarization effects are concentrated in STEM: assignment to a female advisor increases the gender gap in *Gender Role Attitudes* by 0.74 s.d. in STEM fields, compared to a small and statistically insignificant 0.13 s.d. in non-STEM fields. As in the baseline results, effects on *Gender Status Perceptions* are weaker, though generally signed in the same direction (columns 2 and 4). Figure 3 summarizes these patterns visually, Table 11 reports results for individual outcomes, and Appendix Table B.13 demonstrates robustness to the additional controls described above.

Taken together, these findings suggest that the consequences of female authority depend critically on the surrounding gender composition. In male-dominated academic environments, female advisors generate sharply polarizing responses, consistent with defensive reactions by men to challenges to traditional gender hierarchies—particularly in a relatively conservative and patriarchal setting such as Lebanon. In more gender-balanced fields, by contrast, female authority primarily shapes women's attitudes without triggering systematic backlash among men.

Religiosity. Religious individuals tend to hold more conservative gender attitudes in many societies. In the model, religious students may enter university with more patriarchal priors (lower π_0), lower perceived prevalence of female authority (lower p), stronger baseline identity concerns (higher ρ_{g0}), and greater sensitivity to norm violations (higher α_g). Each force amplifies polarization: women respond more strongly in an egalitarian direction, while men are more likely to react defensively through backlash. We test these implications by splitting the sample between students who identify as religious and those who do not.

Two features of the data support this exercise. First, while religiosity is strongly correlated with gender attitudes, it is orthogonal to advisor assignment (see row 4 of Appendix Table B.6). Second, religious students are distributed across departments at AUB rather than being concentrated in a small subset of fields, limiting concerns that these patterns simply proxy for academic environment.[17]

Table 10 shows that responses to female advisor assignment are substantially stronger and more precisely estimated among religious students. Male backlash is entirely driven by this group: religious men assigned to female rather than male advisors exhibit a 0.55 s.d. increase in conservative *Gender Role Attitudes* (column 1) and a 0.53 s.d. increase in conservative *Gender Status Perceptions* (column 3). Thus, exposure to female authority shifts both prescriptive beliefs and descriptive perceptions in a more

[17] We also examine alternative measures of religious heterogeneity, including students' reported religious affiliation (Muslim, Christian, Druze) and the religious affiliation of their high schools (see Canaan et al., forthcoming). While both capture meaningful cultural variation, differences in gender norms are substantially larger within religious groups than between them, and measures of religiosity explain a significant share of this within-group variation. Consistent with these patterns, Table B.8 shows that the backlash effects are similar among male students from Christian and Muslim backgrounds, while there is some evidence that female advisors induce a stronger egalitarian shift among Muslim female students. Meanwhile, students from Christian and Muslim religious high schools are more conservative on average , but sample sizes from Muslim schools and from Christian schools—are too small relative to the much larger group from secular or non-affiliated schools to support meaningful heterogeneity analyses.

conservative direction among religious men. By contrast, there is no evidence of backlash among non-religious men, who, if anything, display weak and imprecise progressive shifts (columns 2 and 4).

Among women, we also observe larger egalitarian shifts for those who identify as religious, though the differences relative to non-religious women are more modest than for men (columns 1 and 3). Combined, these responses generate striking polarization: assignment to a female advisor increases the gender gap in *Gender Role Attitudes* by 0.98 s.d. among religious students, compared to a small and statistically insignificant 0.10 s.d. among the non-religious. Figure 4 summarizes these patterns visually, Table 12 reports results for individual outcomes, and Appendix Table B.15 shows robustness to the additional controls described above.

These findings point to a central role for religious identity in shaping how exposure to female authority translates into long-run gender attitudes. For students who enter university with more traditional views, the university appears not merely to narrow gender divides, but in some cases to intensify them. For religious women, female advisors may represent a rare and salient signal of legitimate female authority, creating substantial scope for belief updating and identity formation. For religious men, the same exposure may pose a sharper challenge to entrenched gender hierarchies, triggering defensive responses rather than convergence. In this sense, the university functions as a crucible for polarization among ex ante conservative students: a shared institutional environment that simultaneously liberalizes some while hardening resistance in others, widening gender divides rather than resolving them.

7 A Counter-Stereotypical Authority Mechanism

The results thus far show that first-year exposure to female advisors produces persistent polarization in gender norms. The patterns align with a model in which counter-stereotypical authority both (i) signals the legitimacy of women in elite roles and (ii) triggers asymmetric identity-based responses among mean and women. The stronger effects in male-dominated STEM fields and among more religious students reinforce this interpretation.

This section provides additional evidence on the channels behind the counter-stereotypical authority mechanism. First, we examine three pathways through which the initial exposure shock can be reinforced over time. Second, we distinguish the influence of female authority figures from that of successful female peers, testing whether norm transmission operates primarily through oblique (authority) rather than horizontal (peer) channels. Finally, we use variation in instructor stature to identify heterogeneity in the strength of counter-stereotypical shock.

7.1 Persistence and Reinforcement Pathways

Our conceptual framework highlights a reinforcement channel that can sustain long-run effects. Initial exposure may shift beliefs and identity directly. It may also alter subsequent choices that govern later encounters with female authority. If early exposure reduces barriers to engaging with female instructors, students may select into environments that generate repeated signals, reinforcing earlier updating and

identity salience. This feedback can strengthen women's egalitarian shifts and sustain or even amplify men's resistance.[18]

This reinforcement logic motivates three empirical tests. First, we ask whether effects are stronger for advisors who are more academically consequential for students. Second, we test whether cumulative exposure to female advisors beyond the first year amplifies long-run attitudinal responses. Third, we examine whether first-year exposure shifts subsequent course choices toward (or away from) female instructors, providing a behavioral pathway for reinforcement. Together, these tests clarify how a brief early encounter with female authority can generate durable—and in some contexts polarizing—effects.

Cohort Variation and an Evolving University Environment. Before turning to these tests, we note suggestive evidence that the baseline effects vary by cohort. Appendix Table B.10 splits the sample at the 2010 entry-year midpoint. Women's egalitarian shift in *Gender Role Attitudes* is similar across cohorts, while polarization is concentrated among more recent cohorts because the male backlash response only materializes after 2010. Patterns for *Gender Status Perceptions* are qualitatively similar but less precise.

This cohort pattern admits multiple interpretations, but each points to time-varying scope for reinforcement. One possibility is attenuation: earlier cohorts are observed farther from enrollment, so any backlash response may dissipate as students accumulate additional experiences and exposures. Another is composition: alumni survey coverage and the mix of students and majors may differ across cohorts. A third is a changing environment. The early-to-mid 2010s coincide with a marked rise in female faculty representation at AUB (especially in STEM, see Section 2.1), and with heightened public salience of gender norms as the MeToo movement and related cultural currents reached Lebanon. These shifts may affect both the informativeness of exposure to female authority and the identity stakes it triggers. We therefore treat the cohort split as suggestive rather than definitive, and use the reinforcement tests below to probe whether and how an initial exposure shock compounds through subsequent encounters.

High-Academic-Value-Added Advisors Amplify Gender Polarization. If advising shapes students' trajectories, then exposure to female authority should matter most when the advisor is especially effective and salient to students' academic success. We test this implication in Table 13 by asking whether the effects of female-advisor assignment are larger for advisors with higher academic value added (VA). Following Canaan et al. (2022), we leverage the random assignment of students to advisors within department–year to estimate unbiased measures of advisor VA. Specifically, we regress students' standardized first-year GPA on department–year fixed effects. We then collapse the residuals to the advisor–year level and construct VA using a leave-one-year-out estimator, where each advisor's VA in a given year is predicted using their students' from all other years (Chetty et al., 2014). Importantly, we also estimate VA using the universe of students excluding our survey respondents, which, combined with the leave-year-out procedure, removes any mechanical correlation between advisor VA and the long-run outcomes we study. Appendix Table B.9 shows that there are no systematic differences in VA across male and female advisors within the same department–year.

[18] Appendix Section A.6 illustrates these reinforcement dynamics through a simple extension of the baseline model in Section 5.

Table 13 shows that polarization in *Gender Role Attitudes* is concentrated among students assigned to high-VA advisors. We split the sample into students randomly assigned to advisors with positive and negative VA.[19] For men, assignment to a female advisor increases conservative *Gender Role Attitudes* by 0.47 s.d. (s.e. 0.27) when the advisor has positive VA, compared to a small and imprecise 0.13 s.d. (s.e. 0.41) for negative-VA advisors. For women, the egalitarian shift is likewise concentrated among positive-VA advisors: -0.39 s.d. (s.e. 0.13) versus 0.05 s.d. (s.e. 0.29) for negative VA. The implied polarization effect is large and precisely estimated in the positive-VA sample (0.86 s.d., s.e. 0.29), but close to zero and statistically insignificant for negative-VA advisors (0.08 s.d., s.e. 0.48). And as with other tests, effects on *Gender Status Perceptions* are weaker and less precise.

These patterns are consistent with an interaction between the authority channel and reinforcement, and they also help interpret the male backlash response through the lens of the model. High-VA advisors are likely to be more salient and more consequential authority figures. This can raise the informational content of the encounter (a larger perceived likelihood ratio) and increase the identity stakes of accepting a counter-stereotypical signal. For women, a highly effective female advisor plausibly strengthens belief updating about the legitimacy of female authority and can set in motion reinforcing choices through academic engagement. For men, the same salience may sharpen perceived challenges to traditional hierarchies, making the backlash condition more likely to bind. We view these interpretations as complementary, even if they are not fully separable empirically in our setting.

Cumulative Advisor Exposure Beyond First Year. While most students keep the same advisor throughout their time at AUB, a non-trivial minority experience advisor changes for the reasons described in Section 4.1. We use these changes to construct an intensive-margin measure of exposure: the share of a student's advisors who are women, $\left(\frac{female\ advisors_a}{total\ advisors_a}\right)$, and re-estimate equation (1) using this cumulative exposure measure.[20] Table 8 reports the results. The takeaways closely mirror our baseline initial-advisor estimates, which is not surprising given that only 28% of survey respondents ever experience a change in the gender of their assigned advisor.

Even so, the magnitudes are informative. Moving from zero exposure to female advisors to full exposure across all enrollment years implies a 0.27 s.d. increase in conservative *Gender Role Attitudes* for men (s.e. 0.21) and a 0.48 s.d. decrease for women (s.e. 0.15), yielding a polarization effect of 0.75 s.d. (s.e. 0.26). These estimates are comparable to, and if anything slightly larger than, the baseline effects of first-year exposure: 0.22 s.d. (s.e. 0.18) for men and -0.31 s.d. (s.e. 0.13) for women, with implied polarization of 0.53 s.d. (s.e. 0.22) (Table 7). As in the baseline analysis, effects on *Gender Status Perceptions* are similarly signed but less precisely estimated. Appendix results further show that this comparability extends to the heterogeneity patterns in Section 6.2 and to specifications that add student-level controls potentially correlated with advisor switching.

Taken together, these results suggest two conclusions. First, the baseline effects are not being driven by endogenous advisor switching: allowing for cumulative exposure produces essentially the same qual-

[19] Due to the data requirements for estimating VA, we lose XXX observations from our baseline sample spread across cohorts and departments XXXX.

[20] Appendix Figure B.2 provides the corresponding graphical evidence.

itative pattern. Second, additional—and, for some, distinct—exposure beyond the first year does not appear to unwind the initial shock. If anything, the slightly larger polarization estimates are consistent with reinforcement: later encounters with female authority may compound earlier belief updating for women while sustaining identity-based resistance among men, rather than pushing attitudes back toward convergence. We turn now to another mechanism for reinforcement inside the classroom.

Course Choices as a Reinforcement Channel. Course choices provide a natural pathway through which a first-year advisor can have effects that persist and compound. Advisors may shift students' beliefs and identity directly. They may also redirect students into academic environments that generate repeated exposure to female authority, different peers, and different course content. These downstream choices can reinforce early updating for women. They can also sustain, or even intensify, resistance among men if additional encounters raise the identity stakes of counter-stereotypical authority.

Identifying this mechanism cleanly is challenging. Instructor gender is not randomly assigned in most courses, and many major requirements leave limited scope for quasi-experimental variation. Course selection is therefore itself an outcome: it reflects endogenous choice. We embrace this reduced-form interpretation and ask whether first-year exposure to female authority leads to systematic differences in subsequent course-taking. We estimate equation (1) with course-choice measures as outcomes, taking advantage of administrative registrar data for the full student population.

Instructor gender exposure. We begin by examining whether students' first-year advisor assignment shifts the gender composition of instructors they encounter in the classroom. Table 15 provides suggestive evidence of divergence in instructor-gender exposure. Female students assigned to female advisors subsequently take courses with a higher prevalence of female instructors: relative to those assigned to male advisors, 0.9 p.p. (3%) more of their courses are taught by women (column 1).[21] Male students show a smaller and statistically insignificant response. The qualitative pattern persists when we restrict attention to students who take more than 10 courses at AUB and when we focus on courses outside the major, where the scope for choice is greater (columns 2 and 3), though estimates become less precise.

We next consider how these patterns vary by field in Table 16. In STEM, male students assigned to female advisors appear to sort away from female instructors, especially in electives outside the major (column 3). In non-STEM fields, both men and women assigned to female advisors tend to sort into courses taught by women, with larger effects for women. While several estimates are imprecise, the overall pattern is consistent with course-taking as a reinforcement channel: first-year exposure leads to systematically different subsequent exposure to female authority, and these differences mirror the same environments where we observe the strongest attitudinal polarization.

Takeaway. Overall, the course-choice patterns point to a plausible behavioral pathway through which a brief first-year encounter with female authority can persist. Female students assigned to female advisors increase their subsequent exposure to female instructors, while male students—especially in STEM—

[21] Panel B of Table 15 reveals similar albeit noisier estimates for the survey sample. This can be explained in part by the fact that these course-choice outcomes exhibit more limited within-department-by-year variation than the core gender-norms outcomes.

appear to move in the opposite direction. These sorting responses are consistent with reinforcement: they shift the stream of experiences that students accumulate after the initial shock, potentially compounding belief updating for women while sustaining identity-based resistance among men.

7.2 Authority vs. Peers: Oblique vs. Horizontal Transmission

A key remaining question is whether our effects are specific to exposure to *authority*, or whether they instead reflect broader exposure to high-achieving women in students' immediate environment. The course-sorting evidence above is consistent with reinforcement through additional contact with female instructors, but it does not by itself distinguish between oblique (vertical) transmission from authority figures and horizontal transmission through peers. We address this distinction by testing whether exposure to high-performing female *peers* generates similar long-run polarization effects as exposure to female *advisors*.

We focus on high-performing peers to create the closest possible analogue to our main setting. Advisors are high-status figures with formal authority and institutional legitimacy. If our results simply reflect exposure to high-achieving women—rather than authority per se—then being assigned to advising group cohorts with more top-performing women should produce comparable shifts in gender norms. In addition, although advisor groups are designed for advising, they also form a natural peer environment: 9% of survey respondents recalled forming friendships within their advisor group 7–24 years prior (with 5% being unsure).

To implement this test, we exploit the same random assignment to advisor cohorts, but shift the focus from advisor gender to peer composition. Within each department–entry-year, students are randomly assigned to advisor groups that differ in the share and performance distribution of female peers. We estimate two complementary specifications following Mouganie and Wang (2020).

The first specification measures exposure as the share of one's peer group who are high-performing women, relative to all students in the group:

$$\begin{aligned} Y_{idgtc} \;=\; & \beta_1 \cdot \text{top women}_{-i,c} + \beta_2 \cdot \text{top men}_{-i,c} + \beta_3 \cdot \text{share female}_{-i,c} \\ & + \beta_4 \cdot (\text{top women}_{-i,c} \times \text{female student}_i) + \beta_5 \cdot (\text{top men}_{-i,c} \times \text{female student}_i) \\ & + \beta_6 \cdot (\text{share female}_{-i,t} \times \text{female student}_i) + \mathbf{X}_i'\boldsymbol{\eta} + \gamma_{dgt} + \varepsilon_{idgc} \end{aligned} \tag{8}$$

where $top\ women_{-i,c}$ is the leave-one-out share of advising-group cohort c who are high-performing women, defined using department–year-specific SAT Math percentile thresholds. We additionally control for overall gender composition ($share\ female_{-i,c}$) and the share of high-performing men ($top\ men_{-i,c}$). All peer composition measures are standardized to have mean zero and standard deviation one. There are three parameters of interest: β_1 captures the effect of a one s.d. increase in high-performing female peers on male students, $\beta_1 + \beta_4$ captures the same effect on female students, and β_4 captures polarization.

In a second specification, we define exposure as the share of all high-performing students who are

women:

$$Y_{idgt} = \beta_1 \cdot \text{share women top}_{-i,t} + \beta_2 \cdot (\text{share women top}_{-i,t} \times \text{female}_i) + \mathbf{X}_i'\boldsymbol{\eta} + \gamma_{dgt} + \varepsilon_{idgt} \quad (9)$$

where $share\ women\ top_{-i,c} = \frac{top\ women_{-i,t}}{top\ women_{-i,c} + top\ men_{-i,c}}$, also standardized to mean zero and unit standard deviation. Both specifications include gender-specific department-by-year FE (γ_{dgt}), control for own SAT Math score in $\mathbf{X}_i$, cluster standard errors at the advisor–year level.

Table 14 reports the results. Across both specifications, both gender norms indices, and all percentile thresholds (top 5%, 10%, and 15%), we find null effects. Point estimates are uniformly small—typically below 0.1 s.d.—and statistically indistinguishable from zero. Most importantly, we find *no evidence of polarization*. Whereas female advisors generate 0.53 s.d. polarization in *Gender Role Attitudes*, exposure to high-performing female peers yields polarization estimates ranging from -0.07 to -0.12 s.d., depending on the specification and threshold used to define high performance.

The contrast between strong advisor effects and null peer effects is difficult to reconcile with a purely "exposure to successful women" story. Instead, it points to an authority-based mechanism: counter-stereotypical examples matter most when they occupy positions of formal authority. Female advisors are not only high-achieving; they represent legitimate institutional power. That combination appears to generate empowerment for women and backlash for men. High-performing female peers, despite being visible and accomplished, do not carry the same hierarchical meaning and thus do not trigger the same identity-based responses.

7.3 Unbundling Authority and Counter-Stereotypes

The previous findings suggest that long-run polarization is triggered by exposure to female *authority* rather than high-achieving female peers. This raises the question of which dimension of authority matters. Our framework in Section 5 implies that the counter-stereotypical shock should be strongest when the woman holds greater institutional stature. Professorial rank is the clearest marker of high status in the university hierarchy, and in our setting women are less represented at higher ranks, making female authority most counter-stereotypical precisely where status is greatest (Appendix Table B.9). We test this implication by estimating advisor-gender effects separately by advisor rank.

Table 17 reveals a clear gradient. In Panel A, polarization effects are concentrated among *professorial* advisors: assignment to a female professor produces sizable and statistically significant widening of the gender gap in both *Gender Role Attitudes* (0.88 s.d.) and *Gender Status Perceptions* (0.81 s.d.). By contrast, when the assigned advisor is *non-professorial* (lecturers/instructors), the corresponding polarization estimates are smaller and statistically indistinguishable from zero. Panel B points in the same direction within the professorial subsample: polarization is most pronounced for *senior* professors—driven in part by especially large egalitarian shifts among women—while estimates for *junior* professors are more muted and imprecise.

These rank gradients sharpen the interpretation of the advisor effects we identify. Female advisors do not simply provide exposure to successful women; they provide exposure to women occupying the

top of the institutional hierarchy. When status is highest and female representation is lowest, a female advisor may carry greater symbolic weight—both as a stronger signal about women's place in elite roles and as a sharper identity-relevant cue (a status threat for men and role model for women). This is precisely the combination that our framework predicts should amplify divergence and thus polarization.

Together with the null peer results in Section 7.2, Table 17 suggests that it is not "successful women" per se that drive long-run polarization, but the social meaning of *counter-stereotypical authority*. The strongest effects emerge where female authority is simultaneously most institutionalized and most exceptional: at higher faculty ranks.

8 Conclusion

This paper asks whether exposure to women in authority durably reshapes gender norms—and whether it ultimately narrows or widens gender divides. Exploiting the random assignment of first-year undergraduates to faculty advisors at an elite university in the Middle East and measuring beliefs up to 24 years later, we find that female authority shifts attitudes in opposite directions. Women assigned to female advisors adopt more egalitarian views about women's roles in politics and the labor market. Male students exposed to the same counter-stereotypical authority become more conservative on closely related beliefs. The net effect is a large and persistent increase in polarization.

Two features of the results underscore a broader lesson about the social meaning of authority exposure. First, divergence is greatest where female authority is rare and hierarchy is salient: in male-dominated STEM departments and among religious students. These environments appear to amplify empowerment for women while intensifying identity- and status-based resistance among men. Second, the effects persist through reinforcement rather than fading with time. Women assigned to female advisors subsequently sort toward women instructors and more egalitarian-oriented coursework, while randomized exposure to high-performing female peers produces little change in long-run attitudes. Together, these patterns point to an authority-based mechanism in which legitimate, hierarchical examples carry distinct normative force.

The implications extend beyond the university. As women's representation rises in leadership across the economy and public life, societies may experience simultaneous progress and backlash—faster movement toward gender equality for some groups alongside hardening resistance for others. This dynamic is especially likely when integration is rapid, historically male-dominated institutions are disrupted, and exposure occurs during formative years. Expanding women's authority is essential for equality, but our findings suggest it can also reallocate beliefs in ways that undermine consensus and complicate the politics of gender-related reform. Understanding these nonlinear dynamics of cultural change is an important direction for future research on gender norms.

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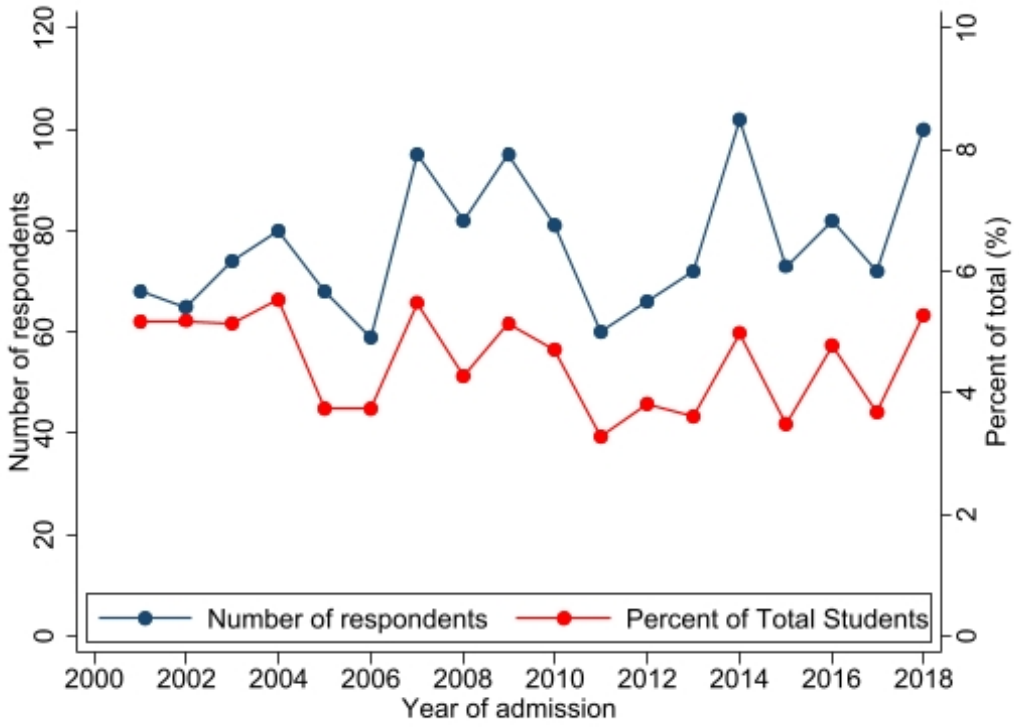
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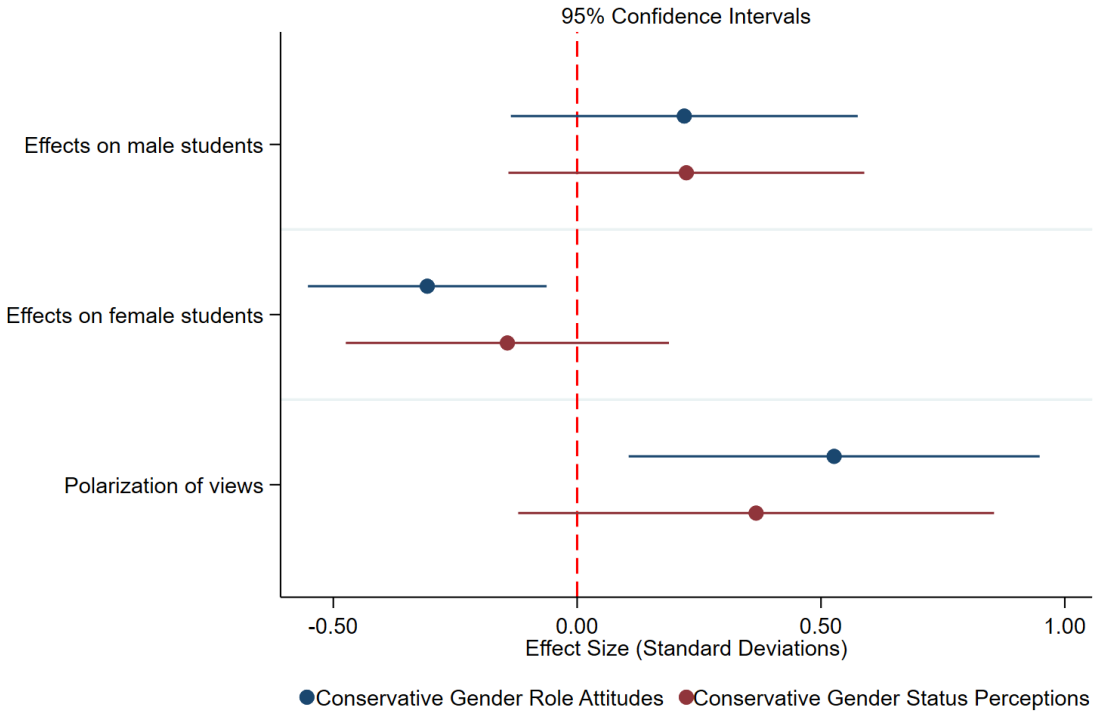
Figures

Figure 1: Number and Percentage of Respondents by Year of Admission



Notes: The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018.

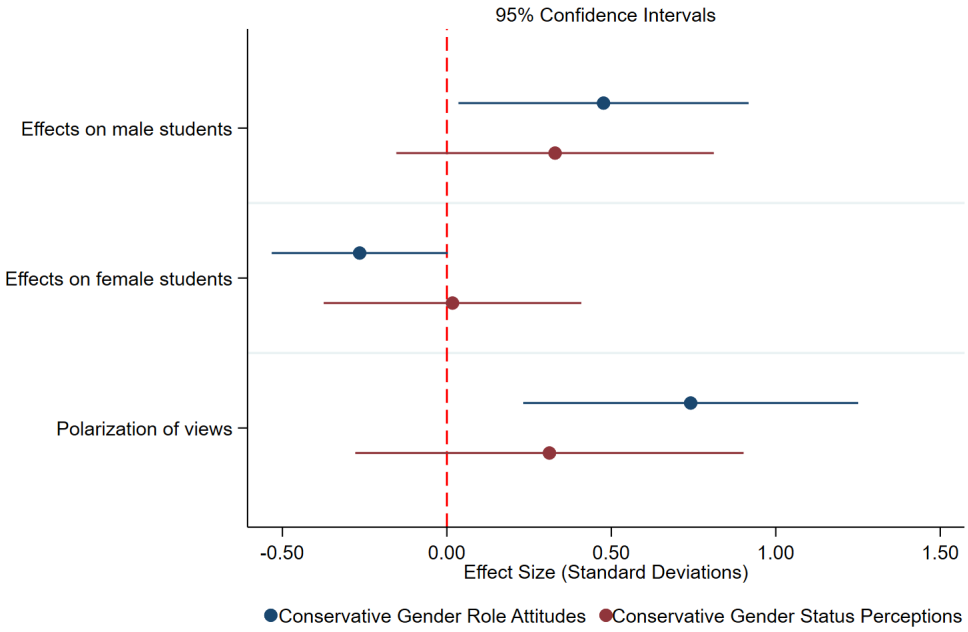
Figure 2: Effects of Female Advisor on Standardized Index Outcomes



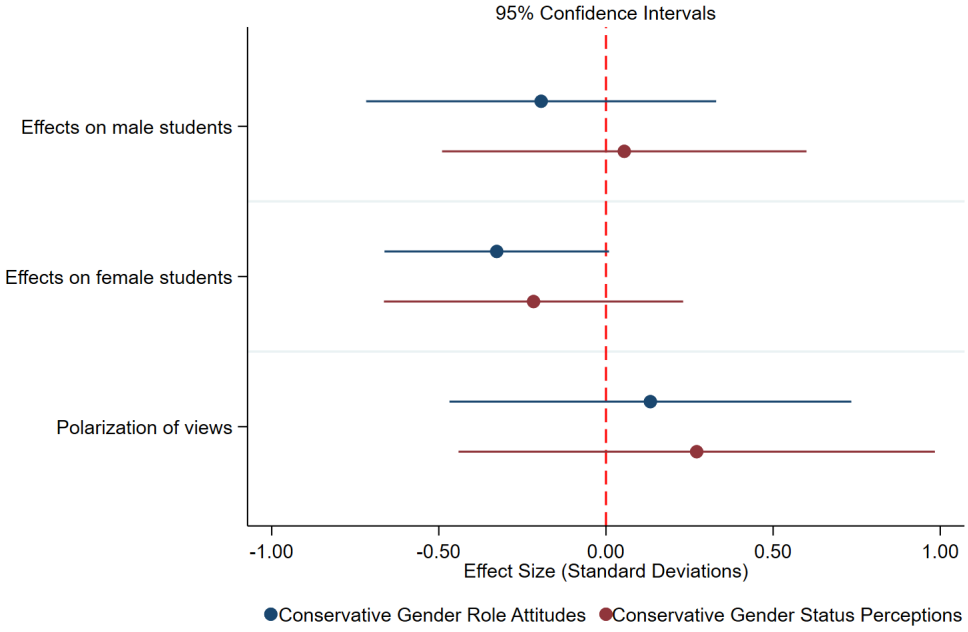
Notes: The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of being assigned a first-year female advisor on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the female advisor indicator. Effects on female students shows the sum of the female advisor coefficient and the interaction term (Female Advisor $\times$ Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Figure 3: Effects of Female Advisor on Standardized Index Outcomes by Department Type

(a) STEM Departments

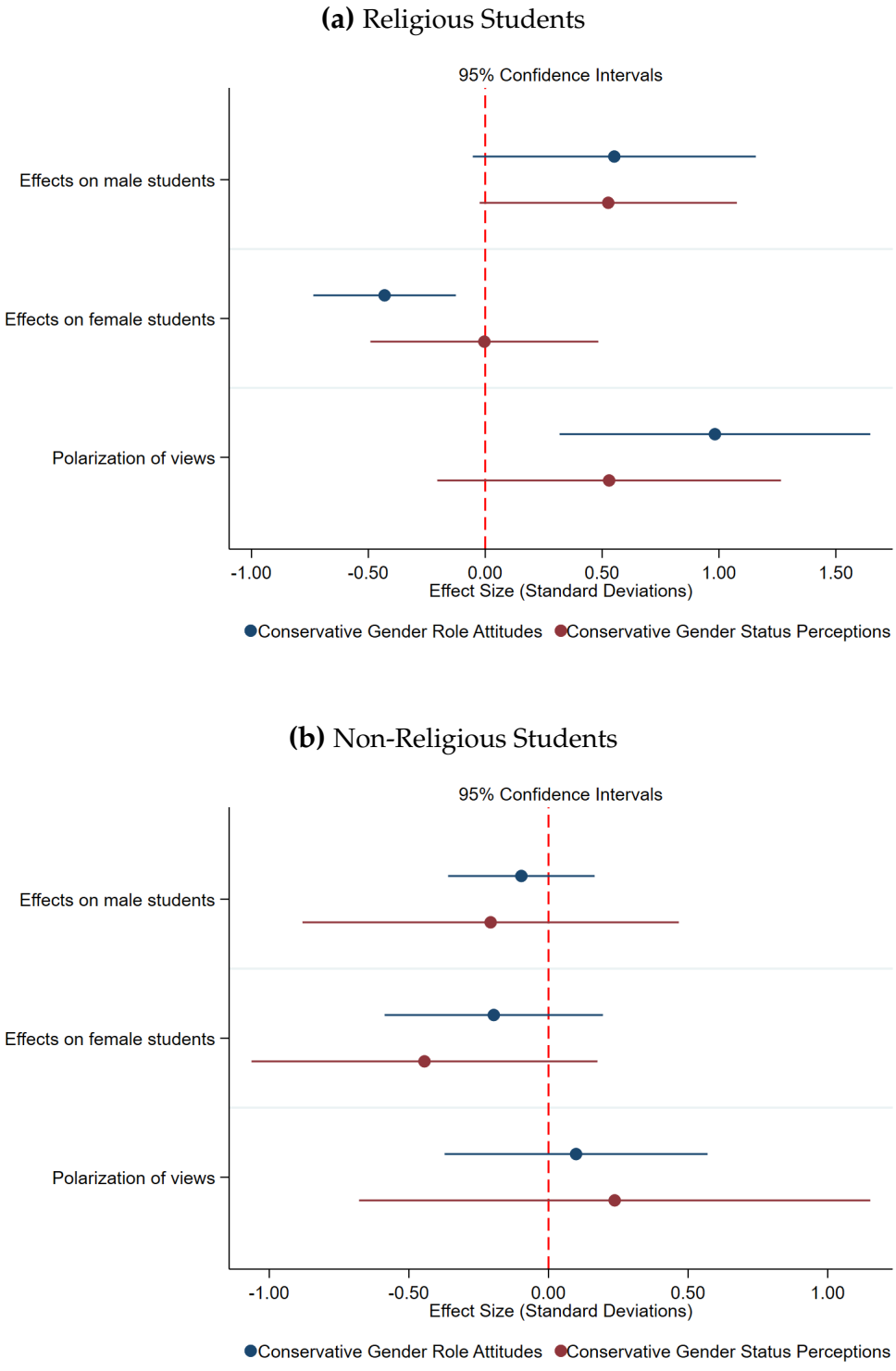


(b) Non-STEM Departments



Notes: The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of being assigned a first-year female advisor on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the female advisor indicator. Effects on female students shows the sum of the female advisor coefficient and the interaction term (Female Advisor $\times$ Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Figure 4: Effects of Female Advisor on Standardized Index Outcomes by Religiosity



The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of being assigned a first-year female advisor on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the female advisor indicator. Effects on female students shows the sum of the female advisor coefficient and the interaction term (Female Advisor $\times$ Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Tables

Table 1: Comparison of Survey Respondents and Non-Respondents

	Respondents (1)	Non-Respondents (2)	Difference (3)
Panel A: Baseline Characteristics			
SAT - Math	638.953	631.491	7.462
	(78.168)	(78.867)	
SAT - Verbal	547.340	542.053	5.287
	(105.571)	(101.015)	
Female student	0.520	0.495	0.025
	(0.500)	(0.500)	
Legacy student	0.185	0.188	-0.003
	(0.388)	(0.390)	
Birth year	1990.373	1990.447	-0.074
	(5.791)	(5.617)	
Elite high school	0.386	0.406	-0.020
	(0.487)	(0.491)	
Panel B: Outcomes at AUB			
Prop. courses with female instructors	0.378	0.381	-0.003
	(0.162)	(0.172)	
Prop. electives with female instructors	0.414	0.425	-0.011
	(0.141)	(0.169)	
Observations	1396	30176	

Notes: This table compares pre-determined characteristics of survey respondents and non-respondents among all students enrolled at AUB between 2001 and 2018. Non-respondents include students not targeted by the survey as well as targeted students who did not respond; we are unable to separately identify these two groups in our anonymized administrative data. Standard deviations are in parentheses. *Legacy student* is an indicator equal to one if the student has a close relative (parent or sibling) who previously graduated from AUB. *Elite high school* is an indicator equal to one if the student attended a high school classified as elite or progressive based on curriculum and institutional characteristics. This includes: (i) international and American-curriculum schools (e.g., IC Ras Beirut, American Community School, Choueifat branches); (ii) elite French and European schools (e.g., Grand Lyceé Franco-Libanais, Lycée Verdun, German School); (iii) top Lebanese private co-educational schools (e.g., Jamhour, Champville, Evangelical schools); and (iv) other quality private Beirut schools. *Prop. courses with female instructors* is the proportion of all courses taken at AUB that were taught by a female instructor. *Prop. electives with female instructors* restricts this to elective courses only.

Table 2: Comparison of Survey Respondents and Non-Respondents by Gender

	Men			Women		
	Resp. (1)	Non-Resp. (2)	Diff. (3)	Resp. (4)	Non-Resp. (5)	Diff. (6)
Panel A: Baseline Characteristics						
SAT - Math	659.917	652.567	7.350	619.256	609.520	9.736
	(71.534)	(75.120)		(79.059)	(76.658)	
SAT - Verbal	548.818	542.353	6.465	545.903	541.751	4.152
	(113.932)	(108.707)		(96.831)	(92.290)	
Legacy student	0.187	0.189	-0.002	0.183	0.187	-0.004
	(0.390)	(0.391)		(0.387)	(0.390)	
Birth year	1990.481	1990.351	0.130	1990.274	1990.546	-0.272
	(5.961)	(5.498)		(5.633)	(5.735)	
Elite high school	0.410	0.420	-0.010	0.364	0.391	-0.027
	(0.492)	(0.494)		(0.481)	(0.488)	
Religious School	0.635	0.632	0.003	0.593	0.590	0.003
	(0.482)	(0.482)		(0.492)	(0.492)	
Secular School	0.365	0.368	-0.003	0.407	0.410	-0.003
	(0.482)	(0.482)		(0.492)	(0.492)	
STEM Department	0.684	0.629	0.055	0.344	0.347	-0.003
	(0.465)	(0.483)		(0.475)	(0.476)	
Panel B: Outcomes at AUB						
Prop. courses with female instructors	0.322	0.338	-0.016	0.431	0.426	0.005
	(0.143)	(0.159)		(0.162)	(0.174)	
Prop. electives with female instructors	0.388	0.396	-0.008	0.439	0.454	-0.015
	(0.137)	(0.161)		(0.140)	(0.171)	
Observations	670	15,251		726	14,923	

Notes: This table compares pre-determined characteristics of survey respondents and non-respondents among all students enrolled at AUB between 2001 and 2018, separately by gender. Non-respondents include students not targeted by the survey as well as targeted students who did not respond; we are unable to separately identify these two groups in our anonymized administrative data. Standard deviations are in parentheses. *Legacy student* is an indicator equal to one if the student has a close relative (parent or sibling) who previously graduated from AUB. *Elite high school* is an indicator equal to one if the student attended a high school classified as elite or progressive based on curriculum and institutional characteristics. This includes: (i) international and American-curriculum schools (e.g., IC Ras Beirut, American Community School, Choueifat branches); (ii) elite French and European schools (e.g., Grand Lyceé Franco-Libanais, Lycée Verdun, German School); (iii) top Lebanese private co-educational schools (e.g., Jamhour, Champville, Evangelical schools); and (iv) other quality private Beirut schools. *Prop. courses with female instructors* is the proportion of all courses taken at AUB that were taught by a female instructor. *Prop. electives with female instructors* restricts this to elective courses only.

Table 3: Summary Statistics

	All Students (1)	Female Students (2)	Male Students (3)
Panel A: Baseline Characteristics			
SAT - Math	638.953	619.256	659.917
	(78.168)	(79.059)	(71.534)
SAT - Verbal	547.340	545.903	548.818
	(105.571)	(96.831)	(113.932)
Female student	0.520	1.000	0.000
	(0.500)	(0.000)	(0.000)
Legacy student	0.185	0.183	0.187
	(0.388)	(0.387)	(0.390)
Birth year	1990.373	1990.274	1990.481
	(5.791)	(5.633)	(5.961)
Elite high school	0.386	0.364	0.410
	(0.487)	(0.481)	(0.492)
Religious School	0.614	0.593	0.635
	(0.487)	(0.492)	(0.482)
Secular School	0.386	0.407	0.365
	(0.487)	(0.492)	(0.482)
Number of survey reminders	0.947	1.061	0.823
	(0.738)	(0.709)	(0.749)
Total time spent on survey (seconds)	574.689	598.278	548.979
	(638.910)	(676.221)	(595.095)
Panel B: Outcomes at AUB			
Prop. courses with female instructors	0.378	0.431	0.322
	(0.162)	(0.162)	(0.143)
Prop. electives with female instructors	0.414	0.439	0.388
	(0.141)	(0.140)	(0.137)
Panel C: Gender Role Attitudes			
Only men can be President/PM	0.059	0.042	0.078
Men better at political leadership	0.154	0.063	0.254
Women should stop working after marriage	0.052	0.036	0.069
Men should be sole provider	0.121	0.125	0.117
Panel D: Gender Status Perceptions			
Women's labor participation high enough	0.212	0.202	0.222
Women's role does not need improving	0.085	0.066	0.105
Women in Lebanon too progressive	0.173	0.138	0.211
Observations	1396	726	670

Notes: The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut (AUB) between 2001 and 2018. Standard deviations are in parentheses. *Legacy student* is an indicator equal to one if the student has a close relative (parent or sibling) who previously graduated from AUB. *Elite high school* is an indicator equal to one if the student attended a high school classified as elite or progressive based on curriculum and institutional characteristics. This includes: (i) international and American-curriculum schools (e.g., IC Ras Beirut, American Community School, Choueifat branches); (ii) elite French and European schools (e.g., Grand Lyceé Franco-Libanais, Lycée Verdun, German School); (iii) top Lebanese private co-educational schools (e.g., Jamhour, Champville, Evangelical schools); and (iv) other quality private Beirut schools. *Prop. courses with female instructors* is the proportion of all courses taken at AUB that were taught by a female instructor. *Prop. electives with female instructors* restricts this to elective courses only.

Table 4: Advisor Characteristics

	All Advisors		Respondents' Advisors	
	Mean	SD	Mean	SD
Female advisor	0.391		0.371	
Rank Distribution				
Full professor	0.168		0.089	
Associate professor	0.100		0.071	
Assistant professor	0.461		0.365	
Lecturer/Instructor	0.104		0.080	
Years served	6.34	(5.39)	8.17	(5.51)
Number of unique advisors	519		337	

Notes: This table presents characteristics of advisors in the sample. Columns 1–2 include all advisors in the data. Columns 3–4 restrict to advisors of survey respondents. Years served is calculated as the number of years between an advisor's first and last observed year in the data. Standard deviations are in parentheses.

Table 5: Random Assignment Test

	(1) Female student Empirical P-Value	(2) Math SAT Empirical P-Value	(3) Verbal SAT Empirical P-Value
Test for Student Characteristics in Survey Sample			
χ^2 goodness of fit test (no. failed/total tests)	0/99	0/131	0/132
Test for Student Characteristics in Full Sample			
χ^2 goodness of fit test (no. failed/total tests)	0/295	2/314	1/312

Notes: The empirical p-value of each advisor represents the proportion of the 10,000 simulated groups of students with a summed value less than that of the observed group. Sample includes students entering from academic years 2001 till 2018. The χ^2 goodness of fit test results indicate the number of tests of the uniformity of the distribution of p-values that failed at the 5% level. The reduced number of tests for Female student is due to the fact some departments do not have any variation in Female students in certain years.

Table 6: Effects of Female Advisor on Likelihood of Survey Response

	Binary Treatment (1)	Binary Treatment (2)	Continuous Treatment (3)	Continuous Treatment (4)
Effects on male students	0.002	0.001	0.003	0.003
	(0.005)	(0.005)	(0.006)	(0.006)
Effects on female students	0.001	0.001	0.005	0.005
	(0.005)	(0.005)	(0.006)	(0.006)
Polarization	0.000	-0.000	-0.002	-0.002
	(0.007)	(0.007)	(0.008)	(0.008)
Observations	31570	31255	31636	31255
Mean with male advisor (Men)	0.042	0.042	0.042	0.042
Mean with male advisor (Women)	0.043	0.043	0.041	0.041
Controls	No	Yes	No	Yes

Note: This table summarizes both the effects of being assigned a female advisor during first year at university and the proportion of female advisors at university on the likelihood of responding to the survey. The sample includes all students enrolled between the years 2001 and 2018 at the American University of Beirut. Standard errors clustered by advisor-year are shown in parentheses. Columns (1) and (2) present binary treatment results without and with controls, respectively. Columns (3) and (4) present continuous treatment results without and with controls. Controls include SAT math score, birth year, along with a missing SAT indicator. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 7: Effects of Female Advisor on Gender Attitudes

	Conservative Gender Role Attitudes					Conservative Gender Status Perceptions			
	Index	Men President	Men Better Politics	Women Stop Working	Men Provide	Index	Women Work High	Women Role Society	Women Too Progressive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Effects on male students	0.220	0.057	0.071	0.050	-0.023	0.224	0.035	0.063	0.076
	(0.181)	(0.054)	(0.067)	(0.044)	(0.058)	(0.186)	(0.074)	(0.056)	(0.062)
Effects on female students	-0.307**	-0.021	-0.070*	-0.059**	-0.088**	-0.143	-0.027	-0.026	-0.064
	(0.125)	(0.037)	(0.042)	(0.029)	(0.039)	(0.169)	(0.070)	(0.044)	(0.058)
Polarization of views	0.527**	0.078	0.141*	0.108**	0.064	0.367	0.062	0.089	0.140
	(0.215)	(0.065)	(0.076)	(0.053)	(0.069)	(0.249)	(0.096)	(0.070)	(0.086)
Observations	1238	1238	1238	1238	1238	1239	1238	1238	1239
Mean (Male students, Male advisor)	0.060	0.049	0.233	0.060	0.125	0.041	0.210	0.094	0.181
Mean (Female students, Male advisor)	-0.005	0.059	0.103	0.067	0.158	0.048	0.238	0.086	0.172

Notes: This table shows the effects of being assigned a female advisor during first year at university. The sample includes all students enrolled between the years 2001 and 2018. Column (1) presents the standardized Gender Role Attitudes index; columns (2)–(5) present the individual questions comprising this index. Column (6) presents the standardized Gender Status Perceptions index; columns (7)–(9) present the individual questions comprising this index. Individual outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor-year are shown in parentheses. All regressions include department-by-year fixed effects as in equation (1). *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 8: Effects of Proportion of Female Advisors on Gender Attitudes

	Conservative Gender Role Attitudes					Conservative Gender Status Perceptions			
	Index	Men President	Men Better Politics	Women Stop Working	Men Provide	Index	Women Work High	Women Role Society	Women Too Progressive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Effects on male students	0.270	0.084	0.143*	0.018	-0.035	0.324	0.093	0.066	0.106
	(0.212)	(0.064)	(0.081)	(0.050)	(0.054)	(0.216)	(0.079)	(0.062)	(0.073)
Effects on female students	-0.475***	-0.066*	-0.106**	-0.074*	-0.116**	-0.006	-0.019	-0.032	0.056
	(0.145)	(0.038)	(0.043)	(0.039)	(0.049)	(0.178)	(0.078)	(0.049)	(0.070)
Polarization of views	0.745***	0.150**	0.249***	0.092	0.081	0.330	0.112	0.098	0.050
	(0.256)	(0.074)	(0.090)	(0.063)	(0.073)	(0.279)	(0.108)	(0.079)	(0.103)
Observations	1240	1240	1240	1240	1240	1241	1240	1240	1241
Mean (Male students, No female advisors)	0.049	0.044	0.218	0.066	0.128	0.020	0.197	0.094	0.174
Mean (Female students, No female advisors)	0.089	0.083	0.124	0.076	0.174	-0.014	0.236	0.089	0.115

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) students are exposed to during their university career. The sample includes all students enrolled between the years 2001 and 2018. Column (1) presents the standardized Gender Role Attitudes index; columns (2)–(5) present the individual questions comprising this index. Column (6) presents the standardized Gender Status Perceptions index; columns (7)–(9) present the individual questions comprising this index. Individual outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor-year are shown in parentheses. All regressions include department-by-year fixed effects as in equation (1). *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 9: Effects of Female Advisor on Gender Attitudes by Department Type

	Non-STEM		STEM	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.194	0.055	0.476**	0.329
	(0.267)	(0.278)	(0.225)	(0.246)
Effects on female students	-0.327*	-0.217	-0.265*	0.017
	(0.171)	(0.228)	(0.136)	(0.200)
Polarization of views	0.133	0.271	0.741***	0.312
	(0.307)	(0.364)	(0.260)	(0.301)
Observations	621	621	617	618

Notes: This table shows the effects of being assigned a female advisor during first year at university by department type. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 10: Effects of Female Advisor on Gender Attitudes by Religiosity

	Non-Religious		Religious	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.097	-0.207	0.552*	0.526*
	(0.134)	(0.344)	(0.309)	(0.281)
Effects on female students	-0.196	-0.444	-0.431***	-0.004
	(0.199)	(0.316)	(0.156)	(0.249)
Polarization of views	0.099	0.237	0.983***	0.530
	(0.240)	(0.467)	(0.339)	(0.375)
Observations	468	468	770	771

Notes: This table shows the effects of being assigned a female advisor during first year at university by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table 11: Effects of Female Advisor on Individual Gender Attitude Questions by Department Type

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-STEM Departments							
Effects on male students	-0.130*	0.105	-0.000	-0.074	0.070	-0.003	-0.014
	(0.072)	(0.112)	(0.058)	(0.082)	(0.132)	(0.092)	(0.095)
Effects on female students	-0.007	-0.059	-0.086**	-0.096*	-0.028	-0.046	-0.100
	(0.049)	(0.056)	(0.042)	(0.051)	(0.090)	(0.061)	(0.077)
Polarization of views	-0.123	0.164	0.086	0.022	0.098	0.043	0.086
	(0.088)	(0.118)	(0.071)	(0.095)	(0.155)	(0.110)	(0.124)
Observations	621	621	621	621	621	621	621
Panel B: STEM Departments							
Effects on male students	0.173**	0.050	0.081	0.008	0.014	0.104	0.132*
	(0.068)	(0.083)	(0.060)	(0.078)	(0.087)	(0.070)	(0.079)
Effects on female students	-0.051	-0.095*	0.000	-0.071	-0.025	0.017	0.015
	(0.045)	(0.055)	(0.000)	(0.056)	(0.107)	(0.044)	(0.077)
Polarization of views	0.225***	0.145	0.081	0.079	0.038	0.087	0.117
	(0.081)	(0.101)	(0.060)	(0.096)	(0.123)	(0.081)	(0.111)
Observations	617	617	617	617	617	617	618

Notes: This table shows the effects of being assigned a female advisor during first year at university on individual questions by department type. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table 12: Effects of Female Advisor on Individual Gender Attitude Questions by Religiosity

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-Religious Students							
Effects on male students	0.053	-0.243**	0.000	0.053	-0.060	-0.086	-0.007
	(0.048)	(0.102)	(0.000)	(0.048)	(0.132)	(0.113)	(0.078)
Effects on female students	0.000	-0.057	-0.029	-0.076	-0.105	-0.114	-0.133
	(0.083)	(0.052)	(0.000)	(0.067)	(0.151)	(0.071)	(0.102)
Polarization of views	0.053	-0.186	0.029	0.129	0.045	0.028	0.126
	(0.096)	(0.115)	(0.000)	(0.083)	(0.201)	(0.134)	(0.128)
Observations	468	468	468	468	468	468	468
Panel B: Religious Students							
Effects on male students	0.113	0.263**	0.081	-0.027	0.134	0.119	0.172*
	(0.096)	(0.107)	(0.076)	(0.093)	(0.103)	(0.077)	(0.100)
Effects on female students	-0.056	-0.099	-0.085**	-0.082	0.023	-0.005	-0.019
	(0.049)	(0.066)	(0.040)	(0.053)	(0.095)	(0.065)	(0.085)
Polarization of views	0.169	0.362***	0.166*	0.055	0.111	0.123	0.190
	(0.109)	(0.122)	(0.085)	(0.104)	(0.132)	(0.100)	(0.132)
Observations	770	770	770	770	770	770	771

Notes: This table shows the effects of being assigned a female advisor during first year at university on individual questions by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor–year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table 13: Effects of Female Advisors by Advisor Value Added

	Gender Role Attitudes		Gender Status Perceptions	
	Positive VA	Negative VA	Positive VA	Negative VA
Effects on male students	0.467*	0.127	0.285	-0.050
	(0.266)	(0.413)	(0.265)	(0.346)
Effects on female students	-0.388**	0.050	-0.093	0.160
	(0.128)	(0.294)	(0.284)	(0.257)
Polarization	0.855***	0.078	0.378	-0.209
	(0.294)	(0.477)	(0.391)	(0.413)
Observations	665	573	665	574

Notes: This table shows the effects of having a female advisor (binary treatment) during first year for students assigned to positive and negative value-added advisors. The sample includes all students enrolled between the years 2001 and 2018. Standard errors clustered by advisor–year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** $p<0.01$, ** $p<0.05$, *

Table 14: Effects of High-Performing Female Peers on Gender Attitudes

	Gender Role Attitudes			Gender Status Perceptions		
	Top 5%	Top 10%	Top 15%	Top 5%	Top 10%	Top 15%
Panel A: Share of top women in cohort						
Effects on male students	-0.076	-0.061	-0.058	0.047	0.025	0.130
	(0.105)	(0.112)	(0.100)	(0.089)	(0.129)	(0.119)
Effects on female students	-0.018	-0.024	0.022	-0.045	-0.013	-0.006
	(0.056)	(0.047)	(0.047)	(0.045)	(0.047)	(0.046)
Polarization	-0.058	-0.037	-0.081	0.092	0.038	0.136
	(0.119)	(0.122)	(0.111)	(0.100)	(0.137)	(0.128)
Observations	906	906	906	906	906	906
Panel B: Share of women among top performers						
Effects on male students	-0.033	-0.092	-0.109	-0.121	-0.183	-0.114
	(0.098)	(0.090)	(0.079)	(0.108)	(0.109)	(0.133)
Effects on female students	-0.026	-0.034	0.016	-0.014	-0.076	-0.031
	(0.064)	(0.065)	(0.068)	(0.102)	(0.091)	(0.083)
Polarization	-0.007	-0.058	-0.124	-0.107	-0.107	-0.083
	(0.117)	(0.112)	(0.104)	(0.148)	(0.142)	(0.157)
Observations	952	1044	1104	952	1044	1104

Notes: This table shows the effects of exposure to high-performing female peers on gender attitudes. Panel A measures exposure as share of cohort that are top women (controlling for the proportion of female peers as well as top male peers). Panel B measures exposure as share of women among top performers. We lose more observations in the specification presented in Panel B in cases where there are no male and female students in the relative top X% in an advisor group. Treatment is defined using department–year-specific Math SAT percentile thresholds (top 5%, 10%, or 15%). Polarization is defined as the effect on men minus the effect on women. All regressions include department-by-year fixed effects and control for own SAT Math score. Standard errors clustered by advisor–year are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 15: Effects of Female Advisor on Proportion of Female Instructors

	All Courses	10+ Courses	Outside Major Electives
	(1)	(2)	(3)
Panel A: Population			
Effects on male students	0.001	0.001	-0.001
	(0.004)	(0.003)	(0.004)
Effects on female students	0.009***	0.006**	0.003
	(0.003)	(0.003)	(0.004)
Gender Gap	-0.008	-0.005	-0.005
	(0.005)	(0.004)	(0.006)
Observations	23,443	21,380	23,074
Mean of outcome	0.366	0.360	0.411
Panel B: Survey Sample			
Effects on male students	-0.008	-0.017	-0.004
	(0.018)	(0.015)	(0.019)
Effects on female students	0.026*	0.026*	0.014
	(0.015)	(0.015)	(0.018)
Gender Gap	-0.033	-0.043**	-0.018
	(0.023)	(0.021)	(0.026)
Observations	1,044	1,017	1,031
Mean of outcome	0.365	0.365	0.400

Note: This table shows the effects of having a female advisor (binary treatment) on the proportion of female instructors in courses taken by students. Column (1) includes all courses, column (2) restricts to students who took 10 or more courses, and column (3) uses the proportion of female instructors in elective courses outside the student's major. Panel A includes all students enrolled between 2001 and 2014. Panel B restricts to students who responded to the survey. Sample is restricted to those entering in 2014 or prior in order to observe the same number of courses for each student. Standard errors clustered by advisor-year are shown in parentheses. All regressions include department-by-year fixed effects. *** p<0.01, ** p<0.05, * p<0.10.

Table 16: Effects of Female Advisor on Proportion of Female Instructors: STEM vs Non-STEM

	All Courses	10+ Courses	Outside Major Electives
	(1)	(2)	(3)
Panel A: STEM			
Effects on male students	-0.007*	-0.006	-0.012**
	(0.004)	(0.004)	(0.005)
Effects on female students	0.002	-0.002	0.001
	(0.006)	(0.006)	(0.007)
Gender Gap	-0.010	-0.005	-0.013
	(0.008)	(0.008)	(0.009)
Observations	11,502	11,166	11,476
Mean of outcome	0.287	0.285	0.360
Panel B: Non-STEM			
Effects on male students	0.008	0.007	0.008
	(0.006)	(0.005)	(0.006)
Effects on female students	0.011***	0.009**	0.004
	(0.004)	(0.004)	(0.005)
Gender Gap	-0.003	-0.001	0.004
	(0.007)	(0.006)	(0.008)
Observations	11,941	10,214	11,598
Mean of outcome	0.442	0.442	0.461

Note: This table shows the effects of having a female advisor (binary treatment) on the proportion of female instructors in courses taken by students, separately for STEM and non-STEM majors. Column (1) includes all courses, column (2) restricts to students who took 10 or more courses, and column (3) uses the proportion of female instructors in elective courses outside the student's major. The sample includes all students enrolled between 2001 and 2014. Sample is restricted to those entering in 2014 or prior in order to observe the same number of courses for each student. Standard errors clustered by advisor-year are shown in parentheses. All regressions include department-by-year fixed effects. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 17: Heterogeneity by Advisor Professorial Status and Rank

Panel A: Professorial vs Non-Professorial Faculty				
	Professorial		Non-Professorial	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	0.418	0.393	-0.089	-0.037
	(0.290)	(0.296)	(0.320)	(0.242)
Effects on female students	-0.462**	-0.420*	-0.322	0.307
	(0.206)	(0.233)	(0.295)	(0.268)
Polarization of views	0.880**	0.813**	0.233	-0.345
	(0.354)	(0.366)	(0.438)	(0.367)
Observations	883	884	355	355
Panel B: Junior vs Senior Professors (Professorial Faculty Only)				
	Junior Professors		Senior Professors	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	0.584	-0.074	0.190	0.695
	(0.436)	(0.367)	(0.425)	(0.573)
Effects on female students	0.044	-0.570*	-0.903**	0.270
	(0.240)	(0.328)	(0.429)	(0.340)
Polarization of views	0.540	0.496	1.093*	0.425
	(0.494)	(0.482)	(0.578)	(0.672)
Observations	363	363	520	521

Notes: This table shows heterogeneity in the effects of being assigned a female advisor by advisor professorial status and rank. Panel A compares professorial faculty (assistant, associate, and full professors) to non-professorial faculty (lecturers, instructors). Panel B restricts to professorial faculty only and compares junior professors (assistant professors) to senior professors (associate and full professors). The sample includes all students enrolled between the years 2001 and 2018. Standard errors clustered by advisor–year are shown in parentheses. All regressions include department-by-year fixed effects. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Appendix (For Online Publication)

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A Model Appendix: Details and Derivations

This appendix provides full derivations for the conceptual framework in Section 5. We (i) derive belief updating from advisor gender, (ii) solve the attitude choice problem, (iii) establish conditions for egalitarian shifts and backlash, and (iv) provide comparative statics mapping to our heterogeneity patterns.

A.1 Belief updating from advisor gender

Let the latent regime be $\theta \in \{0, 1\}$ with $\theta = 1$ denoting an egalitarian regime. Students hold prior $\pi_0 = \Pr(\theta = 1) \in (0, 1)$. The advisor gender signal is $s \in \{0, 1\}$, where $s = 1$ indicates a female advisor. The signal structure is

$$\Pr(s = 1 \mid \theta = 1) = q_1, \qquad \Pr(s = 1 \mid \theta = 0) = q_0, \qquad q_1 > q_0.$$

Posterior Beliefs. Bayes' rule yields

$$\pi(1) \equiv \Pr(\theta = 1 \mid s = 1) = \frac{\pi_0 q_1}{\pi_0 q_1 + (1 - \pi_0) q_0}, \tag{A.1}$$

$$\pi(0) \equiv \Pr(\theta = 1 \mid s = 0) = \frac{\pi_0 (1 - q_1)}{\pi_0 (1 - q_1) + (1 - \pi_0)(1 - q_0)}. \tag{A.2}$$

Monotonicity: Female Advisor Shifts Beliefs toward the Egalitarian Regime. Define the prior odds $O_0 = \pi_0/(1 - \pi_0)$. Posterior odds after observing $s = 1$ satisfy

$$\frac{\pi(1)}{1 - \pi(1)} = O_0 \cdot \frac{q_1}{q_0}.$$

Because $q_1/q_0 > 1$, we have $\pi(1) > \pi_0$. Similarly, after observing $s = 0$,

$$\frac{\pi(0)}{1 - \pi(0)} = O_0 \cdot \frac{1 - q_1}{1 - q_0},$$

and since $q_1 > q_0$ implies $(1 - q_1)/(1 - q_0) < 1$, we have $\pi(0) < \pi_0$. Hence

$$\pi(1) > \pi_0 > \pi(0). \tag{A.3}$$

Posterior Gap and Informativeness. A direct expression for the posterior gap is

$$\pi(1) - \pi(0) = \frac{\pi_0 (1 - \pi_0)(q_1 - q_0)}{\Big(\pi_0 q_1 + (1 - \pi_0) q_0\Big)\Big(\pi_0 (1 - q_1) + (1 - \pi_0)(1 - q_0)\Big)} > 0. \tag{A.4}$$

The gap is increasing in $(q_1 - q_0)$ and, more generally, in the likelihood ratio $LR = q_1/q_0$.

Comparative Statics for Posterior Beliefs. Differentiating (A.1) gives

$$\frac{\partial \pi(1)}{\partial q_1} = \frac{\pi_0(1-\pi_0)q_0}{\big(\pi_0 q_1 + (1-\pi_0)q_0\big)^2} > 0, \tag{A.5}$$

$$\frac{\partial \pi(1)}{\partial q_0} = -\frac{\pi_0(1-\pi_0)q_1}{\big(\pi_0 q_1 + (1-\pi_0)q_0\big)^2} < 0, \tag{A.6}$$

$$\frac{\partial \pi(1)}{\partial \pi_0} = \frac{q_0 q_1}{\big(\pi_0(q_1-q_0)+q_0\big)^2} > 0. \tag{A.7}$$

Thus, holding fixed q_1, a smaller q_0 (female authority rarer under the patriarchal regime) increases the informativeness of observing a female advisor.

A.2 Attitude Choice Problem

Let $a \in [0,1]$ denote support for gender equality (higher a is more egalitarian). After observing s, a student of gender $g \in \{F, M\}$ chooses a to minimize

$$L(a; g, s) = (a - \pi(s))^2 + \rho_g(s)\,(a - \iota_g)^2, \tag{A.8}$$

where ι_g is the identity ideal and $\rho_g(s) \geq 0$ is the weight on identity/status relative to accuracy.

Solution. The first-order condition is

$$2(a - \pi(s)) + 2\rho_g(s)(a - \iota_g) = 0.$$

Solving yields

$$a_g^*(s) = \frac{\pi(s) + \rho_g(s)\iota_g}{1 + \rho_g(s)}. \tag{A.9}$$

Derivatives. From (A.9),

$$\frac{\partial a_g^*}{\partial \pi(s)} = \frac{1}{1+\rho_g(s)} > 0, \tag{A.10}$$

$$\frac{\partial a_g^*}{\partial \rho_g(s)} = \frac{\iota_g - \pi(s)}{(1+\rho_g(s))^2}. \tag{A.11}$$

Hence, the effect of increased identity weight depends on whether the identity ideal exceeds (women) or falls short of (men) the belief-driven component.

A.3 Salience and Counter-stereotypical Authority

We model identity salience as

$$\rho_g(s) = \rho_{g0} + \alpha_g \cdot s \cdot (1-p), \qquad \alpha_g \geq 0, \tag{A.12}$$

where $p \in [0,1]$ is the perceived prevalence of female authority and $(1-p)$ captures counter-stereotypicality. Then, for $s = 1$,

$$\frac{\partial \rho_g(1)}{\partial p} = -\alpha_g.$$

Combining with (A.11), we obtain

$$\frac{\partial a_g^*(1)}{\partial p} = \frac{\partial a_g^*}{\partial \rho_g(1)} \cdot \frac{\partial \rho_g(1)}{\partial p} = -\alpha_g \cdot \frac{\iota_g - \pi(1)}{(1+\rho_g(1))^2}. \tag{A.13}$$

For women (with $\iota_F = 1$), $\iota_F - \pi(1) > 0$ and thus $\partial a_F^*(1)/\partial p < 0$: women's egalitarian shift is larger when female authority is rarer (smaller p). For men (with $\iota_M = 0$), $\iota_M - \pi(1) < 0$ and thus $\partial a_M^*(1)/\partial p > 0$: men's egalitarianism declines when female authority is more counter-stereotypical (smaller p), consistent with stronger backlash in those contexts.

A.4 Exposure Effects: Women, Men, and the Backlash Condition

Women. For women, set $\iota_F = 1$:

$$a_F^*(s) = \frac{\pi(s) + \rho_F(s)}{1 + \rho_F(s)} = 1 - \frac{1 - \pi(s)}{1 + \rho_F(s)}.$$

Because $\pi(1) > \pi(0)$ by (A.3) and $\rho_F(1) \geq \rho_F(0)$ by (A.12), both the numerator and denominator of the last expression move in a direction that increases a_F^*, implying

$$a_F^*(1) > a_F^*(0). \tag{A.14}$$

Men. For men, set $\iota_M = 0$:

$$a_M^*(s) = \frac{\pi(s)}{1 + \rho_M(s)}.$$

Then

$$a_M^*(1) - a_M^*(0) = \frac{\pi(1)}{1 + \rho_M(1)} - \frac{\pi(0)}{1 + \rho_M(0)}. \tag{A.15}$$

The sign is ambiguous.

Backlash. Men exhibit backlash ($a_M^*(1) < a_M^*(0)$) iff

$$\frac{\pi(1)}{\pi(0)} < \frac{1 + \rho_M(1)}{1 + \rho_M(0)}. \tag{A.16}$$

Using $\rho_M(1) = \rho_{M0} + \alpha_M(1 - p)$ and $\rho_M(0) = \rho_{M0}$, backlash is more likely when α_M is larger and/or p is smaller (female authority more counter-stereotypical).

Local Approximation. For intuition, consider a small-change approximation around (π, ρ):

$$da_M^* \approx \frac{1}{1+\rho}\, d\pi - \frac{\pi}{(1+\rho)^2}\, d\rho.$$

Thus backlash is more likely when the identity-salience effect $d\rho$ is large relative to the informational update $d\pi$, especially when π is not too small and ρ is large.

A.5 Polarization

Define the gender gap in egalitarian attitudes as

$$\Delta(s) = a_F^*(s) - a_M^*(s).$$

Then the exposure-induced change in polarization is

$$\Delta(1) - \Delta(0) = \big[a_F^*(1) - a_F^*(0)\big] - \big[a_M^*(1) - a_M^*(0)\big]. \tag{A.17}$$

Whenever women become more egalitarian (A.14) and men exhibit backlash ($a_M^*(1) - a_M^*(0) < 0$), polarization must increase: $\Delta(1) - \Delta(0) > 0$.

A.6 Repeated Exposure and Reinforcement

Suppose students face N authority encounters indexed by $t = 1, \ldots, N$, each generating an independent signal $s_t \in \{0, 1\}$ with the same likelihoods as above. Let $K = \sum_{t=1}^{N} s_t$ denote the number of female authority encounters. Standard Bayesian updating implies the posterior log-odds after N encounters satisfy:

$$\log \frac{\pi_N}{1 - \pi_N} = \log \frac{\pi_0}{1 - \pi_0} + K \log \frac{q_1}{q_0} + (N - K) \log \frac{1 - q_1}{1 - q_0}. \tag{A.18}$$

Hence, holding N fixed, more female encounters (K larger) increase π_N whenever $q_1 > q_0$.

Identity salience may also accumulate with repeated counter-stereotypical exposure:

$$\rho_{g,N} = \rho_{g0} + \alpha_g(1 - p)\, K. \tag{A.19}$$

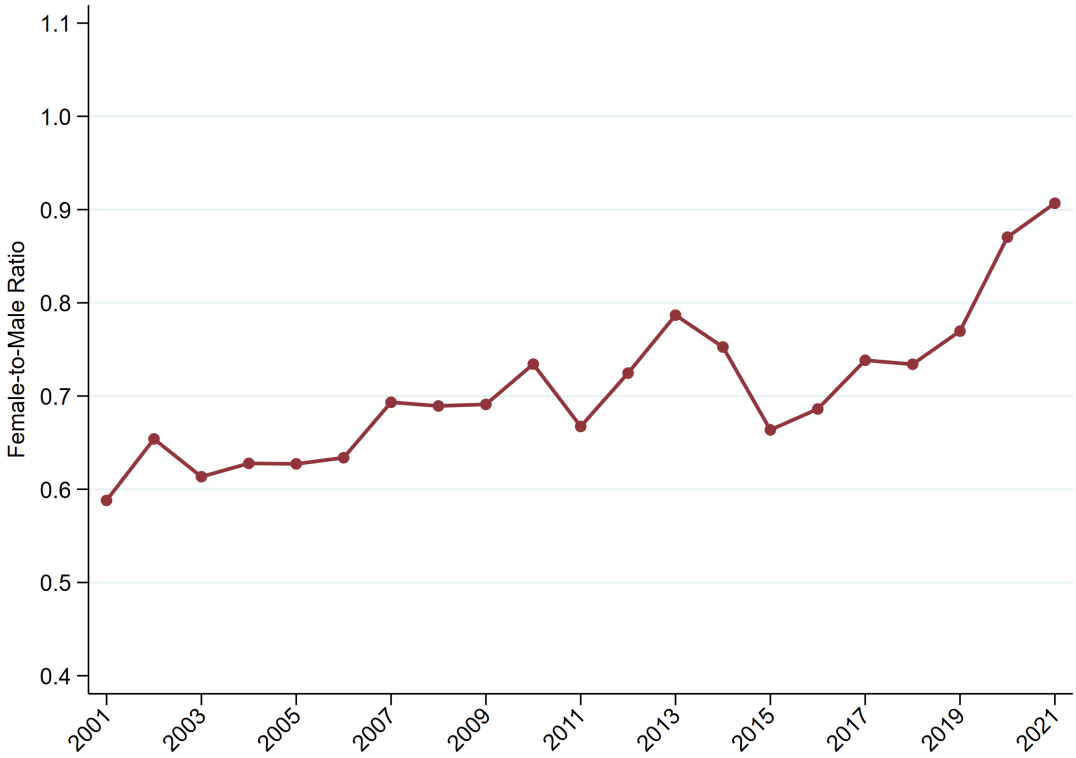
Long-run attitudes after N encounters are

$$a_{g,N}^* = \frac{\pi_N + \rho_{g,N}\iota_g}{1 + \rho_{g,N}}. \tag{A.20}$$

For women ($\iota_F = 1$), both π_N and $\rho_{F,N}$ rising in K push toward more egalitarian attitudes. For men ($\iota_M = 0$), π_N pushes toward egalitarian attitudes while $\rho_{M,N}$ pushes toward backlash, so the net effect of repeated exposure is ambiguous and governed by the analog of condition (A.16).

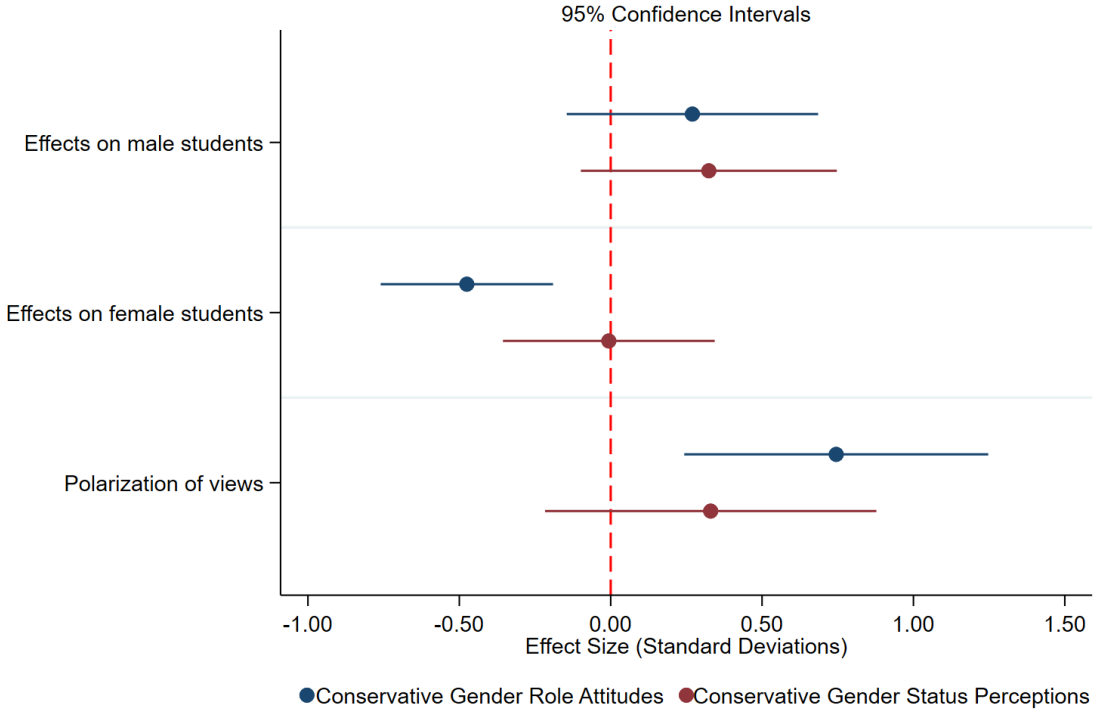
B Additional Results

Figure B.1: AUB Faculty: Female-to-Male Ratio, 2001–2021



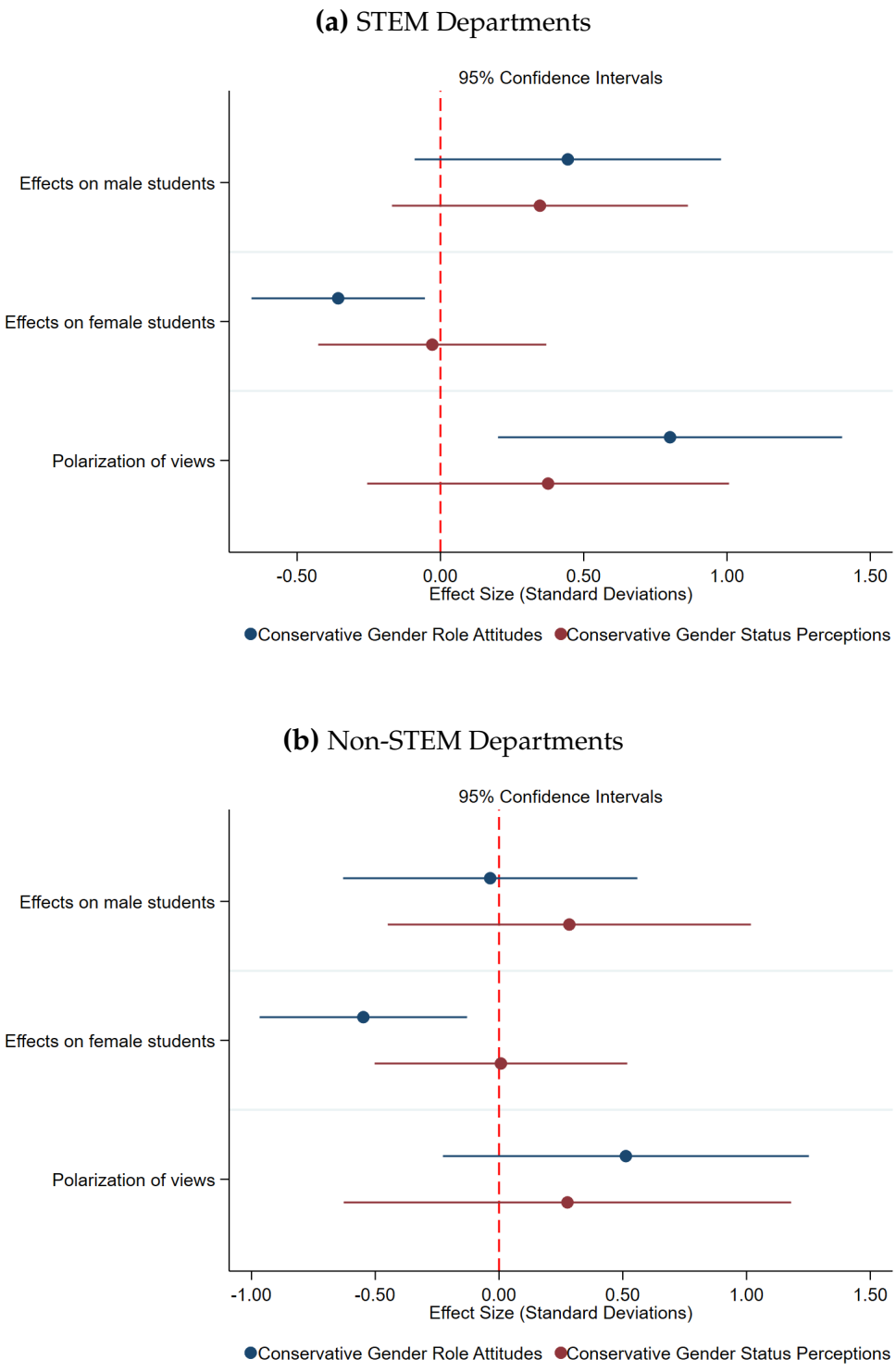
Notes: The figure displays the ratio of female to male instructional faculty at the American University of Beirut from 2001 to 2021. A ratio of 1.0 indicates gender parity. Data are drawn from the AUB Common Data Sets (Section I: Instructional Faculty), published annually by the AUB Office of Institutional Effectiveness and Decision Support.

Figure B.2: Effects of Proportion of Female Advisors on Standardized Index Outcomes



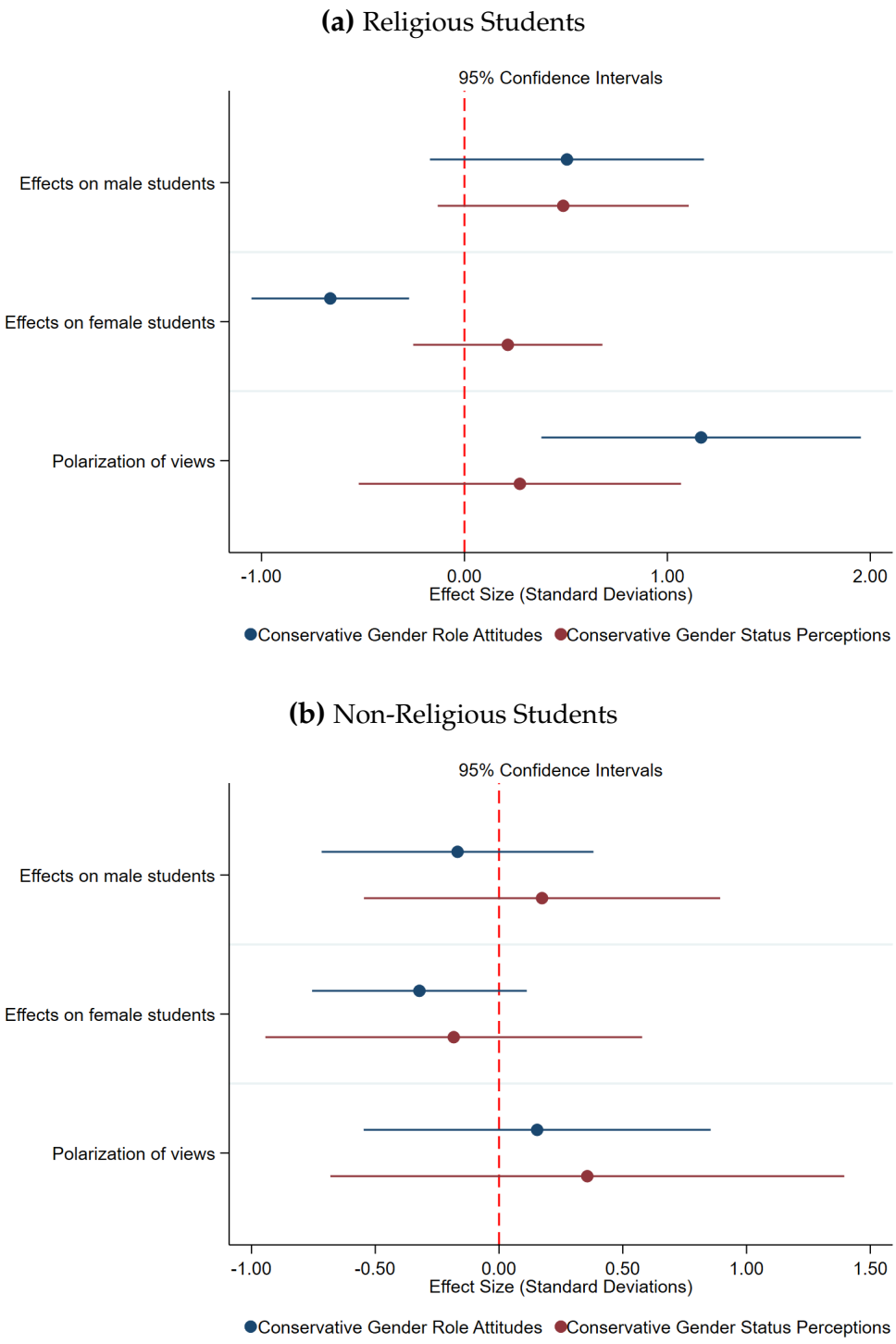
Notes: The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of the proportion of female advisors in a student's department–year cohort on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the proportion female advisor variable. Effects on female students shows the sum of the proportion female advisor coefficient and the interaction term (Proportion Female Advisor $\times$ Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Figure B.3: Effects of Female Advisor Proportion on Standardized Index Outcomes by Department Type



The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of the proportion of female advisors in a student's department–year cohort on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the female advisor indicator. Effects on female students shows the sum of the female advisor coefficient and the interaction term (Female Advisor × Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Figure B.4: Effects of Female Advisor Proportion on Standardized Index Outcomes by Religiosity



The sample includes all students who responded to our survey and who were enrolled at the American University of Beirut between the years 2001 and 2018. This figure displays the estimated effects of the proportion of female advisors in a student's department–year cohort on gender attitude indices, measured 7-24 years after graduation. Point estimates and 95% confidence intervals are shown for both Gender Role Attitudes (blue) and Gender Status Perceptions (red). Effects on male students shows the coefficient on the female advisor proportion. Effects on female students shows the sum of the proportion coefficient and the interaction term (Female Advisor Proportion × Female Student). Positive values indicate more conservative gender attitudes. Polarization shows the negative of the interaction term, indicating the difference in effects between male and female students. Estimates are from regressions with department-by-year fixed effects. Standard errors are clustered by advisor–year.

Table B.1: Baseline Covariates Test: Effects of Female Advisor on SAT Scores

	Math SAT	Verbal SAT
Panel A: Binary Treatment		
Effects on male students	1.163	-7.104
	(8.390)	(12.122)
Effects on female students	8.172	0.116
	(8.108)	(7.927)
Gender gap	-7.009	-7.220
	(11.470)	(13.924)
Observations	1396	1396
Panel B: Continuous Treatment		
Effects on male students	0.158	-15.403
	(9.509)	(14.582)
Effects on female students	12.436	5.541
	(8.689)	(8.997)
Gender gap	-12.278	-20.944
	(12.913)	(17.024)
Observations	1398	1398

Note: Panel A shows results using binary treatment (having a female advisor during first year). Panel B shows results using continuous treatment (proportion of female advisors). Standard errors clustered by advisor-year are shown in parentheses. All regressions include department-by-year fixed effects. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.2: Survey Timing and Response Behavior

Panel A: Does Advisor Gender Predict Survey Submission Timing?

	Reminders Received (0/1/2) (1)	Received ≥1 Reminder (Binary) (2)
Effects on male students	0.096	0.066
	(0.110)	(0.078)
Effects on female students	0.033	0.059
	(0.097)	(0.057)
Polarization of views	0.063	0.007
	(0.154)	(0.099)
Observations	1396	1396

Panel B: Are Gender Attitudes Stable Across Survey Rounds?

	Gender Role Attitudes			Gender Status Perceptions		
	Round 1 (rem. = 0) (1)	Round 2 (rem. = 1) (2)	Round 3 (rem. = 2) (3)	Round 1 (rem. = 0) (4)	Round 2 (rem. = 1) (5)	Round 3 (rem. = 2) (6)
Effects on male students	0.235	0.492	0.171	0.289	0.372	0.770
	(0.358)	(0.377)	(0.442)	(0.604)	(0.331)	(0.600)
Effects on female students	-0.163	-0.181	-0.245	-0.527	0.018	-0.140
	(0.146)	(0.157)	(0.364)	(0.646)	(0.222)	(0.309)
Polarization of views	0.397	0.673*	0.416	0.815	0.354	0.910
	(0.387)	(0.391)	(0.570)	(0.884)	(0.411)	(0.672)
Observations	376	558	304	377	558	304

Notes: The sample includes all students enrolled between 2001 and 2018 who responded to the survey. Panel A tests whether assignment to a female advisor predicts the timing of survey submission. The outcome in column (1) is the number of reminder emails received before responding (0, 1, or 2). The outcome in column (2) is a binary indicator equal to one if the respondent required at least one reminder. Panel B examines whether estimated effects of female advisor assignment on the Gender Role Attitudes and Gender Status Perceptions indices vary across survey rounds. Round 1 includes respondents who replied before any reminder, Round 2 those who responded after the first reminder, and Round 3 those who responded after the second reminder. Stability of point estimates across rounds supports the view that selective survey participation is not driving the main results. All regressions include department-by-year fixed effects. Standard errors clustered by advisor–year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.3: Effects of Female Advisor on Combined Gender Attitudes Index

	Full Sample (1)	Non-STEM Departments (2)	STEM Departments (3)	Non-Religious Students (4)	Religious Students (5)
Effects on male students	0.269	-0.093	0.494**	-0.181	0.655**
	(0.186)	(0.245)	(0.250)	(0.212)	(0.316)
Effects on female students	-0.279**	-0.334*	-0.160	-0.380	-0.279
	(0.131)	(0.179)	(0.145)	(0.249)	(0.172)
Polarization of views	0.548**	0.240	0.654**	0.199	0.934***
	(0.223)	(0.293)	(0.282)	(0.327)	(0.356)
Observations	1239	621	618	468	771

Notes: This table shows the effects of being assigned a female advisor during first year at university using one combined gender index. Column (1) shows results for the full sample. Columns (2)-(3) split by department type (Non-STEM vs STEM). Columns (4)-(5) split by student religiosity. The combined gender attitudes index is constructed using the KKL method (Kling, Katz, and Liebman 2007) by averaging all seven standardized individual gender attitude outcomes. The sample includes all students enrolled between the years 2001 and 2018. Standard errors clustered by advisor–year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.4: Gender Interaction Effects on Standardized Index Outcomes - Randomization Inference

	Gender Role Attitudes (1)	Gender Status Perceptions (2)
Effects on male students	0.220	0.224
	[0.1560]	[0.2760]
Effects on female students	-0.307**	-0.143
	[0.0190]	[0.5720]
Polarization of views	0.527***	0.367
	[0.0060]	[0.2140]
Observations	1238	1239

Notes: This table shows the effects of being assigned a female advisor during the first year at university. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Randomization inference p-values (1,000 permutations) are shown in brackets. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.5: Gender Interaction Effects on Individual Outcomes - Randomization Inference

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Effects on male students	0.057	0.071	0.050	-0.023	0.035	0.063	0.076
	[0.1460]	[0.3090]	[0.2240]	[0.7010]	[0.6960]	[0.2200]	[0.3320]
Effects on female students	-0.021	-0.070	-0.059**	-0.088**	-0.027	-0.026	-0.064
	[0.5390]	[0.1210]	[0.0370]	[0.0490]	[0.8410]	[0.7160]	[0.4280]
Polarization of views	0.078	0.141*	0.108**	0.064	0.062	0.089	0.140
	[0.1030]	[0.0910]	[0.0200]	[0.4130]	[0.6540]	[0.2100]	[0.2020]
Observations	1238	1238	1238	1238	1238	1238	1239
Mean with male advisor (Men)	0.049	0.233	0.060	0.125	0.210	0.094	0.181
Mean with male advisor (Women)	0.059	0.103	0.067	0.158	0.238	0.086	0.172

Notes: This table shows the effects of being assigned a female advisor during first year at university. The sample includes all students enrolled between the years 2001 and 2018. Randomization inference p-values (1,000 permutations) are shown in brackets. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.6: Placebo Test: Effects on Non-Gender Outcomes (Sorted by Correlation)

	Advisor Gender Effects			Correlation with	
	Men	Women	Polarization	Gender Role Attitudes	Gender Status Perceptions
	(1)	(2)	(3)	(4)	(5)
Civil marriage	0.115	0.153*	-0.038	-0.276	-0.182
	(0.082)	(0.081)	(0.116)		
Interreligious marriage	0.097	0.176**	-0.079	-0.214	-0.179
	(0.091)	(0.087)	(0.129)		
Lebanese vs sect	-0.027	0.115**	-0.142	-0.210	-0.149
	(0.073)	(0.057)	(0.097)		
Not religious	0.055	0.042	0.013	-0.205	-0.164
	(0.086)	(0.069)	(0.110)		
Diff religion friends	-0.071	-0.002	-0.068	-0.154	-0.089
	(0.060)	(0.059)	(0.086)		
Trust diff sect	-0.050	-0.019	-0.032	-0.139	-0.037
	(0.064)	(0.034)	(0.072)		
Trust diff religion	0.034	-0.040	0.074	-0.124	-0.026
	(0.051)	(0.033)	(0.059)		
General trust	-0.080	0.073	-0.154	-0.124	-0.054
	(0.104)	(0.085)	(0.134)		
Like sect neighbors	-0.052	-0.029	-0.023	-0.114	-0.107
	(0.047)	(0.024)	(0.053)		
Claimed prize	-0.004	-0.047	0.042	0.099	0.013
	(0.070)	(0.077)	(0.105)		
Donated AUBMC	-0.009	0.001	-0.011	-0.096	-0.021
	(0.064)	(0.078)	(0.101)		
Religion no role	-0.077	0.048	-0.125**	-0.095	-0.057
	(0.051)	(0.030)	(0.060)		
Diff religion spouse	0.042	0.058	-0.016	-0.093	-0.040
	(0.052)	(0.044)	(0.068)		
Secular/not participate	0.069	-0.032	0.101	-0.092	-0.059
	(0.078)	(0.045)	(0.091)		
Identify Lebanese	0.028	0.012	0.016	-0.088	-0.075
	(0.074)	(0.064)	(0.100)		
Voted Lebanon	0.096	-0.005	0.101	-0.083	-0.105
	(0.082)	(0.065)	(0.104)		
Support refugees	-0.071	0.061	-0.131	-0.079	-0.096
	(0.077)	(0.072)	(0.103)		
Like religion neighbors	-0.025	-0.002	-0.022	-0.078	-0.107
	(0.028)	(0.019)	(0.034)		
Same pol party	-0.041	0.016	-0.057	0.075	0.052
	(0.061)	(0.034)	(0.070)		
Corruption: sectarianism	0.114	0.038	0.076	-0.074	-0.052
	(0.071)	(0.072)	(0.099)		
Donated Hotel Dieu	0.005	-0.010	0.015	-0.043	-0.012
	(0.017)	(0.026)	(0.031)		
Sectarianism obstacle	0.096	-0.050	0.146	-0.040	-0.127
	(0.073)	(0.067)	(0.101)		
No West support	0.077	0.005	0.072	0.032	-0.027
	(0.062)	(0.071)	(0.096)		
Political engagement	-0.007	-0.003	-0.004	-0.027	-0.029
	(0.081)	(0.075)	(0.111)		
Equal treatment	-0.023	-0.101	0.078	0.020	0.043
	(0.083)	(0.065)	(0.106)		
Donated Makassed	0.009	0.055	-0.046	0.017	0.022
	(0.030)	(0.042)	(0.054)		
Corruption: colonialism	-0.056	0.024	-0.080	-0.011	-0.007
	(0.052)	(0.050)	(0.072)		
Observations		1188			

Notes: This table presents placebo tests using outcomes that should not be systematically affected by advisor gender. Outcomes are sorted by absolute correlation with Gender Role Attitudes (descending). Columns (1)-(3) show the effects of being assigned a female advisor on male students, female students, and the polarization of views. Columns (4)-(5) show correlations between each placebo outcome and the two main gender attitude indices. Higher absolute correlations suggest the placebo outcome may be related to gender attitudes. The sample includes all students enrolled between 2001 and 2018 who responded to the survey. Standard errors clustered by advisor–year are shown in parentheses. All regressions include department-by-year fixed effects. *** p<0.01, ** p<0.05, * p<0.10.

Table B.7: Effects of Female Advisor on Student Religiosity

	Religiosity (1)
Effects on male students	-0.055
	(0.086)
Effects on female students	-0.042
	(0.069)
Polarization of views	-0.013
	(0.110)
Observations	1242

Notes: This table shows the effects of being assigned a female advisor during first year at university on student religiosity. The sample includes all students enrolled between the years 2001 and 2018. Standard errors clustered by advisor–year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects. *** p<0.01, ** p<0.05, * p<0.10.

Table B.8: Heterogeneity in Gender Attitude Effects by Student Religion

	Christian		Muslim		Muslim + Druze	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)	Gender Role Attitudes (5)	Gender Status Perceptions (6)
Effects on male students	0.312	0.312	0.378	0.568	0.424	0.567*
	(0.280)	(0.273)	(0.366)	(0.363)	(0.354)	(0.340)
Effects on female students	0.018	-0.006	-0.384**	-0.228	-0.256	-0.212
	(0.120)	(0.186)	(0.181)	(0.332)	(0.185)	(0.281)
Polarization of views	0.294	0.318	0.762*	0.796	0.680*	0.779*
	(0.304)	(0.331)	(0.390)	(0.495)	(0.382)	(0.443)
Observations	402	402	619	619	685	685

Notes: This table shows heterogeneity in the effects of being assigned a female advisor on gender attitudes by student religion. Columns (5)-(6) include Druze students with Muslims. The sample includes all students enrolled between the years 2001 and 2018. Standard errors clustered by advisor–year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects. *** p<0.01, ** p<0.05, * p<0.10.

Table B.9: Female vs. Male Advisor Characteristics

	Value-Added (1)	Professorial (2)
Female Advisor	0.001	-0.259^{***}
	(0.009)	(0.029)
Male Advisor Mean	-0.009	0.878
Observations	2,075	2,340
Dept-Year FE	Yes	Yes

Notes: This table compares characteristics of female and male advisors within department–year cells. The unit of observation is advisor–year. Column (1) reports differences in advisor value-added, estimated using first-year GPA. Column (2) reports differences in professorial status (1 = Assistant, Associate, or Full Professor; 0 = Lecturer, Instructor, or other non-professorial). All specifications include department-by-year fixed effects and report robust standard errors in parentheses. $^{*} < 0.10$, $^{**} < 0.05$, $^{***} < 0.01$.

Table B.10: Gender Interaction Effects on Standardized Index Outcomes by Time Period - Binary Treatment

	Year $<$ 2010		Year $\geq$ 2010	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.167	0.111	0.492*	0.304
	(0.165)	(0.250)	(0.277)	(0.265)
Effects on female students	-0.312*	-0.025	-0.304*	-0.251
	(0.179)	(0.268)	(0.175)	(0.211)
Polarization of views	0.145	0.135	0.795**	0.555*
	(0.250)	(0.372)	(0.315)	(0.329)
Observations	461	463	461	461

Notes: This table shows the effects of being assigned a female advisor during first year at university, split by admission year. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.11: Effects of Female Advisor on Gender Attitudes—Student and Advisor Controls

	Conservative Gender Role Attitudes					Conservative Gender Status Perceptions			
	Index	Men President	Men Better Politics	Women Stop Working	Men Provide	Index	Women Work High	Women Role Society	Women Too Progressive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Effects on male students	0.342*	0.072	0.046	0.079*	0.038	0.348*	0.093	0.079	0.109
	(0.186)	(0.050)	(0.080)	(0.044)	(0.063)	(0.206)	(0.078)	(0.063)	(0.069)
Effects on female students	-0.348**	-0.063	-0.100*	-0.050*	-0.051	-0.138	-0.046	0.021	-0.105*
	(0.155)	(0.046)	(0.052)	(0.029)	(0.041)	(0.151)	(0.069)	(0.040)	(0.057)
Polarization of views	0.689***	0.135**	0.146	0.129**	0.089	0.486*	0.139	0.058	0.214**
	(0.240)	(0.068)	(0.097)	(0.052)	(0.074)	(0.253)	(0.099)	(0.073)	(0.090)
Observations	1238	1238	1238	1238	1238	1238	1238	1238	1238

Notes: This table shows the effects of being assigned a female advisor during first year at university. The sample includes all students enrolled between the years 2001 and 2018. Column (1) presents the standardized Gender Role Attitudes index; columns (2)–(5) present the individual questions comprising this index. Column (6) presents the standardized Gender Status Perceptions index; columns (7)–(9) present the individual questions comprising this index. Individual outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.12: Effects of Proportion of Female Advisors on Gender Attitudes—Student and Advisor Controls

	Conservative Gender Role Attitudes					Conservative Gender Status Perceptions			
	Index	Men President	Men Better Politics	Women Stop Working	Men Provide	Index	Women Work High	Women Role Society	Women Too Progressive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Effects on male students	0.326	0.098	0.129	0.033	-0.017	0.418*	0.107	0.086	0.147*
	(0.209)	(0.062)	(0.091)	(0.049)	(0.060)	(0.227)	(0.082)	(0.069)	(0.081)
Effects on female students	-0.524***	-0.108**	-0.124**	-0.063	-0.099*	0.018	-0.024	0.007	0.028
	(0.173)	(0.047)	(0.053)	(0.039)	(0.052)	(0.168)	(0.082)	(0.043)	(0.076)
Polarization of views	0.850***	0.206***	0.253**	0.097	0.082	0.401	0.131	0.079	0.119
	(0.271)	(0.077)	(0.109)	(0.063)	(0.079)	(0.283)	(0.114)	(0.081)	(0.115)
Observations	1240	1240	1240	1240	1240	1240	1240	1240	1240

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) students are exposed to during their university career. The sample includes all students enrolled between the years 2001 and 2018. Column (1) presents the standardized Gender Role Attitudes index; columns (2)–(5) present the individual questions comprising this index. Column (6) presents the standardized Gender Status Perceptions index; columns (7)–(9) present the individual questions comprising this index. Individual outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.13: Effects of Female Advisor on Gender Attitudes by Department Type—Student and Advisor Controls

	Non-STEM		STEM	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	0.313	0.485	0.475*	0.411
	(0.352)	(0.437)	(0.247)	(0.283)
Effects on female students	-0.330	-0.184	-0.266*	0.263
	(0.260)	(0.248)	(0.149)	(0.198)
Polarization of views	0.643	0.670	0.742***	0.149
	(0.425)	(0.512)	(0.285)	(0.340)
Observations	621	621	617	617

Notes: This table shows the effects of being assigned a female advisor during first year at university by department type. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.14: Effects of Female Advisor on Individual Gender Attitude Questions by Department Type—Student and Advisor Controls

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-STEM Departments							
Effects on male students	-0.064	0.108	0.097	0.125	0.287	-0.013	0.171
	(0.104)	(0.149)	(0.085)	(0.086)	(0.176)	(0.163)	(0.112)
Effects on female students	-0.081	-0.064	-0.047	-0.046	0.007	0.038	-0.218**
	(0.072)	(0.080)	(0.055)	(0.067)	(0.103)	(0.070)	(0.092)
Polarization of views	0.017	0.173	0.144	0.171	0.280	-0.051	0.389***
	(0.123)	(0.169)	(0.101)	(0.107)	(0.204)	(0.178)	(0.147)
Observations	621	621	621	621	621	621	621
Panel B: STEM Departments							
Effects on male students	0.172***	0.042	0.070	0.031	0.071	0.113	0.138
	(0.065)	(0.094)	(0.063)	(0.092)	(0.099)	(0.076)	(0.100)
Effects on female students	-0.080	-0.097	-0.006	-0.022	0.015	0.065	0.127*
	(0.052)	(0.063)	(0.014)	(0.053)	(0.111)	(0.076)	(0.070)
Polarization of views	0.253***	0.139	0.076	0.053	0.056	0.049	0.011
	(0.084)	(0.115)	(0.065)	(0.103)	(0.144)	(0.102)	(0.126)
Observations	617	617	617	617	617	617	617

Notes: This table shows the effects of being assigned a female advisor on individual questions by department type. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor controls include advisor value-added (VA) and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.15: Effects of Female Advisor on Gender Attitudes by Religiosity—Student and Advisor Controls

	Non-Religious		Religious	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.040	0.113	1.300***	0.959***
	(0.262)	(0.388)	(0.349)	(0.359)
Effects on female students	-0.262	-0.589	-0.444*	0.070
	(0.278)	(0.530)	(0.244)	(0.260)
Polarization of views	0.222	0.702	1.744***	0.888**
	(0.383)	(0.656)	(0.431)	(0.438)
Observations	468	468	770	770

Notes: This table shows the effects of being assigned a female advisor during first year at university by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.16: Effects of Female Advisor on Individual Gender Attitude Questions by Religiosity—Student and Advisor Controls

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-Religious Students							
Effects on male students	0.063	-0.293**	-0.005	0.137*	-0.036	0.009	0.120
	(0.073)	(0.139)	(0.051)	(0.071)	(0.144)	(0.122)	(0.108)
Effects on female students	0.050	-0.000	-0.132	-0.105	-0.119	-0.078	-0.294*
	(0.079)	(0.000)	(0.106)	(0.069)	(0.308)	(0.067)	(0.171)
Polarization of views	0.013	-0.293**	0.127	0.242**	0.083	0.087	0.414**
	(0.107)	(0.139)	(0.119)	(0.100)	(0.342)	(0.137)	(0.201)
Observations	468	468	468	468	468	468	468
Panel B: Religious Students							
Effects on male students	0.214**	0.350**	0.203*	0.219**	0.285**	0.233**	0.251*
	(0.099)	(0.138)	(0.106)	(0.111)	(0.132)	(0.104)	(0.135)
Effects on female students	-0.110	-0.127	-0.078**	-0.005	0.056	0.049	-0.056
	(0.075)	(0.089)	(0.039)	(0.058)	(0.101)	(0.071)	(0.101)
Polarization of views	0.324**	0.477***	0.281**	0.224*	0.229	0.185	0.307*
	(0.126)	(0.167)	(0.113)	(0.124)	(0.156)	(0.124)	(0.168)
Observations	770	770	770	770	770	770	770

Notes: This table shows the effects of being assigned a female advisor on individual questions by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor controls include advisor value-added (VA) and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.17: Effects of Proportion of Female Advisors on Gender Attitudes by Department Type—Student and Advisor Controls

	Non-STEM		STEM	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	0.206	0.546	0.442*	0.390
	(0.462)	(0.546)	(0.259)	(0.295)
Effects on female students	-0.602**	0.092	-0.287**	-0.064
	(0.272)	(0.280)	(0.145)	(0.227)
Polarization of views	0.808	0.454	0.729**	0.455
	(0.524)	(0.633)	(0.295)	(0.359)
Observations	622	622	618	618

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) by department type. The sample includes all students enrolled between the years 2001 and 2018. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.18: Effects of Proportion of Female Advisors on Individual Gender Attitude Questions by Department Type—Student and Advisor Controls

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-STEM Departments							
Effects on male students	-0.079	0.189	0.066	0.030	0.278	0.002	0.212
	(0.111)	(0.181)	(0.148)	(0.146)	(0.197)	(0.180)	(0.157)
Effects on female students	-0.136*	-0.112	-0.076	-0.119	-0.006	0.042	0.028
	(0.074)	(0.077)	(0.067)	(0.079)	(0.121)	(0.081)	(0.135)
Polarization of views	0.056	0.302	0.141	0.148	0.284	-0.040	0.184
	(0.130)	(0.201)	(0.162)	(0.164)	(0.229)	(0.200)	(0.220)
Observations	622	622	622	622	622	622	622
Panel B: STEM Departments							
Effects on male students	0.192**	0.116	0.031	-0.035	0.027	0.121	0.150
	(0.080)	(0.099)	(0.063)	(0.081)	(0.107)	(0.077)	(0.112)
Effects on female students	-0.084	-0.074	-0.014	-0.044	-0.076	-0.021	0.043
	(0.051)	(0.064)	(0.016)	(0.057)	(0.130)	(0.050)	(0.073)
Polarization of views	0.276***	0.191	0.045	0.009	0.103	0.142	0.106
	(0.095)	(0.121)	(0.066)	(0.095)	(0.160)	(0.088)	(0.136)
Observations	618	618	618	618	618	618	618

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) on individual questions by department type. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor controls include advisor value-added (VA) and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.19: Effects of Proportion of Female Advisors on Gender Attitudes by Religiosity—Student and Advisor Controls

	Non-Religious		Religious	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.048	0.356	0.880**	0.673*
	(0.388)	(0.418)	(0.369)	(0.356)
Effects on female students	-0.409	-0.102	-0.663**	0.408*
	(0.328)	(0.466)	(0.295)	(0.237)
Polarization of views	0.361	0.458	1.543***	0.265
	(0.509)	(0.624)	(0.477)	(0.428)
Observations	468	468	772	772

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor Controls include advisor Value-Added (VA), and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.20: Effects of Proportion of Female Advisors on Individual Gender Attitude Questions by Religiosity—Student and Advisor Controls

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-Religious Students							
Effects on male students	0.089	-0.185	-0.087	0.115	-0.011	0.047	0.256**
	(0.101)	(0.169)	(0.115)	(0.127)	(0.168)	(0.144)	(0.112)
Effects on female students	-0.087	-0.000	-0.148	-0.020	0.193	-0.060	-0.187
	(0.102)	(0.000)	(0.113)	(0.063)	(0.259)	(0.074)	(0.151)
Polarization of views	0.176	-0.185	0.061	0.134	-0.204	0.106	0.444**
	(0.145)	(0.169)	(0.161)	(0.142)	(0.308)	(0.162)	(0.186)
Observations	468	468	468	468	468	468	468
Panel B: Religious Students							
Effects on male students	0.199	0.266*	0.103	0.097	0.232*	0.141	0.177
	(0.121)	(0.152)	(0.096)	(0.112)	(0.135)	(0.103)	(0.143)
Effects on female students	-0.151*	-0.132	-0.108*	-0.088	0.092	0.093	0.142
	(0.080)	(0.099)	(0.058)	(0.081)	(0.115)	(0.067)	(0.136)
Polarization of views	0.350**	0.398**	0.211*	0.185	0.140	0.048	0.035
	(0.143)	(0.187)	(0.113)	(0.136)	(0.171)	(0.122)	(0.202)
Observations	772	772	772	772	772	772	772

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) on individual questions by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. All regressions include department-by-year fixed effects as in equation (1). Student controls include math SAT scores, legacy status, time taken to answer survey, religion, religiosity, birth year, number of reminders received. Advisor controls include advisor value-added (VA) and advisor academic rank. Standard errors clustered by advisor-year are shown in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.21: Effects of Proportion of Female Advisors on Gender Attitudes by Department Type

	Non-STEM		STEM	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.036	0.284	0.445	0.347
	(0.303)	(0.374)	(0.273)	(0.263)
Effects on female students	-0.548**	0.008	-0.357**	-0.029
	(0.214)	(0.260)	(0.154)	(0.203)
Polarization of views	0.513	0.276	0.801***	0.376
	(0.377)	(0.461)	(0.306)	(0.322)
Observations	622	622	618	619

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) by department type. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.22: Effects of Proportion of Female Advisors on Gender Attitudes by Religiosity

	Non-Religious		Religious	
	Gender Role Attitudes (1)	Gender Status Perceptions (2)	Gender Role Attitudes (3)	Gender Status Perceptions (4)
Effects on male students	-0.167	0.174	0.505	0.487
	(0.280)	(0.367)	(0.344)	(0.316)
Effects on female students	-0.322	-0.183	-0.661***	0.214
	(0.221)	(0.388)	(0.198)	(0.238)
Polarization of views	0.154	0.357	1.166***	0.273
	(0.358)	(0.530)	(0.402)	(0.405)
Observations	468	468	772	773

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. Both index outcomes are standardized. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.23: Effects of Proportion of Female Advisors on Individual Gender Attitude Questions by Department Type

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-STEM Departments							
Effects on male students	-0.107	0.173	-0.023	0.003	0.245*	-0.031	0.060
	(0.073)	(0.163)	(0.071)	(0.085)	(0.139)	(0.118)	(0.122)
Effects on female students	-0.058	-0.116**	-0.104*	-0.137*	-0.034	-0.031	0.080
	(0.053)	(0.058)	(0.059)	(0.070)	(0.105)	(0.077)	(0.101)
Polarization of views	-0.049	0.290*	0.080	0.140	0.279	-0.000	-0.019
	(0.091)	(0.170)	(0.092)	(0.109)	(0.172)	(0.141)	(0.161)
Observations	622	622	622	622	622	622	622
Panel B: STEM Departments							
Effects on male students	0.193**	0.125	0.042	-0.057	0.006	0.121*	0.132
	(0.086)	(0.088)	(0.067)	(0.070)	(0.096)	(0.069)	(0.091)
Effects on female students	-0.078	-0.089	-0.025	-0.082	0.006	-0.035	0.017
	(0.052)	(0.062)	(0.029)	(0.062)	(0.114)	(0.033)	(0.080)
Polarization of views	0.272***	0.214**	0.067	0.025	-0.000	0.156**	0.115
	(0.099)	(0.108)	(0.073)	(0.093)	(0.136)	(0.077)	(0.123)
Observations	618	618	618	618	618	618	619

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) on individual questions by department type. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table B.24: Effects of Proportion of Female Advisors on Individual Gender Attitude Questions by Religiosity

	Men President (1)	Men Better Politics (2)	Women Stop Working (3)	Men Provide (4)	Women Work High (5)	Women Role Society (6)	Women Too Progressive (7)
Panel A: Non-Religious Students							
Effects on male students	0.074	-0.145	-0.059	-0.037	0.035	0.010	0.104
	(0.066)	(0.143)	(0.075)	(0.080)	(0.143)	(0.121)	(0.096)
Effects on female students	-0.085	-0.074	-0.023	-0.058	0.019	-0.098	-0.044
	(0.082)	(0.066)	(0.057)	(0.075)	(0.168)	(0.080)	(0.138)
Polarization of views	0.159	-0.071	-0.036	0.022	0.016	0.108	0.148
	(0.105)	(0.158)	(0.094)	(0.110)	(0.221)	(0.145)	(0.165)
Observations	468	468	468	468	468	468	468
Panel B: Religious Students							
Effects on male students	0.144	0.252**	0.056	-0.066	0.141	0.090	0.170
	(0.110)	(0.119)	(0.084)	(0.088)	(0.121)	(0.088)	(0.116)
Effects on female students	-0.104**	-0.147**	-0.103*	-0.144**	0.016	0.021	0.142
	(0.050)	(0.069)	(0.057)	(0.068)	(0.105)	(0.073)	(0.100)
Polarization of views	0.248**	0.399***	0.160	0.078	0.124	0.069	0.028
	(0.123)	(0.138)	(0.102)	(0.109)	(0.159)	(0.113)	(0.158)
Observations	772	772	772	772	772	772	773

Notes: This table shows the effects of the proportion of female advisors (continuous treatment) on individual questions by student religiosity. The sample includes all students enrolled between the years 2001 and 2018. All outcomes are binary indicators equal to one if the respondent agreed or strongly agreed with the statement. Standard errors clustered by advisor-year are shown in parentheses. All regressions are run with the inclusion of department-by-year fixed effects as in equation (1). *** p<0.01, ** p<0.05, * p<0.10.

Table B.25: Share of Female Students and Female Advisors by Department

Department	Faculty	Share Female Students	Share Female Advisors	Year Range	In Survey
Business Administration	Olayan School of Business	0.549	0.446	2001–2018	Yes
Biology	Arts & Sciences	0.520	0.217	2001–2018	Yes
Computer Science	Arts & Sciences	0.268	0.158	2001–2018	Yes
Computer & Communications Engineering	Engineering & Architecture	0.306	0.023	2001–2018	Yes
Civil Engineering	Engineering & Architecture	0.249	0.116	2001–2018	Yes
Economics	Arts & Sciences	0.513	0.190	2001–2018	Yes
Mechanical Engineering	Engineering & Architecture	0.136	0.061	2001–2018	Yes
Chemistry	Arts & Sciences	0.454	0.079	2001–2018	Yes
Agriculture	Agriculture & Food Sciences	0.412	0.082	2001–2018	Yes
Electrical & Computer Engineering	Engineering & Architecture	0.206	0.101	2008–2018	Yes
Nursing	Health Sciences	0.728	0.986	2002–2018	Yes
Physics	Arts & Sciences	0.246	0.000	2001–2018	Yes
Nursing (Arts Entry)	Health Sciences	0.579	0.474	2002–2017	Yes
Materials Science	Engineering & Architecture	0.394	0.165	2002–2018	Yes
Nutrition & Dietetics	Health Sciences	0.975	0.600	2001–2018	Yes
Psychology	Arts & Sciences	0.830	0.652	2001–2018	Yes
Environmental Health	Health Sciences	0.673	0.871	2001–2018	Yes
Architecture	Architecture, Design & Built Env.	0.723	0.607	2001–2018	Yes
Graphic Design	Architecture, Design & Built Env.	0.844	0.589	2001–2018	Yes
Undeclared Pre-Professional	General	0.423	0.917	2004–2018	Yes
Political Science	Arts & Sciences	0.592	0.239	2001–2018	Yes
Food Science & Management	Agriculture & Food Sciences	0.784	0.370	2004–2018	Yes
Electrical Engineering	Engineering & Architecture	0.217	0.004	2001–2006	Yes
Public Administration	Arts & Sciences	0.585	0.545	2001–2018	Yes
Middle Eastern Languages & Translation	Arts & Sciences	0.609	0.930	2001–2009	Yes
Landscape Design & Ecosystem Management	Agriculture & Food Sciences	0.769	0.740	2002–2015	Yes
Chemical Engineering	Engineering & Architecture	0.545	0.054	2011–2018	Yes
Medical Laboratory Sciences	Health Sciences	0.703	0.957	2011–2018	Yes
Elementary Education	Education	0.918	0.498	2002–2018	Yes
Media & Communications	Arts & Sciences	0.865	0.457	2012–2018	Yes
Agricultural Business	Agriculture & Food Sciences	0.374	0.237	2010–2018	Yes

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Table B.25 continued

Department	Faculty	Share Female Students	Share Female Advisors	Year Range	In Survey
Physical Therapy	Health Sciences	0.245	0.075	2002–2018	Yes
Visual Arts	Architecture, Design & Built Env.	0.577	0.122	2003–2018	Yes
English Literature	Arts & Sciences	0.843	0.477	2002–2018	Yes
Education	Education	0.862	0.293	2002–2018	Yes
Industrial Engineering	Engineering & Architecture	0.520	0.172	2016–2018	Yes
Nursing (Business Entry)	Health Sciences	0.430	0.180	2002–2018	Yes
Health Sciences - Medical Journalism	Health Sciences	0.424	0.949	2005–2018	Yes
Sociology & Anthropology	Arts & Sciences	0.827	0.291	2001–2018	Yes
Studio Art	Architecture, Design & Built Env.	0.847	0.490	2007–2018	Yes
Conservation	Architecture, Design & Built Env.	0.289	0.536	2011–2018	Yes
Landscape Architecture	Architecture, Design & Built Env.	0.812	0.388	2015–2018	Yes
Applied Mathematics	Arts & Sciences	0.329	0.037	2013–2018	Yes
Nursing (Science Entry)	Health Sciences	0.506	0.013	2002–2018	Yes
Mathematics (Applied)	Arts & Sciences	0.300	0.129	2002–2018	Yes
English Language	Arts & Sciences	0.895	0.561	2001–2018	Yes
Geology	Arts & Sciences	0.449	0.082	2003–2018	Yes
Education - Modern Languages	Education	0.889	0.600	2002–2018	Yes
Urban Design	Architecture, Design & Built Env.	0.864	1.000	2016–2018	Yes
History	Arts & Sciences	0.476	0.000	2001–2018	Yes
Fine Arts	Architecture, Design & Built Env.	0.514	0.108	2003–2016	Yes
Visual Arts - Science	Architecture, Design & Built Env.	0.389	0.139	2003–2018	Yes
Medical Imaging	Health Sciences	0.657	0.971	2016–2018	Yes
Arabic & Oriental Languages	Arts & Sciences	0.593	0.444	2002–2018	Yes
Nursing (French Entry)	Health Sciences	0.350	0.750	2004–2018	Yes
Nursing (Agriculture Entry)	Health Sciences	0.737	0.053	2004–2017	Yes
Food Technology	Agriculture & Food Sciences	0.882	0.353	2002–2017	Yes
Sociology	Arts & Sciences	0.733	0.400	2004–2018	Yes
Arabic Language & Literature	Arts & Sciences	0.786	0.143	2003–2018	Yes
Exploratory (Undeclared)	General	0.480	0.286	2004–2018	No
Undeclared	General	0.342	0.263	2001–2000	No
Statistics	Arts & Sciences	0.444	0.056	2001–2018	No
Philosophy	Arts & Sciences	0.611	0.028	2005–2018	No

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Table B.25 continued

Department	Faculty	Share Female Students	Share Female Advisors	Year Range	In Survey
Special Education	Education	0.971	0.735	2002–2018	No
Nursing (Engineering Entry)	Health Sciences	0.478	0.391	2005–2016	No
Veterinary Science	Agriculture & Food Sciences	0.706	0.000	2010–2012	No
Visual Arts - Business	Architecture, Design & Built Env.	0.563	0.000	2004–2018	No
Radiologic Technology	Health Sciences	0.538	0.692	2001–2010	No
Science (General)	Arts & Sciences	0.846	0.000	2009–2016	No
Overall		0.580	0.356		

Notes: This table shows department-level shares of female students and female advisors for all departments with more than 10 student observations. Year Range indicates the first and last year the department appears in the data. In Survey indicates whether at least one survey respondent was enrolled in that department. Departments are sorted by survey participation and then by number of students (descending) within each group.