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Female instructors and female advisors each matter for women's persistence in economics. We ask whether the two work better together than apart and whether this is specific to women. Using administrative records from a broad-access public university, we combine quasi-random instructor assignment with plausibly exogenous advisor assignment. Among women, the share taking an advanced economics course rises from 14 to 23 percent when both are female, more than either alone suggests, while men show no comparable pattern. Major completion moves in the same direction, although the evidence is more suggestive. The effect of a female instructor may depend on the advising that students receive.

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Better Together? Female Instructors, Female Advisors, and Women's Persistence in Economics *

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Abstract

Female instructors and female advisors each matter for women's persistence in economics. We ask whether the two work better together than apart and whether this is specific to women. Using administrative records from a broad-access public university, we combine quasi-random instructor assignment with plausibly exogenous advisor assignment. Among women, the share taking an advanced economics course rises from 14 to 23 percent when both are female, more than either alone suggests, while men show no comparable pattern. Major completion moves in the same direction, although the evidence is more suggestive. The effect of a female instructor may depend on the advising that students receive.

JEL: A22, I23, I24, J16

Keywords: gender gap, economics education, role models, faculty gender, academic advising, complementarities

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1 Introduction

Early college encounters can shape whether students see a field as a place to continue. In economics, two important encounters are the introductory-course instructor and the academic advisor who helps students map coursework and navigate the degree. Both roles have been shown to matter for women's persistence in economics, a field where women remain underrepresented (Bayer and Rouse, 2016; Buckles, 2019; Lundberg and Stearns, 2019). A female introductory instructor raises the share of women who take advanced economics courses and complete the major (Eckrote-Nordland et al., 2026), consistent with evidence that instructor gender shapes women's persistence in other quantitatively intensive fields and education settings (Carrell et al., 2010; Mansour et al., 2022; Dee, 2007; Hoffmann and Oreopoulos, 2009; Maurer et al., 2023). Female academic advisors have also been shown to raise women's persistence and retention (Canaan and Mouganie, 2021, 2023; Kato and Song, 2022). Existing evidence therefore shows that each role can matter on its own, but not whether or how the two roles work when considered together.

Departments allocate scarce female faculty time across teaching and advising, and the right balance depends on whether the two roles work together or separately. If one role can stand in for the other, having female faculty in either role may be enough. If the two reinforce one another, pairing them could matter more than either alone, and studies that look at one role at a time may understate the value of putting them together. We bring both roles into one research design and show that, for women, having both a female instructor and a female advisor predicts more persistence than either contact alone. We make the same comparison for men and find no comparable pattern, so the reinforcement is specific to women.

We use administrative records for 2,999 students at a broad-access public university who enrolled in introductory economics between 2009 and 2019. Three features of how the university assigned instructors and advisors let us compare students with both female contacts to otherwise similar students with only one. First, the university pre-assigned students to their introductory sections, so the gender of a student's instructor was essentially random among sections that met at the same time, and few students later changed sections (Eckrote-Nordland et al., 2026). Second, advisors were assigned through a separate process that each college ran on its own. The College of Business Administration (CBA) made these assignments centrally, placing incoming students with advisors in turn within each major, while the other colleges delegated the task to their departments. We assume that once we account for a student's declared major and college, advisor assignment was unrelated to student outcomes. Balance tests support this assumption. Third, instructor and advisor assignments were handled by different offices using different information. As a result, students with a female instructor were no more likely to have a female advisor than students with a male instructor.

The estimates point to the two contacts reinforcing one another, and this reinforcement is specific to women. Among women, the share who take an advanced economics course rises from about 14 percent to about 23 percent when both contacts are female, more than the two roles would predict separately, while men show no comparable gain. Equivalently, the gap between women and men in advanced course-taking narrows by roughly two-thirds, from 9.0

percentage points among students with a male instructor and male advisor to 3.2 percentage points among students with a female instructor and female advisor. Major completion follows the same pattern, but because the outcome is rare, we treat those estimates as suggestive. The pattern holds for women on its own, so it does not rest on the comparison with men. The asymmetry looks less like students simply preferring same-gender faculty and more like representation mattering for a group that is underrepresented.

Our interpretation is not that more same-gender exposure is always better, but that what the second contact does depends on its role. Eckrote-Nordland et al. (2026) find that the persistence response to female instructors is concentrated in the first introductory course, with little added by a second female instructor in the next course. A second instructor mainly repeats the classroom signal, which adds little. An advisor is different, translating that signal into a plan for which course to take next, whether the major is feasible, and whether continuing seems worthwhile. The two findings suggest that the value of same-gender exposure depends on both the role and the timing.

The result is stable across our sensitivity checks. It changes little when we account for the specific advisor each student was assigned, restrict the sample to the CBA students, where the advisor-assignment process is documented in detail, or allow advisor gender to vary by initial major. It also holds up when we drop students whose introductory instructor was also their first advisor or drop one instructor or advisor at a time. It survives checks designed for the small number of instructors and is not undone by plausible amounts of unobserved student selection.

2 Data, Setting, and Empirical Strategy

2.1 Institutional Setting and Assignment Mechanisms

We study the University of Wisconsin–La Crosse (UWL), a mid-sized public university located in western Wisconsin. The economics department is housed in the CBA, where introductory microeconomics and macroeconomics are required for all business degrees. These courses are also taken by students from UWL's other colleges to satisfy general-education requirements, making them a broad point of first contact with economics. Our main sample includes all first-time first-year students who were pre-enrolled in introductory microeconomics or macroeconomics.

The design combines administratively distinct processes for assigning instructors and advisors. On the instructor side, the Registrar's Office pre-assigned students to introductory economics sections before registration opened, and the economics department chair assigned faculty to those sections by staffing and rotation, without reference to student composition.[1] Advisor assignment ran separately within each of UWL's three colleges, the CBA, the College of Science and Health (CSH), and the College of Arts, Social Sciences, and Humanities (CASSH). In CBA, the dean's office centralized the process and assigned incoming students

[1] Both processes are described in Eckrote-Nordland et al. (2026).

sequentially within each major's advisor pool.[2,3] In CSH and CASSH, advisor assignment was delegated to departments, which assigned incoming students in each major to faculty advisors within the department. In every college, declared major places a student into an advisor pool, directly in CBA and through the department in CSH and CASSH. We therefore condition on declared major and college throughout the analysis.

The Multicultural Business Scholars Program (MBS) in the CBA used an internal advising rule that routed students from underrepresented racial and ethnic groups to a small set of designated faculty advisors, four of whom were female economics faculty members during the study period.[4] This routing creates an observable race-by-advisor correlation. We therefore construct an MBS indicator, defined as a non-white CBA student assigned to one of the program's advisors, and include it as a control. About 4 percent of CBA students are MBS students. For non-CBA students, the indicator equals zero by construction.

2.2 Data and Variable Construction

Our data come from UWL administrative records and cover all students who enrolled in introductory microeconomics or macroeconomics from fall 2009 through fall 2019. We observe outcomes through summer 2025. We restrict the main sample to first-time first-year students with non-missing treatments and student-level controls, leaving 2,999 students. The CBA subsample (2,558 students) is one of the robustness checks (Section 3.3).[5]

The outcomes are indicators for completing any 300-level or higher economics course, which we call advanced course-taking, and for graduating with an economics BA/BS, which we call major completion. The treatments indicate whether the student's first introductory economics instructor and first recorded advisor were female. The first recorded advisor is the advisor assigned at the start of the student's first semester, before any course outcomes are realized. Because our records identify the first assigned advisor but do not track later reassignment, the advisor treatment should be interpreted as intention-to-treat. Reassignment unrelated to outcomes would attenuate the estimates toward zero, while reassignment related to outcomes could move them in either direction.

The control vector follows Eckrote-Nordland et al. (2026) and adds controls for advisor-side and CBA-specific variation. Student academic controls include ACT composite and math subscores, math and English placement levels assigned at orientation, and transfer credits. Stu-

[2]This description is based on direct consultation with the staff member who administered CBA advisor assignments during the study period. The coordinator confirmed that no student-level information beyond declared major was used, except for the MBS routing described below, which we control for directly.

[3]Routing beyond the standard major-based assignment is unlikely to affect our sample. We restrict the sample to first-time first-year students, so transfer routing is not at issue. UWL runs no separate honors track in introductory economics, and athletes have no dedicated advisors, receiving the standard major-based assignment instead. We therefore treat advisor assignment as plausibly exogenous conditional on declared major and college rather than as quasi-random in the strong sense (Section 2.3).

[4]This routing was administrative rather than student-selected. Students did not apply to, opt into, or opt out of the MBS advising assignment. The routing rule was not presented to students as a choice over advisor assignment.

[5]The 2,999-student main sample includes every UWL enrollee for whom both treatments are observed and the saturated specification can be estimated. The figure is 19 students smaller than the 3,018-student instructor-only sample in Eckrote-Nordland et al. (2026) because the joint design requires recorded advisor gender, which drops students whose advisor information is not in the advisor file. Appendix Table A1 reports the remaining sample-construction steps.

dent demographic controls include race and ethnicity, first-generation status, Pell eligibility, and public high school attendance. We also control for application timing and course-taking intensity using an early-application indicator (applied before the standard deadline), within-cohort application-rank and registration-rank deciles, and first-semester credits. Additional controls include declared first major, an indicator for whether the student's first advisor is also their introductory economics instructor, instructor characteristics (foreign-born status, experience, experience squared, and tenure status), classroom characteristics (class size and share female), the MBS indicator, and college fixed effects. About 23 percent of students complete an advanced economics course, and 3.8 percent complete the economics major. The female-student share is 40 percent, the female-instructor share is 50 percent, and the female-advisor share is 51 percent. Table 1 reports the design cell means, and Appendix Table A1 reports the full set of summary statistics.

UWL is a regional comprehensive university, so the estimates are most relevant to broad-access public institutions with similar student populations and advising structures. The setting captures an early and relatively selective point in the economics pipeline. Although many students take introductory economics, few major in it. Fewer than 2 percent enter intending to major in economics, and 3.8 percent complete the major, so most economics graduates arrive through these introductory courses rather than declaring the major at entry. Whether the same magnitudes would appear in more selective or research-intensive settings is an open question.

2.3 Identification

Our design combines quasi-random assignment of introductory instructors with within-college routing of academic advisors. Identification relies on three features of these assignment processes. First, instructor gender must vary quasi-randomly within introductory economics assignment cells. This follows from the pre-registration procedure from Eckrote-Nordland et al. (2026), which assigned students to sections before registration within term-by-course-by-day-by-time cells. Second, advisor gender is plausibly exogenous conditional on the student's declared major and college. This is the central identifying assumption for the advisor margin, and unlike instructor assignment, it rests on conditional exogeneity rather than random assignment. It is most credible in CBA, where the dean's office assigned incoming students sequentially within each major's advisor pool and the procedure is best documented. Outside the CBA, departments assign advisors within each major, so the same conditioning logic applies through a process we observe in less detail. Third, instructor and advisor gender must not be assigned jointly. The two processes operated through different offices using different information, and instructor and advisor gender are uncorrelated in the main sample ($\chi^2(1) = 0.001$, $p = 0.98$).

These features allow us to test whether instructor-advisor complementarity is specific to women relative to men, while also examining whether joint female-instructor, female-advisor exposure predicts women's persistence beyond what either contact alone would predict. Because instructor gender and advisor gender are uncorrelated, the joint-exposure estimate is unlikely to reflect sorting into particular instructor-advisor combinations. The CBA subsample is the robustness anchor on the advisor margin (Section 3.3).

Balance tests support the instructor assignment (Appendix Table A2). On the advisor side, the main imbalance reflects the MBS routing described above, which creates an observable race-by-advisor correlation that we control for directly (Appendix Table A3). Within the major-by-cohort cells in which students were routed, predetermined covariates do not jointly predict advisor gender ($F(7, 2{,}691) = 0.79$, $p = 0.60$). The CBA subsample also produces similar estimates. Full balance diagnostics are reported in the appendix.

The main result is concentrated in a single design cell, the joint female-instructor, female-advisor cell, which raises the concern that selection into that cell drives the finding. We therefore check balance across the four instructor-advisor cells within the women's subsample. We build a predicted-persistence index from the predetermined covariates and regress it on the four cell indicators among women. The cells are balanced on this index (joint F, $p = 0.95$). Conditional on assignment cells, colleges, and the application-rank and registration-rank deciles, the female-instructor, female-advisor cell is, if anything, slightly negatively selected (coefficient -0.041). Women sort into female-advisor cells on race, reflecting the MBS routing described above, but that sorting does not predict persistence. Observed selection therefore does not generate the increase in the joint female-instructor, female-advisor cell.

With only 27 instructor clusters, we report wild cluster bootstrap and within-cell randomization-inference results as finite-sample checks (Appendix Table A4). To assess the role of unobserved student selection, the Oster (2019) exercise in Section 3.3 reports how large such selection would need to be to overturn the result.

2.4 Empirical Specification

We estimate the linear probability model described by equation (1).

$$
\begin{aligned}
Y_{i,j,a,c,s} = {} & \beta_0 + \beta_1\,\mathrm{FS}_i + \beta_2\,\mathrm{FI}_{j(i)} + \beta_3\,\mathrm{FA}_{a(i)} \\
& + \beta_4\,(\mathrm{FS}_i \times \mathrm{FI}_{j(i)}) + \beta_5\,(\mathrm{FS}_i \times \mathrm{FA}_{a(i)}) \\
& + \beta_6\,(\mathrm{FI}_{j(i)} \times \mathrm{FA}_{a(i)}) \\
& + \beta_7\,(\mathrm{FS}_i \times \mathrm{FI}_{j(i)} \times \mathrm{FA}_{a(i)}) \\
& + \mathbf{X}'_{1,i}\gamma_1 + \mathbf{X}'_{2,j(i)}\gamma_2 + \mathbf{X}'_{3,c(i)}\gamma_3 + \mu_s + \varepsilon_{i,j,a,c,s},
\end{aligned} \tag{1}
$$

where $Y_{i,j,a,c,s}$ is the outcome for student i taught by instructor j, assigned to advisor a, in classroom c, in assignment cell s. The full subscript on $Y_{i,j,a,c,s}$ and $\varepsilon_{i,j,a,c,s}$ flags the dimensions along which we cluster rather than implying separate sources of variation, since the student is the unit of observation. The indicators FS_i, $\mathrm{FI}_{j(i)}$, $\mathrm{FA}_{a(i)}$ denote female student, female instructor, and female advisor, where $j(i)$, $a(i)$, and $c(i)$ index the instructor, advisor, and classroom of student i. The vector $\mathbf{X}_{1,i}$ contains student controls listed above, including the MBS indicator and college fixed effects. The vectors $\mathbf{X}_{2,j(i)}$ and $\mathbf{X}_{3,c(i)}$ contain instructor and classroom controls. The term μ_s denotes assignment-cell fixed effects, defined by term $\times$ course $\times$ day $\times$ time. A classroom c is an individual section nested within an assignment cell, and a single cell can contain several sections taught by different instructors at the same time. The main sample contains 108 distinct assignment cells, 27 instructors, and 245 advisors. We estimate the model by OLS and cluster standard errors three-way on assignment cell, instructor, and advisor (Cameron et al., 2011). Section 2.3 describes the finite-sample inference checks.

The primary object is the triple interaction, β_7. It compares the women's instructor-advisor cross-partial to the analogous cross-partial for men, and so tests whether any complementarity between joint female-instructor and female-advisor exposure is specific to women rather than a general pattern of students responding to matched instructor-advisor environments. A positive value indicates complementarity for women. A female instructor matters more for persistence when the advisor is also female, and a female advisor matters more when the instructor is also female.

A related object is the instructor-advisor interaction estimated within women alone. In the pooled saturated specification this cross-partial is $\beta_6 + \beta_7$, and in the women-only specification it is the coefficient on *Female instructor* $\times$ *Female advisor*. This parameter asks whether joint exposure to a female instructor and a female advisor predicts more persistence for women than the two exposures predict separately. A positive value indicates complementarity for women, so that the association between a female advisor and persistence is larger when the introductory instructor is also female, and equivalently the association between a female instructor and persistence is larger when the advisor is also female. We use the triple-difference estimate to anchor the interpretation and the within-women interaction to confirm that the triple reflects the women's own response rather than the analogous pattern for men.

3 Results

3.1 Main Estimates

The estimates point to complementarity rather than substitution between female instructors and female advisors for women's persistence in economics, and the complementarity is specific to women. The triple-difference coefficient on the female-student $\times$ female-instructor $\times$ female-advisor term is positive and significant for advanced course-taking, holds when advisor fixed effects absorb the female-advisor main effect, and survives the design's finite-sample inference checks, clearing the wild cluster bootstrap at the 5-percent level and randomization inference at the 10-percent level (Table 2, Appendix Table A4). In the regression-adjusted estimates, the women-versus-men gap in advanced course-taking falls from 9.0 percentage points in the male-instructor, male-advisor cell to 3.2 percentage points in the joint female-instructor, female-advisor cell.[6]

The triple-difference estimate partly reflects a female-advisor response among men that we document below and do not fully explain. One might therefore ask whether the main estimate reflects complementarity for women or instead an offsetting pattern among men. The by-gender decomposition in Table 3 supports the complementarity interpretation. The instructor-advisor interaction estimated on women alone is positive under conventional clustered inference (Column 1 of Table 3), while the analogous interaction for men is statistically

[6]Eckrote-Nordland et al. (2026) report a women-versus-men gap of roughly 15 percentage points under male instructors. That figure pools over advisor gender, and averaging our four cells over the advisor margin reproduces it (Table 1). The 9.0-point gap here conditions additionally on a male advisor, and the remaining differences reflect the control vector and the slightly different sample.

indistinguishable from zero and, if anything, slightly negative, with a confidence interval that rules out a positive interaction for men of the size estimated for women (Column 2). The within-women estimate is smaller than the triple-difference estimate because the men's interaction is slightly negative. We therefore use the triple-difference estimate as the primary finite-sample result and the within-women estimate as the decomposition that shows where the gender-specific interaction comes from.

Among women, advanced economics course-taking is roughly flat across the three cells with at least one male contact and rises to about 23 percent only in the joint female-instructor, female-advisor cell (Table 1). Neither a female instructor nor a female advisor alone moves persistence much above the male-instructor, male-advisor baseline. The same pattern appears in the women-only column of Table 3 and the regression-adjusted Figure 1. The gain from a female instructor is concentrated among women who also have a female advisor, and the gain from a female advisor among women whose instructor is also female, the pattern implied by complementarity. Because the same pattern appears in the raw cell means, the joint female-instructor, female-advisor result is not an artifact of the control vector. Nor is it driven by selection into that cell, which is, if anything, slightly negatively selected on predetermined characteristics (Section 2.3).

Major completion follows the same qualitative shape but is rarer than advanced course-taking. Only 114 of the 2,999 students in the sample complete an economics major, 17 of them in the joint female-instructor, female-advisor cell, so the estimate does not clear our preferred finite-sample inference check. We therefore report major completion as a secondary, suggestive outcome in Appendix Table A4 and Appendix Figure A2, rather than giving it equal weight with advanced course-taking.

The evidence is stronger on the sign of the complementarity than on its exact magnitude. The 95-percent confidence interval on the triple runs from about 0.03 to 0.20, so we do not treat the point estimate as a policy parameter. As a scale reference rather than a head-to-head comparison, the women-only interaction is in the range of the 6- to 7-percentage-point female-instructor gender-match effect estimated in Eckrote-Nordland et al. (2026) on a closely related UWL sample and larger than the roughly 2-percentage-point pooled alumni-speaker effect on intermediate-economics course-taking reported by Patnaik et al. (2024).

The relationship to Eckrote-Nordland et al. (2026) is one of decomposition, not disagreement. The pooled female-instructor estimate in that paper averages over the advising environment in that setting, where about half of the students had female advisors. Because instructor gender and advisor gender are uncorrelated in our data, that average is not an artifact of advisor composition. Our results leave the earlier finding intact. A female instructor raises women's persistence on average, and the effect is largest among women whose advisor is also female. What is new here is the interaction between the classroom and advising margins, which we interpret as evidence of qualitative complementarity rather than as a precise estimate of the optimal allocation rule.

3.2 Specificity and Interpretation

Men show a female-advisor main effect in advanced course-taking but no instructor-advisor interaction (Table 3). This pattern is not explained by major composition. The triple is stable when declared-major × advisor-gender interactions are included (Appendix Table A5). The men's female-advisor response also helps explain the negative female-student × female-advisor coefficient in the saturated model (Appendix Table A6). Among students with male instructors, female advisors are associated with higher course-taking for men, while women's course-taking is essentially flat across advisor gender. As the by-gender decomposition shows, this male-advisor pattern does not drive the result.

The two roles may reinforce different parts of the same decision. A female instructor may affect whether economics feels like a place where women belong, while a female advisor may make continuing feel feasible. Either alone may not be enough, and the two may reinforce one another when they arrive together at the same early decision. This interpretation also distinguishes the result from a second classroom contact, which provides another classroom experience rather than an advising contact and may arrive after the continuation decision is already underway. Splitting the triple by the female advisor's department (Table A8) is consistent with this interpretation. The course-taking effect is positive whether or not the advisor is in economics, while the major-completion effect is concentrated among economics-department advisors, who are best placed to help a student plan the major. Because these department splits rest on few events, we present them as motivation for future work rather than as a mechanism test. Our design does not distinguish among a belonging channel (Akerlof and Kranton, 2000; Bordalo et al., 2019; Beaman et al., 2012; Bayer et al., 2020), an advising channel in which female advisors encourage women to continue (Canaan and Mouganie, 2021), or a grade-sensitivity channel (Rask and Tiefenthaler, 2008; Owen, 2010).

3.3 Robustness

The triple-difference estimate is stable across the main robustness checks, staying in a narrow range across specifications for advanced course-taking (Table 4) and holding for both outcomes in Appendix Table A5. The estimates are unchanged when advisor effects are allowed to vary with instructor characteristics (Appendix Table A7). The within-women interaction that decomposes the triple is also stable in most specifications, with two exceptions. It falls in the advisor-fixed-effects row, where limited within-advisor variation in instructor gender among women makes the estimate less precise, and rises in the section-fixed-effects row, where identification comes from within-section variation in advisor gender. Both movements are within sampling error of the main estimate.[7]

[7] A decomposition supports this interpretation. Within-advisor identification uses only the 1,042 women whose advisor serves two or more sampled women under both instructor genders. On that subsample, the interaction is 0.065 before advisor fixed effects enter, so about half of the movement reflects sample composition, with the remainder small relative to the standard error. Three additional patterns weigh against an advisor-unobservables explanation. The triple absorbs the same advisor fixed effects using men and women within each advisor and is essentially unchanged for both outcomes (Table 2). The women-only major-completion interaction strengthens under advisor fixed effects. Observable advisor controls leave the course-taking interaction essentially unchanged (Table 4).

Finite-sample inference supports the triple-difference result for advanced course-taking. The wild cluster bootstrap at the instructor cluster, the preferred finite-sample procedure for this design (MacKinnon et al., 2023), clears the 5-percent threshold, and within-cell randomization inference clears the 10-percent threshold (Appendix Table A4). The smaller-sample and rare-outcome margins sit just above 10 percent, consistent with limited power. As a complementary selection check on the within-women decomposition, the Oster (2019) sensitivity exercise returns $\delta = 1.0$ for advanced course-taking, and the bias-adjusted coefficient under equal selection is slightly above the observed estimate. Proportional selection on observables therefore moves the within-women estimate up rather than toward zero. Because we test two outcomes and several subgroup splits without a multiple-testing correction, we interpret the evidence as strongest on the sign of the gender-specific interaction rather than its precise magnitude.

Drop-one re-estimation across the 27 instructors and 245 advisors shows that the advanced-course triple changes little (Appendix Table A9). The joint female-instructor, female-advisor cell is also spread broadly across faculty. Its 331 women are distributed across 208 distinct instructor-advisor pairs, and the largest pair accounts for less than 4 percent of the cell. The result therefore does not rest on a small number of instructor-advisor combinations. Appendix Table A5 reports the full robustness grid with additional specification detail.

Two further checks address overlapping roles and graduation-window timing. Dropping the 89 students whose first advisor was also their introductory instructor leaves both the advanced-course triple and the women-only interaction essentially unchanged (Table 4). The major-completion estimate is also not driven by shorter observation windows for recent entrants. Completions in the joint female-instructor, female-advisor cell are spread across entry cohorts rather than concentrated in the most recent ones, and the major-completion triple is 0.050 on the full sample, 0.052 when the most recent entry cohort is dropped, and 0.065 when the two most recent cohorts are dropped.

4 Conclusion

We ask whether a female instructor and a female advisor act as separate forms of support or reinforce one another in women's progression through economics. We find that they reinforce one another, and that this reinforcement is specific to women. Comparing women with men, the gain from having both a female instructor and a female advisor is positive and statistically significant for advanced course-taking, and the pattern within women confirms that it arises among women themselves rather than from how men respond to female advisors. Among women, the share who take an advanced economics course rises from about 14 to 23 percent when both contacts are female, more than either contact alone would predict, and the gap between women and men narrows by roughly two-thirds. Major completion follows the same pattern, although too few students complete the major for the estimates to be conclusive, and we treat that outcome as suggestive.

The setting limits what these estimates can establish. The evidence comes from a single broad-access public university, and advisor assignment is not as close to random as instructor assignment. The results show that the two contacts reinforce one another in this setting, but they do not provide an estimate that other institutions can apply directly to faculty assignment.

The findings also clarify how to read earlier work. When the classroom and the advising office reinforce one another, a study that isolates one role absorbs the influence of the other, so the estimated effect of a female instructor can vary across institutions with different advising structures. Evaluating teaching without regard to advising, or advising without regard to teaching, may therefore miss part of how students decide whether to continue.

The broader lesson is that the classroom and the advising office do not operate as fully separate forms of support. Beyond whether students encounter same-gender faculty, early persistence may depend on whether their classroom and advising experiences point in the same direction. This does not call for assigning every woman to female faculty. Female faculty time is scarce, and concentrating it on particular students can reduce the time available to others and add to the teaching and advising loads of the women who provide it. The contribution is narrower. Departments may need to think about teaching and advising together when deciding how to allocate scarce faculty time.

AI Usage Disclosure

During the preparation of this work, the authors used ChatGPT and Claude to assist with code debugging, general proofreading, and the generation of feedback on the manuscript to help identify potential shortcomings and areas for improvement. The authors reviewed and edited the output as needed and take full responsibility for the content of the published article.

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Tables and Figures

Table 1: Design and Cell Means (Main Sample)

	Women			Men		
Instructor / Advisor	N	Adv. course (%)	Major, n (%)	N	Adv. course (%)	Major, n (%)
Male / Male	272	14.3	6 (2.2)	452	24.8	15 (3.3)
Female / Male	279	15.1	5 (1.8)	453	25.2	15 (3.3)
Male / Female	305	13.8	5 (1.6)	463	33.3	28 (6.0)
Female / Female	331	22.7	17 (5.1)	444	25.0	23 (5.2)
Observations		1,187			1,812	

Notes: The main sample is all first-time first-year UWL students who enrolled in introductory microeconomics or macroeconomics between fall 2009 and fall 2019 with complete covariates and a recorded first advisor ($N = 2{,}999$). Cells are defined by introductory-instructor gender and first-advisor gender. "Adv. course" is the raw percent completing any 300-level or higher economics course. "Major" reports the count completing an economics major with the cell percent in parentheses. The female-student share is 0.40, the female-instructor share 0.50, and the female-advisor share 0.51. Instructor gender and advisor gender are uncorrelated ($\chi^2(1) = 0.001$, $p = 0.98$). Full summary statistics are in Appendix Table A1.

Table 2: Triple-Difference Estimates (Main Sample)

Outcome	Saturated triple	+ Advisor FE
Advanced course-taking	0.114**	0.105**
	(0.043)	(0.042)
Major completion	0.050*	0.056**
	(0.028)	(0.027)
Observations	2,999	2,999

Notes: Each cell reports the female-student × female-instructor × female-advisor coefficient (β_7) from the saturated specification of equation (1), the paper's primary estimand. The triple-difference asks whether the instructor-advisor complementarity is specific to women relative to men. The first column is the fully saturated model with assignment-cell and college fixed effects and the full control vector (Section 2.2). The second adds advisor fixed effects, which absorb the female-advisor main effect, the college fixed effects, and every time-invariant advisor characteristic. The full specification, including all lower-order coefficients (which are not separately interpretable), is in Appendix Table A6. The by-gender decomposition in Table 3 shows that the positive triple reflects the within-women interaction rather than the men's response. Standard errors clustered three-way on assignment cell, instructor, and advisor. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 3: Decomposition by Gender of the Instructor × Advisor Interaction

	Advanced Course-Taking		Major Completion	
	Women	Men	Women	Men
	(1)	(2)	(3)	(4)
Female instructor	0.040	0.049	0.004	−0.003
	(0.048)	(0.042)	(0.018)	(0.016)
Female advisor	−0.001	0.073***	−0.012	0.018
	(0.038)	(0.024)	(0.014)	(0.013)
Female instr. × Female adv.	**0.083****	**−0.051**	**0.048****	**−0.001**
	(0.040)	**(0.039)**	**(0.021)**	**(0.022)**
Observations	1,187	1,812	1,187	1,812

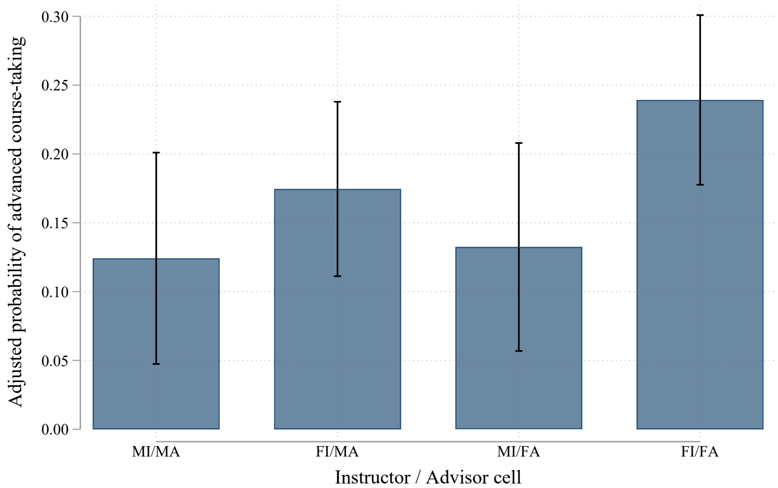
Notes: Each column estimates the instructor-advisor interaction on the indicated gender subsample of the main sample, with the full control vector (student, instructor, classroom characteristics, MBS indicator, college fixed effects) and assignment-cell fixed effects. Standard errors clustered three-way on assignment cell, instructor, and advisor. The triple interaction in Table 2 approximately equals the difference between the women's and men's Female instructor × Female advisor coefficients. Small departures reflect the conditioning differences across the two subsample regressions. The decomposition shows that the positive triple is driven by the within-women interaction, which is positive and significant for advanced course-taking and positive for major completion, a rare outcome we treat as suggestive. The interaction is null for men on both, so the triple is not an artifact of the men's response. Female advisors are also associated with a positive main effect on men's advanced course-taking. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4: Robustness of the Main Estimates (Advanced Course-Taking)

Specification	Women-only interaction	Triple
Main specification	0.083**	0.114**
	(0.040)	(0.043)
+ Advisor fixed effects	0.050	0.105**
	(0.044)	(0.042)
+ Advisor controls	0.082*	0.121**
	(0.047)	(0.045)
White students only	0.082**	0.105**
	(0.039)	(0.045)
+ HS-state dummies	0.080**	0.114**
	(0.037)	(0.042)
CBA subsample	0.081*	0.101**
	(0.044)	(0.046)
CBA + major × advisor gender	0.085*	0.100**
	(0.044)	(0.046)
Drop advisor = intro instructor	0.081*	0.125**
	(0.041)	(0.047)
+ Class (section) fixed effects	0.112**	0.121***
	(0.044)	(0.043)

Notes: Each row reports, for advanced course-taking, the women-only instructor-advisor interaction (the specification of Table 3, estimated on the women's subsample) and the triple-difference coefficient (the specification of Table 2) under the indicated robustness variant. Standard errors in parentheses, clustered three-way on assignment cell, instructor, and advisor. Advisor fixed effects absorb the female-advisor main effect, and within the women's subsample they leave little within-advisor variation in instructor gender, which is why the women-only estimate moves most in that row (Section 3.3). Advisor controls add advisor experience and foreign-born status. HS-state adds seven-category state-of-high-school dummies. The CBA rows drop the college fixed effects, and the major × advisor-gender row adds declared-major-by-advisor-gender interactions. The class (section) fixed-effects row replaces the assignment-cell fixed effect with a finer section fixed effect, one instructor per section, which absorbs instructor gender so the interaction is identified from within-section variation in advisor gender. Women-only sample sizes range from 1,010 (CBA rows) to 1,187, and triple sample sizes from 2,558 to 2,999. The same grid for the rare major-completion outcome, with sample sizes, is in Appendix Table A5. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure 1: Women's adjusted advanced course-taking by instructor and advisor gender (Main Sample)



Notes: Predicted probability of taking any advanced economics course from the saturated regression (Column 5 of Appendix Table A6) evaluated at sample means of the controls, for the women's subsample of the main sample. Bars are predicted probabilities and error bars are 95-percent confidence intervals from standard errors clustered by assignment cell for display, with the regression tables using three-way clustering. The joint female-instructor, female-advisor cell is highest, matching the raw cell means in Table 1. The parallel chart for men is in Appendix Figure A1 and the corresponding major-completion panels are in Appendix Figure A2. MI/MA denotes male instructor and male advisor, FI/MA female instructor and male advisor, MI/FA male instructor and female advisor, and FI/FA female instructor and female advisor.

Appendix

Table A1: Summary Statistics for the Main Sample

	Main Sample		Male Advisor		Female Advisor	
	Mean	SD	Mean	SD	Mean	SD
Outcomes						
Advanced economics course	0.230	0.421	0.211	0.408	0.248	0.432
Economics major	0.038	0.191	0.028	0.165	0.047	0.212
Treatment indicators						
Female student	0.396	0.489	0.378	0.485	0.412	0.492
Female instructor	0.503	0.500	0.503	0.500	0.502	0.500
Female advisor	0.515	0.500	n/a	n/a	n/a	n/a
MSP student	0.035	0.185	0.000	0.000	0.069	0.253
Student characteristics						
ACT composite	24.40	2.58	24.43	2.65	24.37	2.51
First-generation student	0.294	0.456	0.304	0.460	0.286	0.452
Pell recipient	0.220	0.415	0.221	0.415	0.220	0.414
Public high school	0.879	0.326	0.872	0.334	0.886	0.318
Transfer credits	5.35	7.05	5.18	6.82	5.50	7.26
Instructor characteristics						
Foreign-born instructor	0.359	0.480	0.383	0.486	0.336	0.473
Instructor experience (years)	13.47	11.79	13.46	11.74	13.48	11.83
Tenured/tenure-track	0.538	0.499	0.562	0.496	0.515	0.500
Classroom characteristics						
Share female in section	0.389	0.101	n/a	n/a	n/a	n/a
Class size	33.25	7.69	n/a	n/a	n/a	n/a
Observations	2,999		1,456		1,543	

Notes: Sample includes all first-time first-year UWL students who enrolled in introductory microeconomics or macroeconomics between fall 2009 and fall 2019 with non-missing values on all regression variables and a recorded first advisor. Advanced economics course is an indicator for completing any 300-level or higher economics course. Economics major is an indicator for graduating with an economics BA or BS degree. MBS student is an indicator for non-white CBA students assigned to one of the small set of designated Multicultural Business Scholars Program advisors. Non-CBA students are coded as zero by construction. The CBA subsample is a 2,558-student subset reported as row 6 of Appendix Table A5. This CBA subsample is built by listwise deletion from the full CBA enrollment of 2,625 students. Of the 67-student gap, 33 are missing ACT composite or math subscore, 18 are missing math placement, 12 are missing English placement, and 4 are dropped as singletons within the assignment-cell fixed effects. The control vector excludes high-school state. Including it would drop an additional 77 students with missing or non-standard state-of-high-school records and does not change the triple (Appendix Table A5 row 5).

Table A2: Covariate Balance on Female Instructor (Main Sample)

	Standardized Difference		Coef. on Female Instr.	
Covariate	Raw	Within-cell	Coef.	p-value
Female student	0.037	0.015	0.0217	0.392
White	-0.135	-0.044	-0.0350	0.356
First generation	-0.037	0.016	0.0216	0.687
Pell eligible	0.019	0.006	0.0080	0.804
Attended public HS	-0.037	-0.007	-0.0066	0.667
Remedial math	-0.062	-0.017	-0.0070	0.303
College algebra	-0.003	0.015	0.0179	0.534
Pre-calculus	0.095	0.025	0.0317	0.286
Calculus	-0.061	-0.029	-0.0426	0.287
ACT composite	0.017	0.010	0.0741	0.635
ACT math	0.002	-0.001	-0.0138	0.952
English placement (1 to 6)	0.006	0.006	0.0044	0.772
Transfer credits	0.043	0.015	0.3107	0.399
First-semester credits	-0.001	-0.011	-0.0381	0.629
Required advanced eco	0.004	0.002	0.0006	0.934
Advisor = intro instructor	0.152	0.059	0.0291	0.034
Joint F-test (15 d.f.)			1.15	0.324
Joint F-test, white-only ($N = 2{,}739$; 14 d.f.)			0.71	0.756
Observations		2,999		

Notes: Sample is the main sample. Raw standardized differences are computed on pooled data following Rosenbaum and Rubin (1985) and Austin (2009). Within-cell standardized differences partial out assignment-cell fixed effects (term × course × day × time) together with college fixed effects and application-rank-decile and registration-rank-decile dummies, matching the conditioning set of the main regression spec. The regression columns report the coefficient on the Female Instructor indicator from a regression of each covariate on the indicator with assignment-cell fixed effects, college fixed effects, and the decile timing controls, clustered at the assignment cell. The joint F-test regresses the Female Instructor indicator on all covariates with the same conditioning. Imbalance thresholds are $|d| < 0.10$ negligible and $|d| \geq 0.25$ substantial. Early-application indicator omitted from the balance set because it is near-collinear with the application-rank-decile dummies used as conditioning controls.

Table A3: Covariate Balance on Female Advisor (Main Sample)

	Standardized Difference		Coef. on Female Adv.	
Covariate	Raw	Within-cell	Coef.	p-value
Female student	0.069	0.083	0.0426	0.027
White	-0.246	-0.200	-0.0550	0.000
First generation	-0.039	-0.002	-0.0008	0.961
Pell eligible	-0.004	0.015	0.0068	0.640
Attended public HS	0.042	0.070	0.0243	0.054
Remedial math	0.022	0.026	0.0037	0.388
College algebra	0.019	0.056	0.0234	0.186
Pre-calculus	-0.001	-0.017	-0.0074	0.597
Calculus	-0.020	-0.038	-0.0196	0.288
ACT composite	-0.025	-0.022	-0.0597	0.521
ACT math	-0.067	-0.059	-0.1942	0.107
English placement (1 to 6)	0.043	0.020	0.0052	0.583
Transfer credits	0.045	0.029	0.2141	0.437
First-semester credits	-0.050	-0.055	-0.0668	0.096
Required advanced eco	0.007	-0.004	-0.0006	0.900
Advisor = intro instructor	0.144	0.082	0.0142	0.140
Joint F-test (15 d.f.)			3.54	0.000
Joint F-test, white-only ($N = 2{,}739$; 14 d.f.)			1.33	0.204
Observations	2,999			

Notes: Sample is the main sample. Method as in Table A2, including the same conditioning on college fixed effects and application-rank-decile and registration-rank-decile dummies in addition to assignment-cell fixed effects. The joint F-test rejects because of the White indicator, which exhibits a substantial within-cell standardized difference of -0.200. This imbalance reflects the routing of non-white CBA students to the small set of female advisors who serve the Multicultural Scholars Program (MSP). Excluding students assigned to MSP-pool advisors, the within-cell SMD on White falls to -0.076 and is no longer substantial, indicating that approximately two-thirds of the total imbalance is mechanically attributable to MSP routing inside CBA. We control for MSP status directly in all main regressions. As an additional check using the natural conditioning set for advisor assignment, regressing advisor gender on student covariates within major $\times$ cohort cells yields $F(7, 2{,}691) = 0.79$, $p = 0.60$.

Table A4: Finite-Sample Inference on the Triple Interaction (Main Sample)

Outcome	β_7	3-way Cluster SE	RI p-value	Wild Boot. p-value
Advanced eco course-taking	0.114	0.043	0.065	0.038
Economics major completion	0.050	0.028	0.289[a]	0.104[a]

Notes: The triple-interaction coefficient β_7 from the saturated specification (Column 5 of Appendix Table A6) on the main sample ($N = 2{,}999$). The three-way cluster standard error clusters on assignment cell, instructor, and advisor (Cameron et al., 2011). The randomization-inference (RI) p-value permutes female-instructor status within assignment cells across 999 replications. The wild cluster bootstrap p-value uses Webb weights with the null imposed and 9,999 replications, clustered at the instructor cluster (the smallest dimension, with 27 clusters) following MacKinnon et al. (2023). [a]Randomization inference and the wild cluster bootstrap have less power when the outcome is rare. About 3.8 percent of students complete the economics major. The major-completion result is also stronger on the CBA subsample where the eco-major signal is more concentrated (wild bootstrap $p = 0.044$ clustered on the instructor).

Table A5: Robustness of the Women-Only Interaction and the Triple, Both Outcomes (Main Sample)

	Advanced Course-Taking		Major Completion		
Specification	Women-only	Triple	Women-only	Triple	N
Main spec (with college FE)[a]	0.083^{**}	0.114^{**}	0.048^{**}	0.050^{*}	2,999
	(0.040)	(0.043)	(0.021)	(0.028)	
+ Advisor fixed effects	0.050	0.105^{**}	0.054^{***}	0.056^{**}	2,999
	(0.044)	(0.042)	(0.019)	(0.027)	
+ Advisor controls	0.082^{*}	0.121^{**}	0.048^{**}	0.051^{*}	2,935
	(0.047)	(0.045)	(0.023)	(0.029)	
White students only	0.082^{**}	0.105^{**}	0.054^{**}	0.056^{*}	2,739
	(0.039)	(0.045)	(0.022)	(0.029)	
+ HS-state dummies	0.080^{**}	0.114^{**}	0.050^{**}	0.052^{*}	2,922
	(0.037)	(0.042)	(0.022)	(0.029)	
CBA subsample[b]	0.081^{*}	0.101^{**}	0.060^{**}	0.061^{**}	2,558
	(0.044)	(0.046)	(0.022)	(0.026)	
CBA + Major × advisor-gender	0.085^{*}	0.100^{**}	0.058^{**}	0.060^{**}	2,558
	(0.044)	(0.046)	(0.022)	(0.027)	
− Advisor = intro instructor students[c]	0.081^{*}	0.125^{**}	0.046^{**}	0.051^{*}	2,910
	(0.041)	(0.047)	(0.021)	(0.029)	
+ Class (section) fixed effects	0.112^{**}	0.121^{***}	0.028	0.043	2,999
	(0.044)	(0.043)	(0.022)	(0.028)	
Range	[0.050, 0.112]	[0.100, 0.125]	[0.028, 0.060]	[0.043, 0.061]	

Notes: For each outcome, the table reports the women-only instructor-advisor interaction (the specification of Table 3, estimated on the women's subsample) and the triple-difference coefficient (β_7 = Female Student × Female Instructor × Female Advisor) across nine robustness checks. The main spec (row 1) is the main sample with college fixed effects and matches Table 2. Advisor fixed effects (row 2) absorb the female-advisor main effect and the MBS indicator, leaving the estimates identified from within-advisor variation. Advisor controls (row 3) add advisor experience and advisor foreign-born status. The white-only specification (row 4) restricts to white students. The HS-state specification (row 5) augments the main spec with seven-category state-of-HS dummies. The CBA subsample (row 6) restricts to the CBA students where the advisor-assignment process is documented (Section 2.3). Row 7 adds declared-major × advisor-gender interactions on the CBA subsample. The section fixed-effects row replaces the assignment-cell fixed effect with a finer section fixed effect, which absorbs instructor gender and identifies the interaction from within-section variation in advisor gender. The triple is positive in every specification for both outcomes. The CBA subsample produces the larger major-completion estimate, consistent with the economics-major-completion signal being concentrated among CBA students who are mechanically closer to that outcome. Standard errors clustered three-way on assignment cell, instructor, and advisor in all specifications. [a]The main sample is smaller than the instructor-only sample in Eckrote-Nordland et al. (2026) ($N = 3{,}018$) because the joint design requires recorded advisor gender, which drops students whose advisor information is not in the advisor file. [b]The CBA subsample drops the college fixed effects because they become collinear with the within-CBA sample restriction. [c]Row 8 drops the 2.97 percent of main-sample students (89 of 2,999) whose first recorded advisor was the same person as their introductory economics instructor. For that subset the two assignment processes collapse into a single contact, and the triple should not be identified off them. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A6: Full Specification of Instructor and Advisor Gender Effects (Main Sample)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Advanced Economics Course-Taking						
FS	-0.089^{***}	-0.122^{***}	-0.087^{***}	-0.120^{***}	-0.090^{**}	-0.083^{**}
	(0.019)	(0.018)	(0.024)	(0.024)	(0.034)	(0.031)
FI	0.042	0.016	0.042	0.016	0.045	0.026
	(0.034)	(0.034)	(0.035)	(0.034)	(0.037)	(0.038)
FA	0.040^{**}	0.039^{**}	0.041^{**}	0.041^{**}	0.069^{***}	
	(0.016)	(0.016)	(0.018)	(0.018)	(0.021)	
FS × FI		0.065^{*}		0.065^{*}	0.006	0.006
		(0.032)		(0.032)	(0.042)	(0.043)
FS × FA			-0.004	-0.004	-0.061	-0.056
			(0.025)	(0.026)	(0.036)	(0.034)
FA × FI					-0.057^{*}	-0.029
					(0.033)	(0.029)
FS × FA × FI					$\mathbf{0.114}^{**}$	$\mathbf{0.105}^{**}$
					(0.043)	**(0.042)**
Panel B. Economics Major Completion						
FS	-0.018^{**}	-0.029^{***}	-0.012	-0.023^{**}	-0.010	-0.004
	(0.008)	(0.009)	(0.008)	(0.010)	(0.010)	(0.009)
FI	0.007	-0.002	0.007	-0.002	0.003	-0.003
	(0.013)	(0.015)	(0.013)	(0.015)	(0.013)	(0.015)
FA	0.016^{*}	0.015^{*}	0.020^{**}	0.020^{*}	0.023^{*}	
	(0.009)	(0.009)	(0.009)	(0.010)	(0.013)	
FS × FI		0.022^{*}		0.022^{*}	-0.005	-0.003
		(0.013)		(0.013)	(0.017)	(0.019)
FS × FA			-0.011	-0.011	-0.036^{**}	-0.045^{***}
			(0.017)	(0.017)	(0.017)	(0.014)
FA × FI					-0.008	0.002
					(0.020)	(0.021)
FS × FA × FI					$\mathbf{0.050}^{*}$	$\mathbf{0.056}^{**}$
					(0.028)	**(0.027)**
Observations	2,999	2,999	2,999	2,999	2,999	2,999
Advisor FE	No	No	No	No	No	Yes

Notes: Full build-up for the compact estimates in Table 2. FS denotes female student, FI female instructor, and FA female advisor. Column 1 includes main effects only. Column 2 adds FS×FI. Column 3 adds FS×FA. Column 4 includes both two-way student interactions. Column 5 is the fully saturated model. Column 6 adds advisor fixed effects, which absorb the female-advisor main effect and every other time-invariant advisor characteristic. Individual lower-order coefficients are not separately interpretable, and the negative FS × FA reflects the men's female-advisor response discussed in Section 3 rather than any adverse effect of female advisors on women. The women-only instructor-advisor interaction that decomposes the triple is reported in Table 3. All columns include assignment-cell fixed effects, college fixed effects (where not absorbed by advisor FE), and the full control vector (Section 2.2). Standard errors clustered three-way on assignment cell, instructor, and advisor. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A7: Decomposing the FS × FA Coefficient via Professor-Advisor Heterogeneity (Main Sample)

	Advanced Econ Course		Economics Major	
Specification	FS × FA	Triple	FS × FA	Triple
Baseline saturated model	−0.061	0.114**	−0.036**	0.050*
	(0.036)	(0.043)	(0.017)	(0.028)
+ Prof. foreign-born × advisor FE	−0.057	0.120***	−0.040***	0.055*
	(0.036)	(0.041)	(0.014)	(0.028)
+ Full prof. characteristics × advisor FE	−0.042	0.118**	−0.037**	0.052*
	(0.037)	(0.046)	(0.016)	(0.030)

Notes: The first row is the saturated specification reported in Column 5 of Appendix Table A6. The second row adds advisor fixed effects fully interacted with the indicator for whether the student's introductory instructor was foreign-born, so that advisor effects are allowed to differ between students who had foreign-born and US-born instructors. The third row further adds full interactions between advisor fixed effects and the remaining two professor characteristics in the control vector (experience and tenure), allowing advisor effects to vary across all three professor traits simultaneously. The full control vector (student, instructor, classroom characteristics, MBS indicator, college fixed effects) is included in every row, and Table 2 notes give the listing. The sample is the main sample with $N = 2{,}999$. Standard errors clustered three-way on assignment cell, instructor, and advisor (Cameron et al., 2011). The advanced-course FS × FA coefficient and the major-completion FS × FA are small and stable across the augmentations. The triple is unchanged or slightly larger in both rows for both outcomes, so the complementarity is not produced by the same heterogeneity channel that generates the negative two-way on advanced course-taking. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A8: Triple Interaction by Advisor Department (Main Sample)

	Advanced Econ Course	Economics Major	N
Baseline (all advisors)	0.114^{**}	0.050^{*}	2,999
	(0.043)	(0.028)	
Econ-department female advisors	0.104	0.091^{**}	2,069
	(0.066)	(0.040)	
Non-econ-department CBA female advisors	0.128^{**}	0.032	2,194
	(0.053)	(0.029)	
Non-CBA female advisors	0.070	0.022	1,705
	(0.092)	(0.063)	

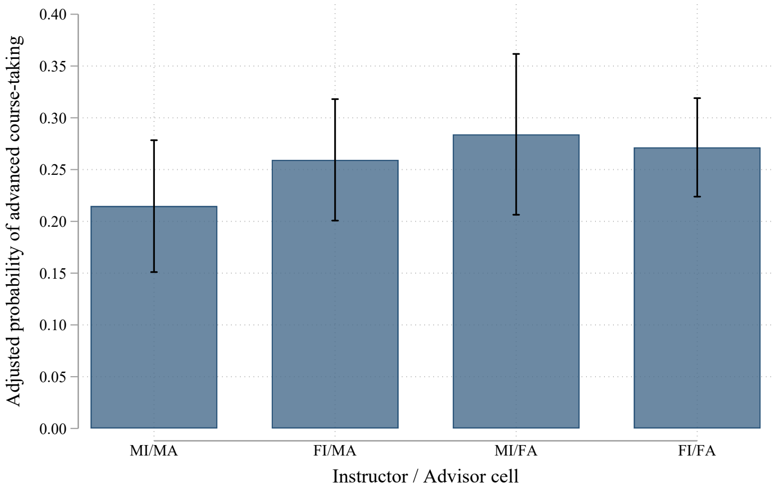
Notes: Each row reports the FS $\times$ FI $\times$ FA triple-interaction coefficient from the saturated specification (Appendix Table A6, Column 5), estimated on the indicated subsample of the main sample. Row 1 is the pooled sample. Rows 2-4 restrict the female-advisor side to a single department category and keep all male-advisor students as the reference. Row 2 contains female advisors in the CBA economics department. Row 3 contains female advisors in non-economics CBA departments (accounting, finance, management, marketing). Row 4 contains female advisors of non-CBA students (other UWL colleges). The three categories are mutually exclusive within the female-advisor pool. Standard errors clustered three-way on assignment cell, instructor, and advisor. All controls (student, instructor, classroom, MBS, college FE) and assignment-cell FE included. The difference across rows is descriptive and is not interpreted as a formal test of mechanisms. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A9: Drop-One Robustness for Triple Interaction (Advanced Course-Taking, Main Sample)

	N drops	Min	Max	Median	Mean
Drop one instructor	27	0.095	0.155	0.114	0.114
Drop one advisor	245	0.099	0.130	0.114	0.114
For comparison, lower-order FS × FA					
Drop one instructor	27	-0.100	-0.041	-0.061	-0.062
Drop one advisor	245	-0.069	-0.048	-0.061	-0.061

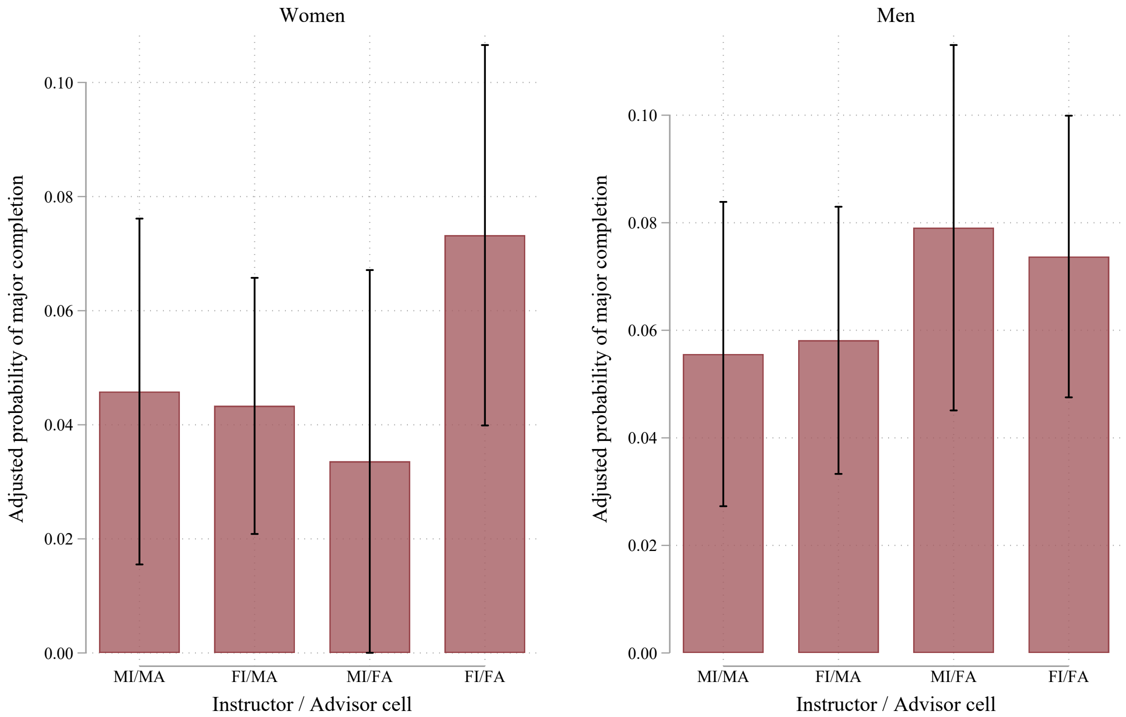
Notes: Each row reports the distribution of the indicated coefficient when the saturated model is re-estimated dropping each of the 27 instructors (top) or each of the 245 advisors (bottom) one at a time. The baseline triple-interaction estimate is 0.114 and the baseline FS $\times$ FA estimate is -0.061. Across all 272 drops, the triple remains positive and the FS $\times$ FA estimate remains negative. The most influential single instructor moves the triple by about 4 percentage points and the most influential single advisor by less than 2. Sample is the main sample.

Figure A1: Men's adjusted advanced course-taking by instructor and advisor gender (Main Sample)



Notes: Predicted probability of taking any advanced economics course from the saturated regression (Column 5 of Appendix Table A6) evaluated at sample means of the controls, for the men's subsample of the main sample. Bars are predicted probabilities and error bars are 95-percent confidence intervals from standard errors clustered by assignment cell for display, with the regression tables using three-way clustering. The male-instructor, female-advisor cell is elevated, the male-spike pattern discussed in Section 3, a real female-advisor response among men that we do not fully attribute to major composition. The qualitative pattern is different from the women's chart (Figure 1), which supports the women-specific reading of the interaction. MI/MA denotes male instructor and male advisor, FI/MA female instructor and male advisor, MI/FA male instructor and female advisor, and FI/FA female instructor and female advisor.

Figure A2: Adjusted economics-major completion by instructor and advisor gender (Main Sample)



Notes: Predicted probability of completing the economics major from the saturated regression (Column 5 of Appendix Table A6) evaluated at sample means of the controls. The left panel is women and the right panel is men. Bars are predicted probabilities and error bars are 95-percent confidence intervals from standard errors clustered by assignment cell for display, with the regression tables using three-way clustering. Major completion is a rare outcome and these panels are treated as suggestive. The women's joint female-instructor, female-advisor cell rests on 17 completions. The linear probability model produces some fitted values below zero for this rare outcome (781 of 2,999 in the full sample, none above one, with a range of -0.06 to 0.37 in the women's joint female-instructor, female-advisor cell), one more reason we treat major completion as secondary. MI/MA denotes male instructor and male advisor, FI/MA female instructor and male advisor, MI/FA male instructor and female advisor, and FI/FA female instructor and female advisor.