Improving Women's Advancement in Political Science:

What We Know About What Works

ONLINE APPENDIX

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Scope and Method of Review

We established three key criteria for the scope of our literature review. 1) We only include studies published in journals or books since 2008. 2) We only include studies that evaluate the effectiveness of an intervention, meaning some intervention was implemented and the outcomes evaluated relative to a comparison group that was not subject to the intervention. 3) Because there is no gender gap among undergraduates (half of political science undergraduates are women), we omit studies of undergraduate recruitment or retention and look only at interventions targeted at improving women's outcomes in graduate study or later career stages. That said, we do include some exceptions in the tables below but clearly note them as such.

We gathered studies using several approaches, including: 1) reviewing every article published in *PS: Political Science and Politics* over the selected timeframe, 2) searching existing online repositories, annotated bibliographies, or published reviews, 3) keyword searches, 4) suggestions from scholars, and 5) tracing work that cites or is cited by any research identified in prior steps of the process. The sources examined in step 2 include: APSA and AEA Committee on the Status of Women in the Profession websites, newsletters, and reports; Buckles (2018) review article; and bibliographies listed at <u>http://web.apsanet.org/cswp/scholarship/</u> and <u>https://docs.google.com/document/d/1QRcQU4RSizlu-HxDY2uZxYp4EmYslmvm9BMtcd-RUis/edit</u>. For step 3, research assistants were instructed to search many variations of the following example keywords: "gender political science profession", "women's advancement political science", "gender gap social science", "gender gap academia", "women's advancement social science."

Table A1 provides a list of all published work meeting the above criteria *specifically in political science*. For the reader's information, we also include a separate table, Table A2, which

lists the published studies we encountered that describe interventions in Political Science but which do not include evaluation relative to a comparison group. Table A3 provides a complete list of studies we encountered in any discipline beyond political science that met our criteria, as well as some that did not meet the criteria but are noted as such.

Because of the limited scope of studies specific to political science, we extend our review to other disciplines. Although there can be substantial differences in the structure and expectations of academic disciplines, women face enough similar obstacles for research in these fields to be informative to political science. The vast majority of such studies have been conducted in economics or STEM fields, where gender imbalances are even greater than those in political science. In practice, economics has the largest gender gap in the social sciences and has accordingly produced the most research on improving academic women's outcomes. Because of the comparable structure and close relationship between economics and political science, we view the work in economics as informative. Other social science fields, such as sociology and psychology, are female-dominated or have minimal gender gaps and therefore do not have widespread disciplinary conversations or extensive research on this issue.

Lab sciences, by contrast, often observe gender gaps in undergraduate matriculation into the major, and have a very different model of graduate training than political science. Undergraduate education is beyond the scope of our review, so we do not include the substantial body of work from these fields regarding attracting and keeping women in undergraduate majors. We only include research about graduate students to the extent that it reflects common gender differences rather than structural features of disciplinary training design. For example, while the resilience training described by Bekki et al (2013) is specific to scenarios for STEM graduate students, we anticipate that women graduate students in political science also face psychological

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obstacles related to confidence and resilience, and would benefit from equivalent training in their field.

However, we also anticipate that while women in different fields undoubtedly face unique challenges, many of the institutional and psychological barriers women face are common across fields. For example, mirroring the dismissal of women as experts in political science (Beaulieu et al. 2017), women in STEM fields are perceived as less competent as men, and are less likely to be hired as lab managers – even by female PIs (Moss-Racusin 2012; see also Sheltzer and Smith 2014). Further, having children imposes a greater penalty on academic advancement for female than male scientists, indicating that women in both STEM and non-STEM fields face similar challenges reconciling family considerations with the tenure clock (Ceci and Williams 2011). Finally, the gendered nature of professional networks in predominantly-male fields poses similar problems across disciplines. Male STEM faculty are more likely than female STEM faculty to be in same-gender professional networks, and female STEM faculty are more likely to consider gender a factor in gaining access to networks (Xu and Martin 2011). Therefore, although there can be substantial differences in the structure and expectations of academic disciplines, there are enough similar obstacles facing women for research in these fields to be informative to political science.

One important difference between STEM fields and political science is that some research has demonstrated bias *in favor* of hiring women in STEM fields (Williams and Ceci 2015), while women in political science may face obstacles at the hiring stage (APSA 2016). The hiring studies conducted in STEM and described in the main text of the article assume a disadvantage for female candidates in the hiring process, but that disadvantage may be diminishing in STEM fields for reasons other than the intervention. Therefore, studies of hiring

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interventions may have variance across disciplines and may not be completely applicable to political science.

Appendix Works Cited

- Buckles, Kasey. 2019. "Fixing the Leaky Pipeline: Strategies for Making Economics Work for Women at Every Stage." *Journal of Economic Perspectives* 33 (1): 43-60.
- Beaulieu, Emily, Amber E. Boydstun, Nadia E. Brown, Kim Yi Dionne, Andrea Gillespie,
 Samara Klar, Yanna Krupnikov, Melissa R. Michelson, Kathleen Searles, and Christina
 Wolbrecht. 2017. "Women Also Know Stuff: Meta-Level Mentoring to Battle Gender
 Bias in Political Science." *PS: Political Science and Politics* 50 (3): 779-783.
- Ceci, Stephen J., and Wendy M. Williams. 2011. "Understanding Current Causes of Women's Underrepresentation in Science." *PNAS* 108 (8): 3157-3162.
- Moss-Racusin, Corinne, A., John F. Dovidio, Victoria L. Brescoll, Mark J. Graham, and Jo
 Handlsman. 2012. "Science faculty's subtle gender biases favor male students." *PNAS* 109 (41): 16474-16479.
- Sheltzer, Jason M., and Joan C. Smith. 2014. "Elite Male Faculty in the Life Sciences Employ Fewer Women." *PNAS* 111 (28): 10107-10112.
- Williams, Wendy M., and Stephen J. Ceci. 2015. "National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track." *PNAS* 112 (17): 5360-53.
- Xu, Yonghong Jade, and Cynthia L. Martin. 2011. "Gender Differences in STEM Disciplines: From the Aspects of Informal Professional Networking and Faculty Career Development." *Gender Issues* 28 (3): 134-154.

Citation	Brief Description of Intervention	Comparison Group?	Random Assignment?	Overall Effect
Barnes, Tiffany D., and Emily Beaulieu. 2017. "Engaging Women: Addressing the Gender Gap in Women's Networking and Productivity." <i>PS:</i> <i>Political Science and Politics</i> 50 (2): 461-466.	Visions in Methodology: Women- only methods and mentoring workshop	Yes	No	Positive
Peterson, David A. M., Lori A. Biederman, David Andersen, Tessa M. Ditonto, and Kevin Roe. 2019. "Mitigating Gender Bias in Student Evaluations of Teaching." <i>PLOS ONE</i> 14 (5): e0216241.	Statement in student evaluation instructions recognizing the role of gender bias	Yes	Yes	Positive
Unkovic, Cait, Maya Sen, and Kevin M. Quinn. 2016. "Does Encouragement Matter in Improving Gender Imbalances in Technical Fields? Evidence from a Randomized Controlled Trial." <i>PLOS ONE</i> 11 (4): 1-15.	Email invitations to grad students encouraging applications to the Society for Political Methodology annual meetings	Yes	Yes	Null

Table A2: Published Resea	rch on Interventions in	Political Science that I	Lack Comparison	Groups in Evaluation
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Citation	Brief Description of Intervention	Comparison	Random	Overall
Beaulieu, Emily, Amber E. Boydstun, Nadia E. Brown, Kim Yi Dionne, Andrea Gillespie, Samara Klar, Yanna Krupnikov, Melissa R. Michelson, Kathleen Searles, and Christina Wolbrecht. 2017. "Women Also Know Stuff: Meta-Level Mentoring to Battle Gender Bias in Political Science." <i>PS:</i> <i>Political Science and Politics</i> 50 (3): 779-783.	Women Also Know Stuff: Discipline- wide effort to boost visibility of women's expertise	No	Assignment?	Positive
Bos, Angela L., and Monica C. Schneider. 2012. "Mentoring to Fix the Leaky Pipeline." <i>PS: Political</i> <i>Science and Politics</i> 45 (2): 223-231.	New Research in Gender and Political Psychology: Women-only research and mentoring workshop	No	No	Positive
 Brown, Nadia E. 2019. "Me Too Political Science: An Introduction." <i>Journal of Women, Politics & Policy</i> 40 (1):1-6. *Citation is to an introduction to a special edition of a symposium in the <i>Journal of Women, Politics, & Policy</i>. This special edition was reprinted as a book by Routledge Press in 2020 under the title <i>Me Too Political Science</i>, with Nadia E. Brown as editor. 	Efforts by the Women's Caucus for Political Science, branded #MeTooPoliSci, to bring awareness to sexual harassment in political science and discuss solutions	No	No	Positive
Cassese, Erin C., and Mirya R. Holman. 2018. "Writing Groups as Models for Peer Mentorship among Female Faculty in Political Science." <i>PS:</i> <i>Political Science and Politics</i> 51 (2): 401-405.	Virtual women's peer mentorship and writing group (established by participants in New Research in Gender and Political Psychology)	No	No	Positive

Citation	Brief Description of Intervention	Field	Unit of Observation	Random?	Overall Effect	Notes
Antecol, Heather, Kelly Bedard, and Jenna Stearns. 2018. "Equal but Inequitable: Who Benefits from Gender-Neutral Tenure Clock Stopping Policies?" <i>American Economic</i> <i>Review</i> 108 (9): 2420-41.	Gender-neutral tenure clock-stopping policies	Economics	Men and women hired in top-50 econ departments	No	Negative	
Bagues, Manuel, Mauro Sylos-Labini, and Natalia Zinovyeva. 2017. "Does the Gender Composition of Scientific Committees Matter?" <i>American Economic Review</i> 107 (4): 1207-1238.	The number of women on faculty promotion evaluation committees in Italy and Spain	Multi- disciplinary	Candidates for academic promotion in Italy and Spain	No	Null, negative in some cases	
Bekki, Jennifer M., Mary Lee Smith, Bianca L. Bernstein, and Caroline Harrison. 2013. "Effects of an Online Personal Resilience Training Program for Women in STEM Doctoral Programs." <i>Journal of Women and</i> <i>Minorities in Science and Engineering</i> 19 (1): 17-35.	Online resilience training for women in graduate school	STEM	Recruited graduate student women	Yes	Positive	
Bilimoria, Diana, and Xiangfen Liang. 2012. Gender Equity in Science and Engineering: Advancing Change in Higher Education. New York: Routledge.	Meta-analysis of the effects of the first two waves of NSF ADVANCE grant programs	Multi- disciplinary	Universities	No	Null	
Blau, Francine D., Janet M. Currie, Rachel T.A. Croson, and Donna K. Ginther. 2010. "Can Mentoring Help Female Assistant Professors? Interim Results from a Randomized Trial." <i>American Economic</i> <i>Review</i> 100 (2): 348-352.	CeMENT: Women-only mentoring and networking research workshop	Economics	Women economists who applied to the program	Yes	Positive	

Bohnet, Iris, Alexandra Van Geen, and Max Bazerman. 2016. "When Performance Trumps Gender Bias: Joint Versus Separate Evaluation." <i>Management Science</i> 62 (5): 1225-1234.	Joint evaluation: Compare qualifications of two candidates side- by-side, rather than evaluating each candidate separately	N/A	Undergraduate lab subjects	Yes	Positive	
Bostwick, Valerie, and Bruce Weinberg. "Nevertheless She Persisted? Gender Peer Effects in Doctoral Stem Programs." <i>NBER</i> <i>Working Paper No.25028</i> . September 2018. DOI: 10.3386/w25028.	Variations in the percentage of female students in doctoral programs	STEM	Men and women incoming graduate students	No	Positive	**
Bowles, Hannah Riley, and Linda Babcock. 2012. "How Can Women Escape the Compensation Negotiation Dilemma? Relational Accounts Are One Answer." <i>Psychology of Women Quarterly</i> 37 (1): 80- 96.	Strategies for salary negotiation (providing relational justifications)	N/A	Online survey experiment of non-academic adults	Yes	Mixed	
Bradley, Steven W., James R. Garven, Wilson W. Law, James E. West. "The Impact of Chief Diversity Officers on Diverse Faculty Hiring." <i>NBER Working Paper</i> <i>No.24969</i> . August 2018. DOI: 10.3386/w24969.	Presence of a Chief Diversity Officer on campus	Multi- disciplinary	Universities	No	Null	**
Budden, Amber E., Tom Tregenza, Lonnie W. Aarssen, Julia Koricheva, Roosa Leimu, Christopher J. Lortie. 2008. "Double-blind Review Favours Increased Representation of Female Authors." <i>Trends in Ecology &</i> <i>Evolution</i> 23 (1): 4-6.	Introduction of double- blind review for the journal <i>Behavioral</i> <i>Ecology</i>	Ecology	Published authors in selected journals	No	Positive	

Carnes, Molly & Devine, Patricia & Isaac, Carol & Manwell, Linda & Ford, Cecilia & Byars- Winston, Angela & Fine, Eve & Sheridan, Jennifer. 2012. "Promoting Institutional Change Through Bias Literacy." <i>Journal of Diversity in</i> <i>Higher Education</i> 5:63-77.	Diversity training workshop for department faculty	Science, Medicine, & Engineering	Departments, and faculty in departments	Yes	Mixed	
Carnes, Molly, Patricia G. Devine, Linda Baier Manwell, Angela Byars-Winston, Eve Fine, Cecilia E. Ford, Patrick Forscher, Carol Isaac, Anna Kaatz, Wairimu Magua, Mari Palta, and Jennifer Sheridan. 2015. "Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial." <i>Academic</i> <i>Medicine</i> 90 (2): 221–230.						
Carrell, Scott E., Marianne E. Page, and James E. West. 2010. "Sex and Science: How Professor Gender Perpetuates the Gender Gap." <i>Quarterly</i> <i>Journal of Economics</i> 125 (3): 1101-144.	Instructor gender in undergraduate STEM courses	Multi- disciplinary	Undergraduate students	Yes	Positive	*
Cundiff, Jessica & Zawadzki, Matthew & Danube, Cinnamon & Shields, Stephanie. 2014. "Using Experiential Learning to Increase the Recognition of Everyday Sexism as Harmful: The WAGES Intervention." <i>Journal of Social</i> <i>Issues</i> 70 (4): 703-721.	WAGES: Game-based diversity training protocol	Multi- disciplinary	Undergraduate lab subjects	Yes	Positive	
Zawadzki, Matthew J., Stephanie A. Shields, Cinnamon L. Danube, and Janet K. Swim. 2014. "Reducing the Endorsement of Sexism Using Experiential Learning: The Workshop Activity for Gender Equity Simulation (WAGES)." <i>Psychology of Women Quarterly</i> 38 (1): 75-92.						

Dennehy, Tara C., and Nilanjana Dasgupta. 2017. "Female Peer Mentors Early in College Increase Women's Positive Academic Experiences and Retention in Engineering." <i>PNAS</i> 114 (23): 5964-5969.	Female peer mentors assigned to undergrad female engineering students	Engineering	Undergraduate students	Yes	Positive	*
Feeney, Mary K., Margarita Bernal, and Lauren Bowman. 2014. "Enabling Work? Family- Friendly Policies and Academic Productivity for Men and Women Scientists." <i>Science and Public</i> <i>Policy</i> 41 (6): 750-764.	Family friendly policies: Status of Women report, Parental Leave, Tenure Clock-stopping, On-site childcare, Spousal hiring	Multi- disciplinary	University faculty	No	Mixed	
Li, Hsueh-Hsiang. 2018. "Do Mentoring, Information, and Nudge Reduce the Gender Gap in Economics Majors?" <i>Economics of Education</i> <i>Review</i> 64: 165-83.	Information about grade distribution, encouragement for high- achieving students to continue, and peer mentoring activities	Economics	Undergraduate students	Quasi	Mixed	*
Main, J. 2014. "Gender Homophily, Ph.D. Completion, and Time to Degree in the Humanities and Humanistic Social Sciences." <i>The Review of Higher Education</i> 37 (3): 349– 375.	Ph.D. mentoring and advising practices, including same-gender mentorship for women	Humanities	Graduate students	No	Positive	
O'Meara, KerryAnn, Audrey Jaeger, Joya Misra, Courtney Lennartz, Alexandra Kuvaeva. 2018. "Undoing Disparities in Faculty Workloads: A Randomized Trial Experiment." <i>PLOS ONE</i> 13 (12): e0207316.	Four-part intervention regarding equitable distribution of service assignments, notably a transparent "dashboard" of department faculty workloads	STEM	Academic departments	Yes	Positive	

Pietri, Evava S., Erin P. Hennes, John F. Dovidio, Victoria L. Brescoll, April H. Bailey, Corinne A. Moss-Racusin, and Jo Handelsman. 2018. "Addressing Unintended Consequences of Gender Diversity Interventions on Women's Sense of Belonging in Stem." <i>Sex Roles</i> 80 (9- 10): 527-547.	Diversity training program; includes intervention to prevent women from being alienated or discouraged by training	STEM	General population adults; academic scientists	Yes	Mixed	
Roberts, Seán G., and Tessa Verhoef. 2016. "Double-blind Reviewing at EvoLang 11 Reveals Gender Bias." <i>Journal of Language</i> <i>Evolution</i> 1 (2): 163–167.	Introduction of double- blind review for the Journal of Language Evolution	Linguistics	Published authors in selected journals	No	Positive	
 Sheridan, Jennifer T, Eve Fine, Christine Maidi Pribbenow, Jo Handelsman, and Molly Carnes. 2010. "Searching for Excellence and Diversity: Increasing the Hiring of Women Faculty at One Academic Medical Center." <i>Academic Medicine</i> 85 (6): 999-1007. Fine, Eve, Jennifer Sheridan, Molly Carnes, Jo Handelsman, Christine Pribbenow, Julia Savoy, and Amy Wendt. 2014. "Minimizing the Influence of Gender Bias on the Faculty Search Process." In <i>Gender Transformation in the</i> <i>Academy</i>, edited by Vasilikie Demos, Catherine White Berheide, and Marcia Texler Segal. UK: Emerald Group Publishing. Carnes, Molly, Patricia G. Devine, Linda Baier Manwell, Angela Byars-Winston, Eve Fine, Cecilia E. Ford, Patrick Forscher, Carol Isaac, Anna Kaatz, Wairimu Magua, Mari Palta, and Jennifer Sheridan. 2015. "Effect of an Intervention to Break the Gender Bias Habit for Eagulty at One Institution: A Cluster 	WISELI: Gender bias training for faculty	Medicine & STEM	Departments, and faculty in departments	Yes	Mixed	

Randomized, Controlled Trial." <i>Academic</i> <i>Medicine</i> 90 (2): 221–230.						
Smith, Jessi L., Ian M. Handley, Alexander V. Zale, Sara Rushing, and Martha A. Potvin. 2015. "Now Hiring! Empirically Testing a Three-Step Intervention to Increase Faculty Gender Diversity in STEM." <i>BioScience</i> 65 (11): 1084- 1087.	Three-part bias-reduction intervention in the hiring process: Toolkit, Training, and peer faculty advisor for each search	STEM	Academic job searches	Yes	Positive	
Stepan-Norris, Judith, and Jasmine Kerrissey. 2015. "Enhancing Gender Equity in Academia: Lessons from the ADVANCE Program." <i>Sociological Perspectives</i> 59 (2): 225-245.	Equity Advisors: senior faculty assigned to oversee equity in all aspects of search & hiring process	Multi- disciplinary	University-level faculty gender ratio	No	Mixed	

*These intervention evaluations are targeted at undergraduate recruitment and retention, and so are beyond the scope criteria of the review. We include them in this table because they are mentioned in the main text of the article as suggestive evidence for the importance of peer mentoring and role models.

**These interventions are unpublished, and so beyond the scope criteria of the review. We include them in this table because they are briefly mentioned in the main text of the article as suggestive evidence for mechanisms or conditions discussed in the paper.