METHODS APPENDIX FOR THE PAPER:

Perceptions of Academic Department Climate by Men and Women and the

Effects of Such Perceptions on Research Productivity

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The data employed here are from a 2009 survey of members of the American Political Science Association (APSA) under APSA sponsorship and with implementation by the association’s Committee on the Status of Women. We infer that the implementation of the survey was led by Vicki Hesli (now Vicki Hesli Claypool). The data set was provided to us by Professors Claypool and Sarah McLaughlin Mitchell to whom we are very grateful.

Details for how the instrument was constructed, the sample selected, and the survey implemented are in Hesli and Lee (2011). However, we note that respondents were chosen from the APSA’s faculty membership files with stratification by department size and over-sampling of faculty members from medium and small institutions.

 Following an email invitation to take the survey, and with four follow-up reminders, 1,399 members of the original sample of 5,179, or 27 percent, completed all or part of the survey. Hesli and Lee (2011, 405-406) present marginals from the final sample that compare favorably to similar distributions in the APSA faculty membership.

We note, too, that the subtitle for the survey instrument indicated that it was “for those who [are] currently employed in a political science department.” Yet many APSA faculty members work in other kinds of university departments or settings. For the analyses in this paper, as explained in more detail in the paper itself, we have selected for analysis only those respondents who were employed as faculty members in PhD granting departments, whether for political science *per se* or for another focus like public administration or public affairs, that we verified as explained below.

These data were also analyzed in earlier articles by Hesli and Lee (2011,2013); Hesli, Lee, and Mitchell (2012); and Mitchell and Hesli (2013).

One reviewer of the original version of this paper worried that “survival bias,” especially among women, could mean that some individuals who were earlier in PhD departments may have already departed to other careers, to non-PhD departments, or the like because of climate concerns. This is a problem that could plague every cross-sectional data set employed to study the relationship of climate and productivity.

But consider data on how much attrition by gender goes on in political science (and other) PhD departments and what sorts of movement across types of departments may be going on. If, first, attrition from faculty positions disproportionately reduces the number of women available to participate in the sort of survey for which we have data, then in some degree those data would present a biased representation of women’s departmental perceptions and other attributes. But a study of new tenure-track assistant professors in seven mostly PhD granting social science departments, including ones in political science, tracked through their careers from 1990 through 2001 finds no gender bias in attrition (although it does find gender bias with men more likely to earn associate professor rank in this time period) (Box-Steffensmeier, Cunha, Varbanov, How, Knisley, and Holmes 2015). The former finding about gender-based attrition is also replicated for eight physical science and engineering departments studied over the period 1990-2002 by Kaminski and Geisler (2012).

One limitation of the Box-Steffensmeier *et al*. and Kaminski and Geisler studies, however, is they do not track where faculty members who leave PhD departments go. Yet Hill’s (2021) explication of the long-term career paths of political scientists who entered assistant professor positions in PhD departments in 1988 and 1989 offers evidence on the latter point, as well as gender comparisons for it. Hill demonstrates that more men experienced attrition of any sort from these PhD departments (26 percent of the original set of men) than did women (15 percent of the original set of women). Further, he shows that among those faculty who started their careers in PhD departments, the vast majority of those who earned tenure in any academic position stayed in a PhD department, even if they made a career move from the first institution at which they were hired. These findings comport, first, with those of Box-Steffensmeier *et al*. and Kaminski and Geisler that indicate attrition does not disproportionately affect women more than men. But it also indicates that more women than men stay in our profession *and* in PhD departments, even if they move to new faculty positions.

The preceding evidence does not mean that cross-sectional data sets are free of all survival bias problems. But, as Box-Steffensmeier *et al*. also conclude, we interpret it to mean that such problems are less severe than many fear and that they do not diminish the representation of women more than that of men.

*The Character of the Survey and Data Set*

 The survey was very ambitious. The codebook lists 109 questions, and many of those questions contained multiple “sub-questions.” A printed version of the instrument with the survey questions as posed to the respondents runs to 14 pages of mostly single-spaced text in a small font. Major categories of questions were for information on the respondents’ doctoral degrees, current employment, teaching responsibilities, service responsibilities, scholarly work, career satisfaction, institutional and department climate, job history, background information as for family and for employer benefits, and demographics.

 The data set constructed from the responses to the survey is also large and complicated, especially because the survey itself as long and detailed. Many singularly listed questions in the survey instrument produced large number of discrete variables in the data set because of their sub-questions. In addition, many additional variables were constructed from the original questions in the instrument.

*Missing Data*

 There is a good deal of missing data here for a variety of reasons. As with every survey, some respondents doubtless did not answer some questions selectively. In many other cases data are missing on variables that do not pertain to all respondents. As one example, many respondents did not have an academic position before the one they held at the time of the survey, thus they have missing values on the many job history questions. In addition, many respondents evidently experienced “fatigue” and stopped answering questions near the end of the instrument. Finally, we uncovered some cases of mis-codings on a handful of variables necessary for our analyses. We discuss the latter two kinds of missing data and how we dealt with them below.

 We note, however, that Hesli and Lee (2011) recognized the general problem of missing data and produced two sets of analyses: one using only the literal data in the survey and list-wise deletion of cases in their multivariate analyses and a second in which they replaced missing data with estimates from multiple-imputation methods using the Amelia II program. It is reassuring, too, that these two alternative estimation methods produced nearly identical hypothesis test results.

*Replacing or Re-Coding Missing Data in the Original Survey File*

 We infer that the authors of other papers using these data did not recognize or chose to ignore the fact that a notable number of respondents evidently experienced fatigue near the end of the instrument and stopped answering the last several questions. Yet it was our intention to replace as much missing data as possible with respondent-supplied or what we will call “respondent-identified” true score values.

Most of the questions late in the survey were not germane to our research interests, but regrettably the questions on the gender and ethnicity of the respondents were in the last questions many ignored. The loss of data on the gender question was especially of concern for our research, with 19 percent of the sample from PhD departments failing to answer this question. But the data set included email addresses and home institutions for the respondents (personal identifiers now excluded from our HarvardDataverse replication data set to ensure the respondents are anonymous in accord with the replication data policy of *PS: Political Science and Politics*). Using the latter identifying information, however, we were able to replace many missing values following procedures similar to those of Teele and Thelen (2017) and Kim and Grofman (2019) as we explain here.

An email address, such as janedoe@stateu.edu or jdoe@stateu.edu or doe@stateu;.edu, contains a “local part” (like janedoe) and a “domain” (like stateu.edu) which will frequently support identification of a specific respondent at a specific institution. Even if the respondent has moved to another institution, the local part name will often help identify the respondent’s present affiliation. Extensive searching of specific departments’ faculty along with more diffuse web searches can uncover still more respondents.

Using the latter variables we were able to reduce the missing values on gender to 2 percent of the sample in PhD granting institutions. Regrettably, we had no reliable method to equivalently replace missing data on ethnicity, and because so few respondents self-identified themselves as of an ethnic or racial minority group (51, or 14 percent of the sample, with missing data as well for another 19 percent of the sample) we are not confident that analyses with this variable would be reliable.

We also discovered an odd pattern of missing data in the measure for the year respondents earned their PhD In total, 19 percent of the cases had either literal no-response missing values or implausible ones such as the year 1900. We surmise the latter cases arose because some respondents failed to navigate correctly a conventional drop-down menu where one scrolls from a default number (1900 here) to the correct year. Cursor control is essential and sometimes tricky for carrying out the latter step, as is well documented on research on commercial use of such drop-down menus in online surveys (e.g., Baymard Institute 2021). Thus, while some respondents skipped this variable, others may have failed to record the correct number as they intended. Thus we did not include this variable in our analyses. Yet the valid values on this variable correlate at r = -0.79 with the measure of faculty rank we include in our hypothesis tests. Both are reasonably estimators of time in the profession, so the loss of the first one does not materially affect our key hypothesis tests.

Finally, we discovered 10 respondents who were coded as employed at the time of the survey in PhD granting departments when we discovered that was not the case upon checking the character of all the respondents’ home departments. These mis-coded cases may have arisen because of respondent error, perhaps because they were in institutions but not departments that granted PhDs. Thus we eliminated these cases from our analyses.

We did not inspect the codings of variables in the data set that we did not use in our exploratory or final analyses, so future users of such other variables should carry out data confirmation assessments similar to those explained above.

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