DOES INCREASED REPRESENTATION HELP OR HURT FEMALE FACULTY? A MULTILEVEL ANALYSIS OF RESEARCH PRODUCTIVITY AND DEPARTMENTAL CONTEXT

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INTRODUCTION

Two theoretical approaches to understanding departmental context posit differential effects of female representation on academic work life (Neumark & Gardecki, 1998; Tolbert, Simons, Andrews, & Rhee, 1995). The first, social contact theory, underlies much of the efforts to increase the number of female faculty in higher education. Simply put, as the proportion of female faculty members in a department increases, female faculty should be better off, as male faculty become used to the presence of females, and also because of the availability of female role models, mentors, and collaborators. The second, competition theory, posits that increasing the proportions of females will lead to greater conflict among faculty, as the majority group believes that their access to resources is threatened by the minority. This continues until some threshold of representation has been reached. Thus, these two theories predict different empirical findings: under social contact theory, increasing proportions of females in a department should yield higher female research productivity, while competition theory predicts a negative relationship as the proportion of females increases.

The purpose of this project is to investigate how the proportion of females in a department affects female research productivity. Is the relationship positive or negative? Although competition theory depends on access to resources for its negative predictions, scholars have not focused on resources in their empirical analyses. Clearly, resources will differ across departments, and the relationship between resources, representation, and productivity has implications for exactly how higher education should go about increasing the number of females in academia.

SUMMARY OF STUDY

The paper uses female full-time faculty with the title of assistant, associate, or full professor at research and doctoral institutions in the 2001 HERI Faculty Survey. This survey is ideally suited for this purpose, as faculty members' departments are listed on the survey, allowing analyses at the departmental level. Other national surveys such as the National Study of Postsecondary Faculty do not have this level of detail. Faculty in departments with less than five respondents are excluded from the analysis. Due to a variety of data and estimation issues, the results presented here should be considered preliminary.

The dependent variable is the number of professional writings published in the previous two years. Due to estimation issues, this categorical ordinal variable has been dichotomized into low productivity (0-2) and high productivity categories (4 or more publications). Independent variables at the individual level include age, race/ethnicity, marital status, rank, recent appointment at the institution, having interrupted career for family reasons, stress caring for

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dependents, and satisfaction with office and lab space. At the institutional level, variables include public/private status, Carnegie classification, and expenditures per student.

The primary variables of interest are at the departmental level. Biglan's (1973a; 1973b) classification is used to classify departments as hard/pure, hard/applied, and soft/pure. Three variables are used to understand the impact of representation on productivity: the proportion of females in the department, the average departmental satisfaction rating for office and lab space (used as a proxy for resources), and an interaction between the two.

Given the clustered nature of the sample, the effects of departmental context on research productivity are estimated using a dichotomous logistic multilevel regression model with three levels of data (faculty, departments, and institutions) and a randomized intercept. All independent variables have been grand-mean centered. Limitations include the non-representative nature of the HERI Faculty Survey, relatively low counts at the departmental level (mean n = 9.5), the wording of the question used for the dependent variable, a lack of data for number of dependents, the use of a proxy for level of departmental resources, and the coding scheme used to identify departments.

SUMMARY OF FINDINGS

Approximately 16% of the variance in productivity lies at the departmental level, with 7% at the institutional level. Results at the individual level are similar to previous studies, in that faculty with full or associate rank and faculty with a Ph.D. have a higher probability of being productive, while older faculty and faculty with a more recent appointment to the institution less likely to be productive. At the institutional level, faculty at Research I and II institutions were more likely to be productive than faculty at doctoral institutions.

Turning to the departmental variables, the average rating for space, proportion of females in the departments, and an interaction term between the two variables are statistically significant (p<.05). Given the complexity of interaction terms with centered data, the effects of the departmental context variables on the probability of a female faculty member being productive are presented in Figure 1.

The figure shows the relationship between the proportion of female faculty in a department and the probability of being productive, at differing levels of average departmental satisfaction with office/lab space. As can be seen, the proportion of female faculty has a strong, positive effect on productivity in departments where satisfaction with space is low. In departments where satisfaction with space is higher, this positive effect is much less, and is even negative in departments where satisfaction is highest.

Figure 1. Relationship between productivity and departmental context
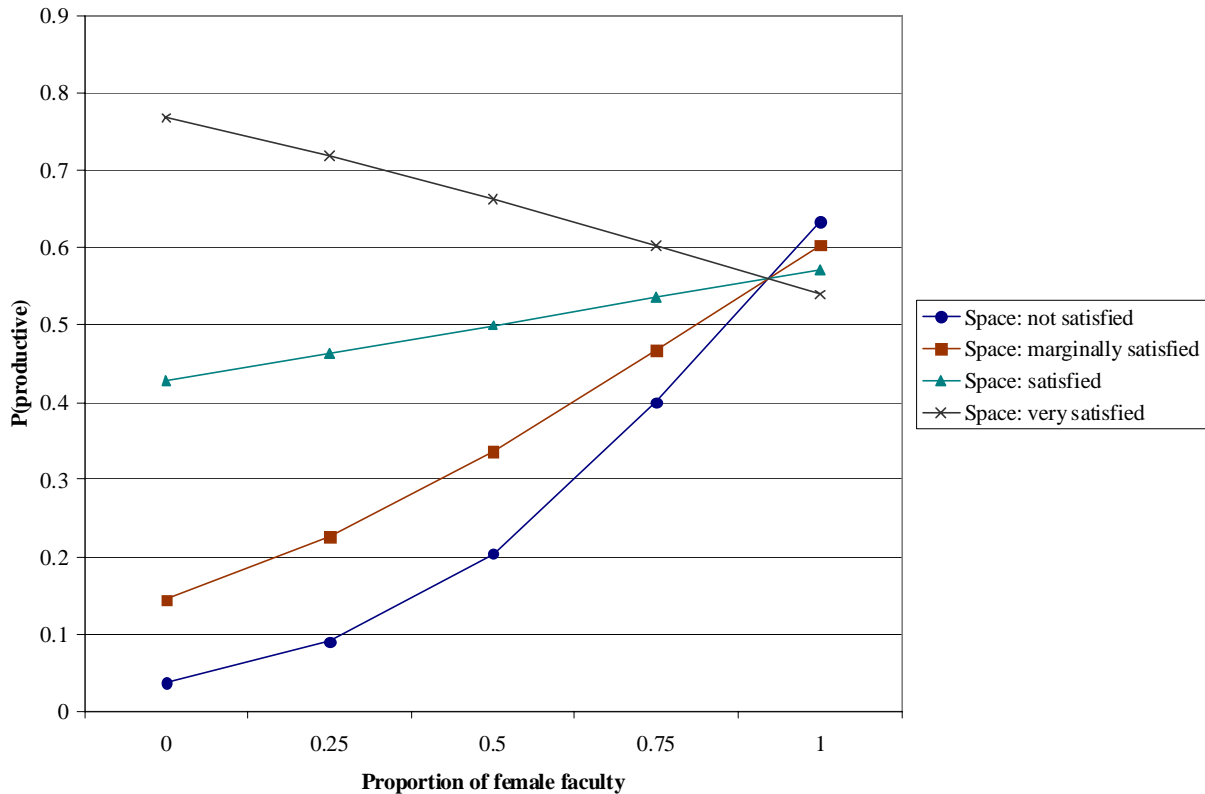
IMPLICATIONS FOR POLICY & PRACTICE

Interestingly, the results presented here indicate that the proportion of female faculty in a department does have an effect on female faculty research productivity, but the size and direction of the effect is contingent on available resources. Female faculty in departments with low levels of resources benefit from a large proportion of female faculty, but this effect is much less (and even negative) when resources are plentiful. The results are more in line with social contact theory than competition theory, as one would expect that competition among female faculty would be less in departments with plentiful resources.

Future research should focus on the role of department context in research productivity, as well as other aspects of academic life. Clearly the academic department is one of the central organizational features of academic work life, yet the vast majority of research on faculty focuses on individual and institutional attributes.

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