Academic Elitism: Career Experiences of First-Generation vs Generational PhD Faculty in U.S. Institutions

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Background

Scientific elitism is divisive, benefiting the elite, and excluding those with less privilege. It is also persistent, supported by a broad pattern of social closure that excludes new members. The more elite are advantaged as evidenced in prestige-based academic hiring networks (Burris, 2004; Clauset et al., 2015; Wapman et al., 2022), and collaboration and citation behaviors (Kozlowski et al., 2022; Nielsen, 2021; Rubin & O'Connor, 2018). Exclusion brings consequences that dimmish the advancement and impacts of science, from reduction in topic and methodological diversity (Nielsen et al., 2017) and novel discoveries (Hofstra et al., 2020).

While "scientific elites" are often defined by their PhD institution (Wapman et al., 2022), productivity (Hagstrom, 1971), and visibility (Nielsen & Andersen, 2021), other personal attributes may contribute to these privileged characteristics. For example, in the U.S., faculty are twenty-five times more likely to have a PhD parent than the overall population, and that this is even greater in more prestigious institutions, points to another important dimension of elitism (Morgan et al., 2022). This same study showed that faculty who are "first generation" (with parents without a college degree) are less likely than the overall population to be in the professoriate. Embedded in these different educational levels are highly varied socioeconomic backgrounds.

Bourdieu's Theory of Cultural Reproduction (1975) describes the transmission of cultural capital, or familiarity with the norms and values of the dominant culture, to explain socioeconomic differences in academic achievement. Similarly, navigating an academic career does not always benefit from transparent policies or norms. The heritability of science careers (Morgan et al., 2022) suggests that faculty with PhD parents, or continuing-generation PhDs, gain insight to academic career norms from their family, while first-generation faculty ack this resource. First-generation faculty and PhD students describe academic culture and norms as exclusionary, citing class-based marginalization (Lee, 2017), lack of belonging (Bahack & Addi-Raccah, 2022), and barriers to career development (Haney, 2015). We ask: to what extent do faculty career experiences vary by social class backgrounds?

Social Class and Career Experiences

In our study, we hypothesize that the cultural capital embodied in social class matters for how faculty experience and navigate their academic careers. We offer three hypotheses that address these impacts on overall perceptions of a chilly climate, how that varies across institutional types (given the vast number and form of U.S. academic institutions), and how access to networks social capital for career-specific advice might mitigate these experiences. First, under-represented groups (women and people of color) in science are more likely to experience a "chilly" work environment as demonstrated through exclusion from decision-making processes and grant opportunities (Hopkins et al., 2002). A chilly climate decreases job satisfaction while increasing intentions to quit (Callister, 2006). If social class is conceived of as another form of majority/minority representation, it may also increase one's experience or perception of exclusion due to differences in norms and values (Stephens & Townsend, 2015).

Second, if one's social class influences how one relates to colleagues, social class may also impact access to professionally-relevant social capital. Instrumental and advice-based resources are accessed through one's professional networks (Lin, 2017). While the cultivation of advice networks may be detrimental for academic

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productivity (Gaughan et al., 2018), these network resources may provide other types of career benefits. We consider how advice networks, particularly ones associated with department-related matters, can buffer one from an isolating and competitive climate. For first-generation faculty who have not inherited tacit knowledge within academia, advice networks may serve as a mechanism to make better sense of academia's norms.

Finally, we also consider the context in which faculty work. Across the vast U.S. academic landscape is a smaller set of highly competitive, productive, prestigious and high-ranked institutions. These institutions attract the most research funding but have also been known to have competitive and often chilly work environments (Roy and Edwards, 2017; Arora-Jonsson, et al, 2023; Fox et al, 2011.) For a range of reasons, faculty with PhD parents may already have a better understanding of the competitive nature of research institutions buffering them from negative consequences such as role ambiguity. In contrast, first-generation faculty may not have this additional form of support and source of knowledge and may perceive a less supportive and inclusive climate at research institutions as compared to those with familial knowledge of this environment (generational PhDs).

Data and Method

We use data from the U.S. National Science Foundation-funded NETWISE II study (n=4,195) which includes academic U.S. faculty from across four disciplines (biology, biochemistry, civil engineering, and mathematics) at more than 400 academic institutions. Institutions were categorized using the U.S. Carnegie Foundation 2000 basic classification system, categorizing institutions as: (doctoral-serving and research-focused) research-extensive and research-intensive and (teaching intensive) master's comprehensive and liberal arts. Because foreign-born status emerged as a distinct characteristic of the first-generation faculty (45.46% of first-generation faculty were foreign-born) in our sample, we included an interaction term throughout all our analysis. Data analysis includes descriptive results and a series of multivariate regression models, with a constructed variable for "chilly climate" as our dependent variable.

Results

For our first hypothesis, results show that first-generation status did predict a chillier climate while continuing-generation PhD status predicted a warmer climate as compared to the other faculty. For our second hypothesis, we find that advice networks may fully mediate the effect between first-generation faculty and climate, while CG PhD status predicted a warmer climate. For our third hypothesis, results showed that research-extensive universities (the most competitive and elite institutions and where first generation faculty are less likely to be employed), first-generation status significantly predicted a chilly climate while CG PhD status significantly predicted a warmer climate.

Conclusion

Our preliminary results demonstrate that social class, measured as parental education, significantly influenced faculty's perception of department climate, and that first-generation faculty feel a chillier climate. Further, because CG PhD status significantly predicted feeling a more inclusive climate, social class not only advantages CG PhD faculty with material resources but also in their ability to relate to their colleagues. Most notably, when examining the effect of parental education on climate within the most prestigious elite institutions (research-extensive), parental education provides additive advantage for CG PhD faculty and disadvantage for first-generation faculty. Due to the collaborative nature of science, these social class differences in climate perceptions may have detrimental effects on first-generation faculty careers such as lower quality collaborations and smaller networks. These preliminary results show evidence of how science disadvantages those from lower social classes through the social environment.

References

Arora-Jonsson, S., Brunsson, N., & Edlund, P. (2023). 11. The construction of competition in public research funding systems. Handbook of Public Funding of Research, 172.

Bahack, H., & Addi-Raccah, A. (2022). PhD first-generation and continuing generation students' academic experience and strengths. Higher Education, 84(4), 909–925. https://doi.org/10.1007/s10734-021-00806-4

Burris, V. (2004). The Academic Caste System: Prestige Hierarchies in PhD Exchange Networks. American Sociological Review, 69(2), 239–264. https://doi.org/10.1177/000312240406900205

Clauset, A., Arbesman, S., & Larremore, D. B. (2015). Systematic inequality and hierarchy in faculty hiring networks. Science Advances, 1(1), e1400005. https://doi.org/10.1126/sciadv.1400005

Gaughan, M., Melkers, J., & Welch, E. (2018). Differential Social Network Effects on Scholarly Productivity: An Intersectional Analysis. Science, Technology, & Human Values, 43(3), 570–599. https://doi.org/10.1177/0162243917735900

Hagstrom, W. O. (1971). Inputs, Outputs, and the Prestige of University Science Departments. Sociology of Education, 44(4), 375. https://doi.org/10.2307/2112029

Haney, T. J. (2015). Factory to Faculty: Socioeconomic Difference and the Educational Experiences of University Professors. Canadian Review of Sociology/Revue Canadienne de Sociologie, 52(2), 160–186. https://doi.org/10.1111/cars.12069

Hofstra, B., Kulkarni, V. V., Munoz-Najar Galvez, S., He, B., Jurafsky, D., & McFarland, D. A. (2020). The Diversity–Innovation Paradox in Science. Proceedings of the National Academy of Sciences, 117(17), 9284–9291. https://doi.org/10.1073/pnas.1915378117

Kozlowski, D., Larivière, V., Sugimoto, C. R., & Monroe-White, T. (2022). Intersectional inequalities in science. Proceedings of the National Academy of Sciences, 119(2), e2113067119. https://doi.org/10.1073/pnas.2113067119

Lee, E. M. (2017). "'Where People Like Me Don't Belong'": Faculty Members from Low-socioeconomic-status Backgrounds. Sociology of Education, 90(3), 197–212. https://doi.org/10.1177/0038040717710495

Lin, N. (2017). Building a network theory of social capital. Social capital, 3-28. Morgan, A. C., LaBerge, N., Larremore, D. B., Galesic, M., Brand, J. E., & Clauset, A. (2022). Socioeconomic roots of academic faculty. Nature Human Behaviour. https://doi.org/10.1038/s41562-022-01425-4

Nielsen, M. W., Alegria, S., Börjeson, L., Etzkowitz, H., Falk-Krzesinski, H. J., Joshi, A., Leahey, E., Smith-Doerr, L., Woolley, A. W., & Schiebinger, L. (2017). Gender diversity leads to better science. Proceedings of the National Academy of Sciences, 114(8), 1740–1742. https://doi.org/10.1073/pnas.1700616114

Nielsen, M. W., & Andersen, J. P. (2021). Global citation inequality is on the rise. Proceedings of the National Academy of Sciences, 118(7), e2012208118. https://doi.org/10.1073/pnas.2012208118

Rubin, H., & O'Connor, C. (2018). Discrimination and Collaboration in Science. Philosophy of Science, 85(3), 380–402. https://doi.org/10.1086/697744

Stephens, N. M., & Townsend, S. S. M. (2015). The Norms That Drive Behavior: Implications for Cultural Mismatch Theory. Journal of Cross-Cultural Psychology, 46(10), 1304–1306. https://doi.org/10.1177/0022022115600264

Wapman, K. H., Zhang, S., Clauset, A., & Larremore, D. B. (2022). Quantifying hierarchy and dynamics in US faculty hiring and retention. Nature, 610(7930), 120–127. https://doi.org/10.1038/s41586-022-05222-x