Texas A&M University ADVANCE Social Science Studies Supplement

The following table summarizes the empirical studies that the Texas A&M ADVANCE Social Science team will conduct. **All studies address critical gaps in the literature** on implicit bias and well-being. Additional details about each study are provided in the subsequent text.

<table>
<thead>
<tr>
<th>Gaps Addressed in Research Literature</th>
<th>Study Design and Participants</th>
<th>Example Testable Hypotheses</th>
<th>ADVANCE Activity Focus</th>
</tr>
</thead>
</table>
| Impact of implicitly biased behavior toward female faculty by students and staff on the well-being of women faculty | 1a. Longitudinal survey of faculty perceptions of interactions with staff and students  
1b. Content analysis of students’ teaching evaluation comments | Institutionalization of gender-bias workshops will decrease gender-based differential treatment by staff and students and increase the well-being of women STEM faculty.  
STEM women faculty will receive less disrespectful comments on their teaching evaluations after the institution of gender bias material into student orientation activities. | Climate Change |
| Impact of development and training opportunities tailored to women faculty on the negative effects of implicit gender-based biases. | 2a. Quasi-experimental study of assistant professors’ mentoring experiences and well-being outcomes  
2b. Case study of associate and full professors in rotating administrator positions | STEM women faculty who engage in success circles aimed at acknowledging their multiple demands (e.g., as a faculty member and parent) will report higher mentoring well-being benefit than women STEM faculty who engage in traditional mentoring.  
STEM female faculty who participate in a rotating administrator program report increases in self-efficacy and involvement and, in turn, higher well-being. | Success Enhancement |
| Nature and level of the relationship between implicit bias toward women and minorities, selection/promotion decisions, and well-being | 3a. Quasi-experimental study of administrators’ selection & promotion decisions  
3b. Longitudinal survey of post-docs and advanced graduate students | Department workshop attendees will allocate resources more equitably to hypothetical job candidates following training than control group participants.  
Workshop attendees will report higher levels of self-efficacy for negotiating and, in turn, higher levels of well-being than non-workshop attendees. | Recruitment and Retention |
The Importance of Implicit Bias

One of the most important factors affecting the success of women and minorities in occupational contexts is implicit bias. Implicit bias refers to non-conscious negative expectations and stereotypes that influence our judgments of others. Research shows that all people, regardless of the social groups they belong to, hold such biases to some extent and that they often conflict with consciously held attitudes (Fiske, 2002; Nosek, Banaji, & Greenwald, 2002). For example, people often expect women to be less committed to work and more dedicated to family than men or for men to be more competent and productive than women; these expectations stem from long-held societal stereotypes that women are naturally better at taking care of children and therefore belong in the home and that men are best served in the world of work (Valian, 1998).

Several empirical studies have examined the negative effects of implicit biases toward women and minorities in applied contexts. For example, Steinpreis, Anders, and Ritzke (1999) examined whether university professors would rate job application packages for an assistant professor position differently if they were ostensibly received from a male or female applicant. The application packages were identical with one exception: the name of the applicant (one was clearly male and one was clearly female). Steinpreis et al. found that both male and female professors preferred the male candidate over the female candidate, even though there were no differences in their application materials. In a similar study, Bertrand and Mullainathan (2004) found that applicants with African-American sounding names received fewer calls for job interviews compared to Whites with identical resumes. Correll, Benard, and Paik (2007) found that when evaluating identical resumes from “mothers” and “nonmothers,” evaluators rated mothers as less competent and less committed to paid work; mothers were also less likely to be recommended for hire and promotion and received lower starting salaries than nonmothers. In contrast, “fathers” were seen as more committed to their work and were offered higher salaries compared to “nonfathers” and women. Comparable results have been found for studies examining the evaluation of identical resumes from heterosexual and sexual minority applicants (Weichselbaumer, 2003), students’ credibility ratings of “gay” and “straight” professors (Russ, Simonds, & Hunt, 2002), and identical post-doctoral fellowship submissions from male and female applicants (Wenners & Wold, 1997). In the latter study, women had to be nearly three times more productive than men to receive the same reviewer rating as the average male candidate. Together, this research demonstrates the critical role that implicit biases can play in the recruitment, promotion, and evaluation of women and minorities.

Although research has examined the role that implicit bias toward women and minorities plays in their occupational success, we know little about how such biases affect the well-being of women and minorities, especially those in university faculty positions. The purpose of the ADVANCE social science studies is to examine the link between implicit bias and well-being for STEM women faculty.

Contributions of Proposed Social Science Studies

The ADVANCE social science studies contribute to past research on implicit bias in applied contexts in at least four important ways. First, the proposed studies are largely based on the Psychologically Healthy Workplace (PHW) theoretical framework. Based on this framework, we conjecture that transforming Texas A&M into a more PHW by actively addressing and combating the role of implicit bias in the life of women STEM faculty will improve their psychological (e.g., mental health), physical (e.g., physical health), and occupational (e.g., job satisfaction) well-being. As such, the proposed studies are perhaps the first to explicitly investigate well-being outcomes associated with ADVANCE activities focused on lessening the effects of implicit bias toward women and minority STEM faculty. Indeed, empirical research has demonstrated that PHW practices lead to clear well-being benefits for employees as well as organizations (Grawitch, Gottschalk, & Munz, 2006; Grawitch, Ledford, Ballard, & Barber, 2009; Grawitch, Tares, & Kohler, 2007; Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2004), but it remains unclear how such practices can uniquely impact women in STEM.
Second, the proposed studies examine why lessening implicit biases may lead to positive outcomes for women STEM faculty in two ways. First, the proposed studies examine the cognitions and behaviors of perpetrators of prejudiced acts aimed at women STEM faculty. By studying the effects of implicit bias training and other programs aimed at reducing implicit bias, we can determine how implicit bias is reduced. Second, this research will identify important psychological mechanisms (e.g., such as improved self-efficacy, which refers to confidence in one’s ability to perform specific tasks) that mediate the effect of reduced implicit bias from others in the academic workplace on women STEM faculty’s well-being.

Third, the studies examine under what circumstances or conditions implicit biases are more or less harmful (e.g., for certain women faculty of a specific race, sexual orientation, or particular STEM field). For all studies, the data and results for multiple self-reported characteristics including race, ethnicity, sexual orientation, disability, foreign-born or foreign-trained, parenting status, and sex will be tabulated (disaggregated) to the fullest extent possible.

Fourth, we examine aspects of bias and well-being using a variety of participants, research designs, measures, and analytic techniques. For example, recognizing that all people within the university contribute to the climate, the studies will target different populations (e.g., faculty, staff, students). In addition, an array of research methodologies (e.g., experiment, survey, case study) and sources of data (e.g., teaching evaluations, curriculum vitae [CVs], survey responses) are proposed. Where appropriate, questionnaires that have been widely used in the extant literature (e.g., measures of self-efficacy, mentoring satisfaction, turnover intentions) will be included in our studies. Multiple data analysis strategies including both quantitative (ANOVA, MANOVA, multiple regression, structural equation modeling, and hierarchical linear modeling) and qualitative (content analysis, grounded theory, ethnography) approaches will be used. Together, findings from the proposed studies will contribute to the broader social science literature on implicit bias and well-being and also to research on climate, discrimination, incivility, sexism, racism, self-efficacy, mentoring, negotiation, work-life balance, and developmental assignments.

THE STUDIES

Study Focus: Climate Change

Research has documented that female faculty are treated differently than their male counterparts by university students (Grauerholz, 1989; Heckert, White, Gulinson, Schnarre, & Gannon, 1999; Kelly & Stanley, 1999), and the 2006 Texas A&M Faculty Campus Climate Survey revealed these research findings apply to Texas A&M as well. Thus, our first set of studies focus on the influence of student comments and behavior (both in the classroom and on teaching evaluations) on faculty well-being. We will also examine the relationship between perceived staff gender bias and faculty well-being.

Study 1a will consist of climate surveys assessing STEM women faculty’s perceptions of personal and vicarious experiences of disrespect from undergraduate students and staff before and after the Student Diversity Workshops and Staff Development Workshops are instituted. We will then compare the frequency with which women faculty experience gender- and race-based differential treatment from students and staff and how these experiences affect faculty well-being. Measures assessing these constructs (i.e., personal and vicarious experiences of gender and race-based disrespect, well-being) were included in the 2006 and 2009 Faculty Campus Climate Surveys and will be included in subsequent climate surveys. These survey data will allow us to assess the well-being benefits for STEM women faculty of more respectful, less biased student and staff behavior. A comparable subsample of STEM men faculty’s experiences and well-being before and after the program will also be analyzed for comparison.

Study 1b will consist of a qualitative content analysis of undergraduate students’ open-ended comments on all possible STEM women faculty’s teaching evaluations before and after material on gender bias is incorporated into student orientation activities. Beginning in the fall of 2009, teaching evaluations are
completed online and compiled at a centralized office. Specifically, undergraduates’ open-ended responses on teaching evaluations will be analyzed with ATLAS/ti software for negative and positive themes and explicitly inappropriate statements before and every year after the program initiation. We will also link the frequency of students’ positive and negative comments to women faculty’s well-being assessed via climate surveys. A parallel subsample of STEM men faculty’s teaching evaluation comments before and after the program will also be analyzed for comparison purposes.

**Study Focus: Success Enhancement**

*Study 2a* will follow all newly hired Texas A&M assistant professors (on average 99 per year) who agree to participate in a mentoring program. Each year’s new cohort will be randomly assigned to either the ongoing Dean of Faculties traditional mentoring program (i.e., protégés paired with a more senior colleague) or the ADVANCE Success Circles (i.e., protégés assigned to a group based on research interests, hobbies, and/or common demographic characteristics such as children, ethnic background). Well-being, self-efficacy, indicators of success as coded from participants’ CVs (e.g., publications), social networks on campus (i.e., number of collaborators and informal relationships with faculty), and multiple mentoring criteria including protégé satisfaction with mentor (Ragins, Cotton, & Miller, 2000), mentor’s perception of mentorship quality (Allen & Eby, 2003), and satisfaction with mentoring program (Ragins et al., 2000) will be assessed annually over the course of the study. Comparisons will be made between the mentoring programs; our analyses will also take a separate look at the experiences and outcomes for STEM women specifically. This study will respond to calls in the mentoring literature on specific matching criteria and multiple indicators of mentoring program success (Blake-Beard, O’Neill, & McGowan, 2007) as well as sources of self-efficacy for women STEM faculty (Zeldin, Britner, & Pajares, 2008; Zeldin & Pajares, 2000).

*Study 2b* will be a series of case studies examining the experiences of women STEM faculty who participate in the Rotating Administrator Program. This program builds on developmental work assignments called “stretch assignments” (McCauley, Eastman, & Ohlott, 1995) which result in “framebreaking” or experiences that lead an individual to profound change (London, 1988). It is believed that learning and change are most likely to occur when there is a mismatch between an individual’s current knowledge, skills, abilities, and other characteristics and the job requirements (i.e., the faculty member is “stretched” to achieve the new assignment’s goals). All Rotating Administrator Program participants will be interviewed before they begin the assignment, during their administrative assignment, and after the assignment ends. Participants will be asked to reflect on the positive and negative aspects associated with participating in the program, the skills and abilities they developed during the process, how participation affected their well-being, and ways the program could be improved. Prior to beginning the program, participants will be asked to describe their expectations of what the assignment will be like, how their lives (work and home) will change, and their beliefs about administration. They will also be asked to reflect on these themes—and the answers they originally provided—in interviews during and following the program. Interview transcripts will be coded for common themes among the participants with an eye toward assessing those aspects of their experiences that align with PHW components. Qualitative analyses via ATLAS/ti software will reveal strengths of the program and areas in need of improvement with implications for future assignments. The goal of this study is to examine the degree to which participants experienced an increase in self-efficacy for leadership roles, felt empowered, felt they grew professionally, felt included in university decision-making, and experienced higher levels of well-being rewards as a result of participating in the program. To obtain a complete picture of the program’s efficacy, we will also conduct semi-structured interviews with other administrators in the same division or college to assess their perceptions of women in administration before and after the program.
Study Focus: Recruitment and Retention

Study 3a will assess the effect that implicit bias training has on university administrators who are involved in the negotiation of faculty offers and contracts. Research has shown that female faculty receive fewer resources than male faculty (MIT, 1999). Before training, at the end of training, and one month post-training, administrators will be asked to complete a job offer for hypothetical job candidates (based on application materials such as CVs, letters of recommendation, etc.) in which they denote specific resource allocations (salary, lab space, start-up funds, teaching load, etc.). Within the application materials, we will manipulate sex, race, and parental status through subtle cues (e.g., “Parent Advisory Council for the University Childcare Center”) on the hypothetical CVs. We predict that administrators who participate in the training will allocate resources more equitably regardless of sex, race, or parental status after the training. A within-subjects design comparing resource allocations before and after training will be conducted.

Study 3b examines the extent to which negotiation skill training included in the Workshops for Future Women Faculty enhances women STEM faculty’s self-efficacy for negotiation. Recognizing the historical disparity between men and women in negotiating skills and the adverse effects this disparity has on job resources (e.g., salary and start-up funds [Stuhlmacher & Walters, 1999; Walters, Stuhlmacher, & Meyer, 1998]), this longitudinal study will examine the extent to which negotiation training bolsters women’s self-efficacy for negotiating which in turn leads to more negotiating behaviors which result in more job resources and higher well-being. We will request copies of final job offer letters from all workshop participants (N=50) and compare resource allocations (salary, lab space, start-up funds, teaching load, etc.) for those who participate in the workshop to a matched control group (STEM post-docs recruited from comparable universities who pursue academic positions but do not participate in the workshop from Texas A&M. A matched sample of approximately 50 male post-docs will also be recruited. Samples will be matched on STEM field and other job qualifications (e.g., publications).

Another outcome of interest is work-life balance. Building on empirical research demonstrating the relationship between realistic job previews and a number of work-related outcomes including socialization and turnover (Phillips, 1998), workshop participants will be provided with a realistic job preview of a faculty member. As a part of this, a panel of successful women STEM faculty will share strategies they employ to balance work and life. The impact of this workshop on subsequent reports of work-life balance will be assessed in at least two follow-up annual surveys and analyzed controlling for known predictors of work-life conflict (e.g., work and family demands). This research will contribute to the broader literature on work-life balance training and interventions.

Research Dissemination

All studies will be conducted with the highest level of methodological rigor to enhance our ability to publish the findings in the most highly regarded peer-reviewed journals. The results of these studies will provide both theoretical and practical implications for institutional transformation, organizational climate, and the advancement of women in STEM fields. Manuscripts based on these studies will be presented at national and international conferences and published in top-tier, peer-reviewed journals such as the Journal of Women and Minorities in Science and Engineering, Journal of Diversity in Higher Education, Journal of Career Development, Journal of Vocational Behavior, and Journal of Applied Psychology.

Social Science Team Members

The Texas A&M ADVANCE social science team is comprised of three social science researchers with relevant expertise. Dr. Stephanie Payne, Associate Professor of Psychology, conducts research on organizational change, work-life issues, recruitment, and mentoring. Dr. Kathi Miner-Rubino, Assistant Professor of Psychology and Women’s and Gender Studies, has expertise in workplace climate and interpersonal workplace mistreatment toward women and minorities in applied contexts, including STEM fields. Dr. Mindy Bergman, Associate Professor of Psychology, specializes in occupational health, with an emphasis on organizational climate, well-being, and racial and gender equity at work.
References for Social Science Studies Supplement


