

The Gendering of Interdisciplinary and Collaborative Scholarship in Ten Private, Mid-Sized Research Universities

Diane Hyland PhD, Jackie Krasas PhD, Marci Levine PhD, Wendy Abrantes MA

ABSTRACT

- STEM faculty from ten private, mid-sized, research universities were asked to complete an online survey assessing their perceptions of the work environment.
- The goal of the survey was to collect data on gender and collaborative and interdisciplinary (ID) research. Despite the essential focus of agencies, such as the NSF, on both interdisciplinarity and increasing the participation of women, there is still inadequate knowledge about whether or not involvement in ID research and programs facilitates the career success of STEM faculty, particularly women.
- Some research suggests that women, compared to men, may be more attracted to collaborative and/or ID research, but may actually engage in less collaborative and ID research due to lower levels of access to networks that foster this type of research. (Rhoten & Pfirman, 2007; Bear & Woolley, 2011)
- This survey assessed the gendering of collaboration and interdisciplinarity by comparing the research preferences, research activity patterns, and self reported productivity of women and men across these universities.

METHODS

- 10 private, mid-sized, research universities in this study: Case Western Reserve University, Catholic University of America, Lehigh University, Rensselaer Polytechnic Institute, Rice University, Southern Methodist University, Tufts University, Tulane University, University of Denver, University of Rochester.
- STEM departments included: engineering, physical, biological and environmental sciences, mathematics, economics, psychology, and sociology.
- For each woman STEM faculty member, a best matched male peer was identified within the same department based on rank, year of highest degree, and year of hire.
- STEM faculty (women: n=168, tenured=60.7%, mean years since PhD=16.5 y; men: n=125, tenured=65.6%, mean years since PhD=18.4 y; overall response rate of 41%) completed an online survey assessing their perceptions of and participation in collaborative and ID research as well as more general perceptions of the work environment. Distribution of participants by disciplinary division is presented in the table below.
- Analysis of variance was used to test for effects of disciplinary division (engineering, natural sciences including mathematics, and social sciences), rank (pre-tenure and tenured), affiliation with an ID center/program, and gender. In all subsequent tables, values reported are means and all effects are significant at $p < 0.05$ level.

Number of Women and Men in Study Sample by Division

	Women	Men
Engineering	30	27
Natural Sciences	74	49
Social Sciences	64	48
Not Specified		1
TOTAL	168	125

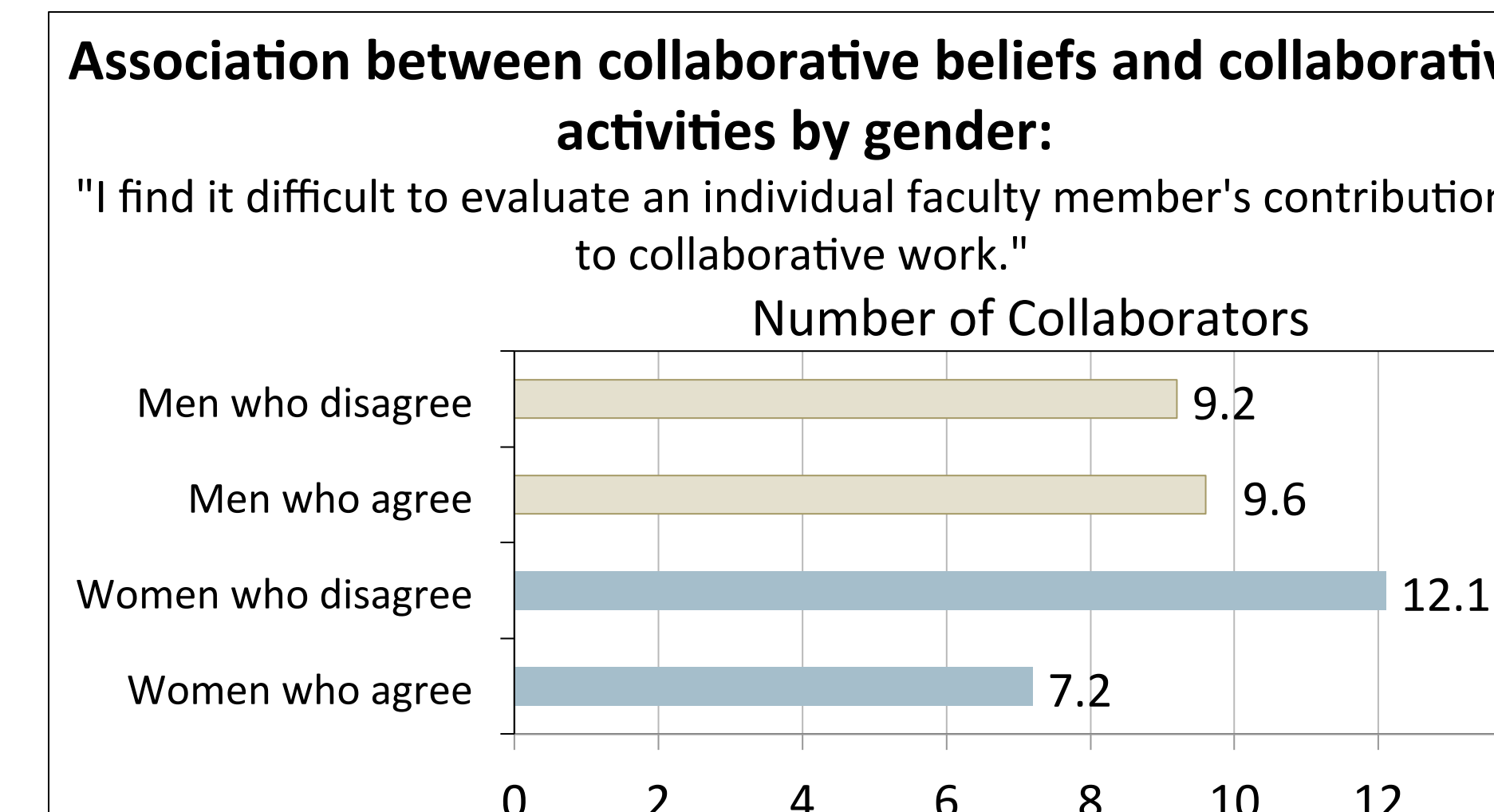
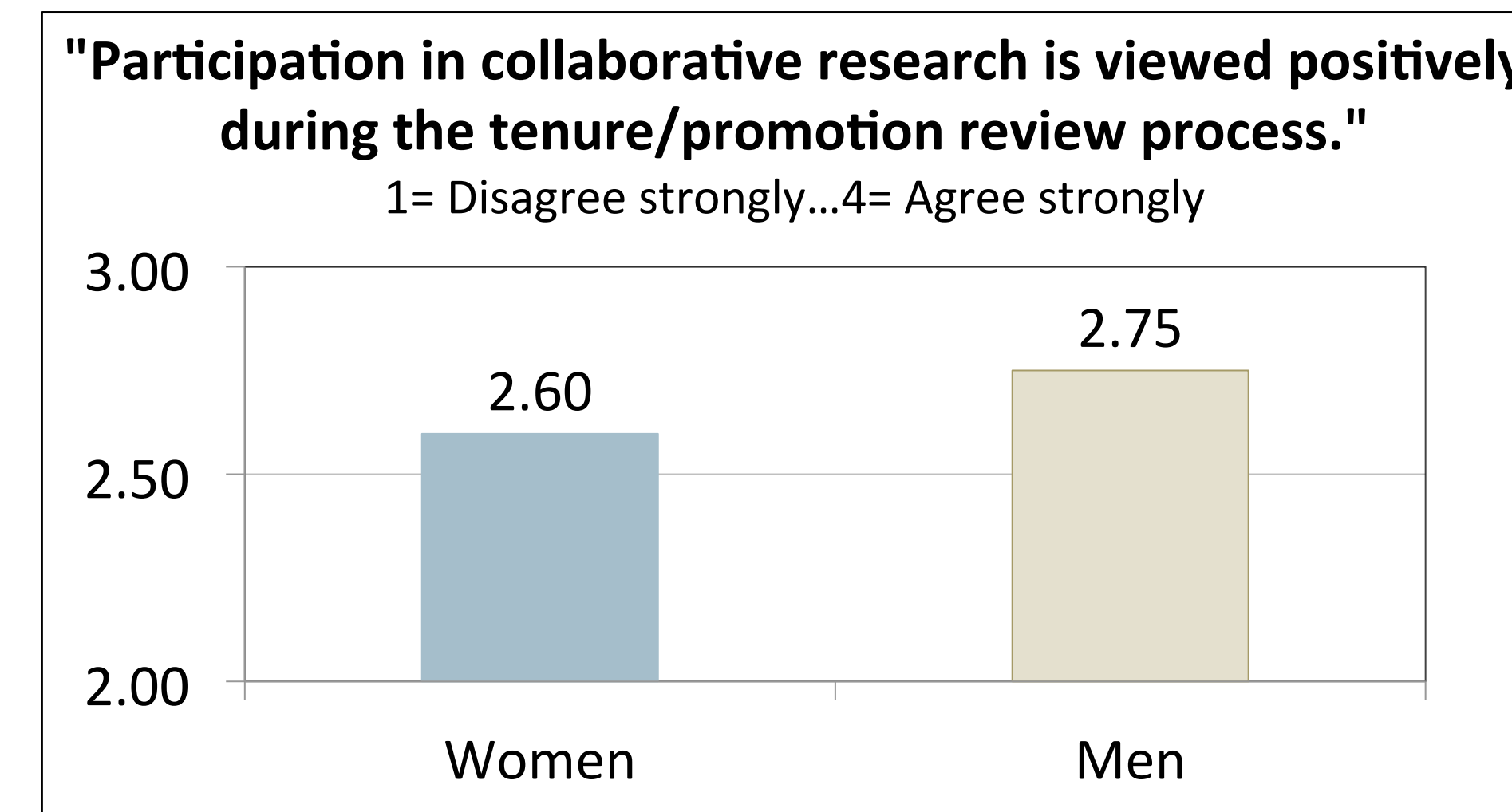
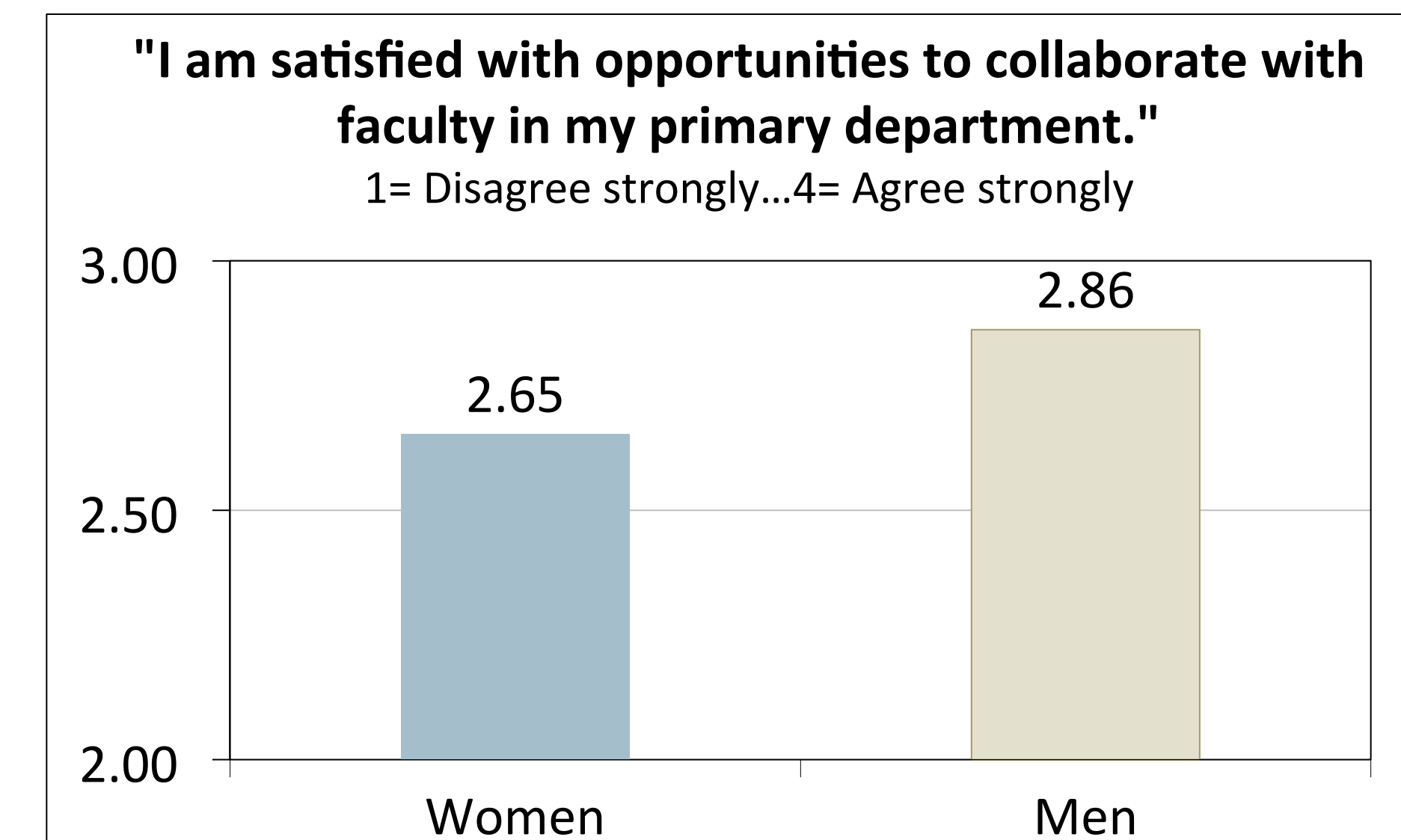
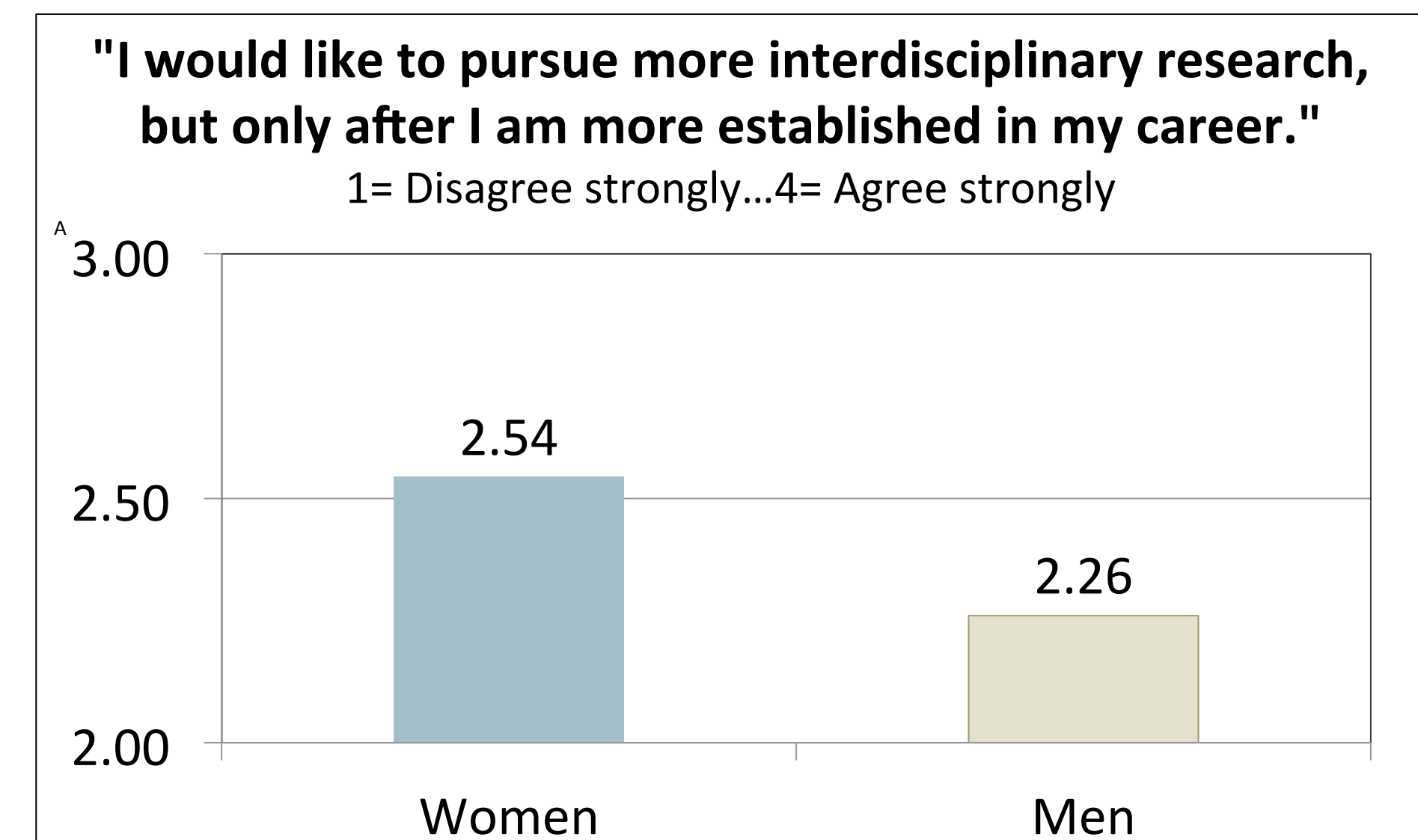
1. Are there gender differences in self-reported levels of collaborative and interdisciplinary research?

No gender differences in the following collaborative research activities:	Women	Men
% who report primary mode of scholarship is collaborative (rather than solo)	57.0%	57.9%
% of total publications (articles, chapters, and books published during the last three years) that are co-authored	69.6%	69.5%
Total # of collaborators (inside department, outside department, and outside institution) over last 3 years	9.96	9.20

No gender differences in the following interdisciplinary research activities:	Women	Men
% who report an affiliation with an interdisciplinary center or program	47.6%	42.4%
% who report primary mode of scholarship is interdisciplinary (rather than disciplinary).	39.4%	43.0%
Mean % of publications that are in journals outside your primary discipline	19.7%	20.1%
Frequency of ID activities such as reading journals and attending conferences outside primary field.		

Conclusion 1: No gender differences were found in levels of self-reported collaborative and ID research activities. Is it possible women perceive constraints that limit the higher level of activity they desire?

2. Are women STEM faculty more attracted to collaborative and/or interdisciplinary research? Do they perceive fewer opportunities to participate in this type of research? Do they perceive more institutional constraints on this type of research? There is a significant main effect of gender for these items.

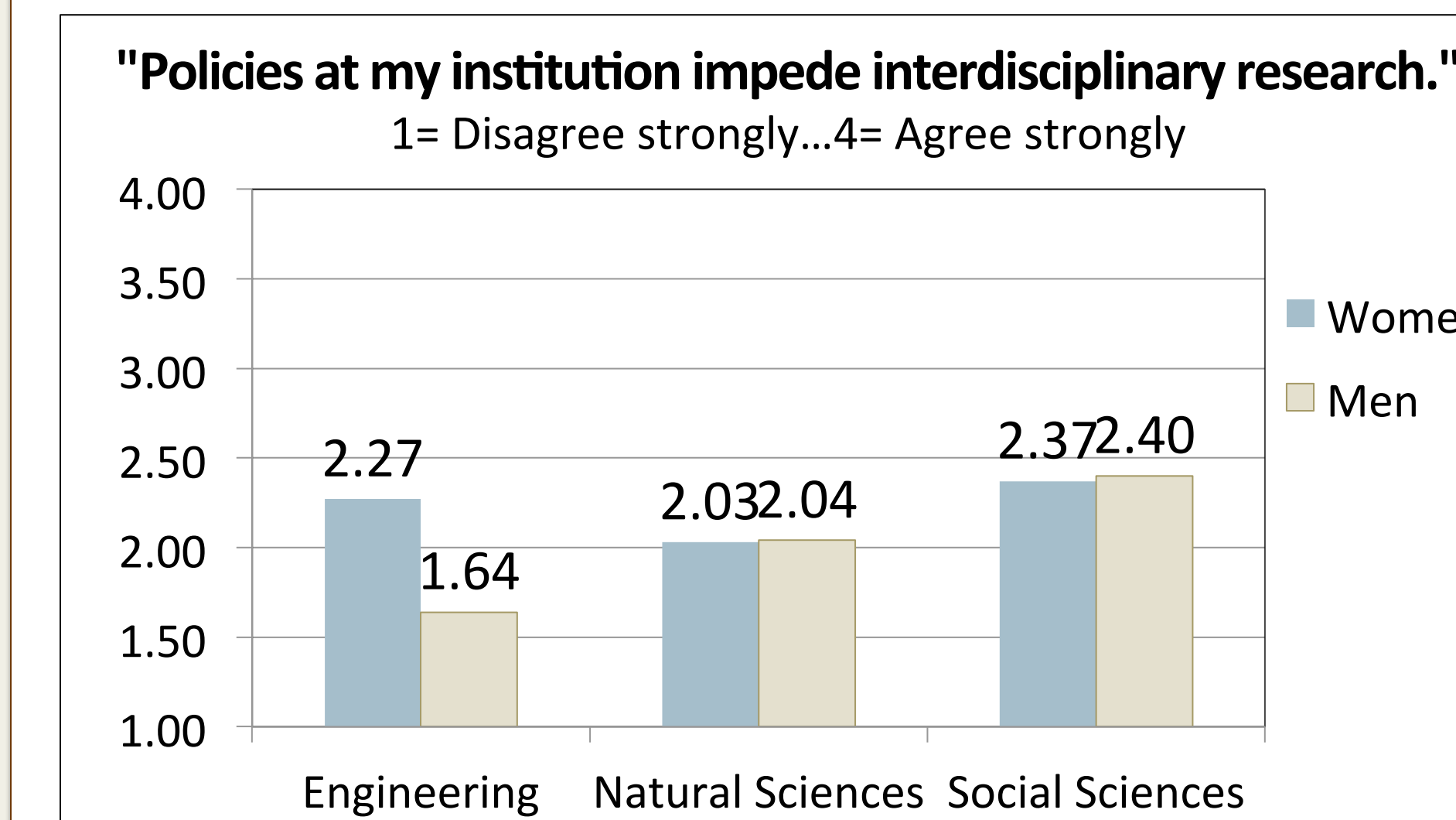
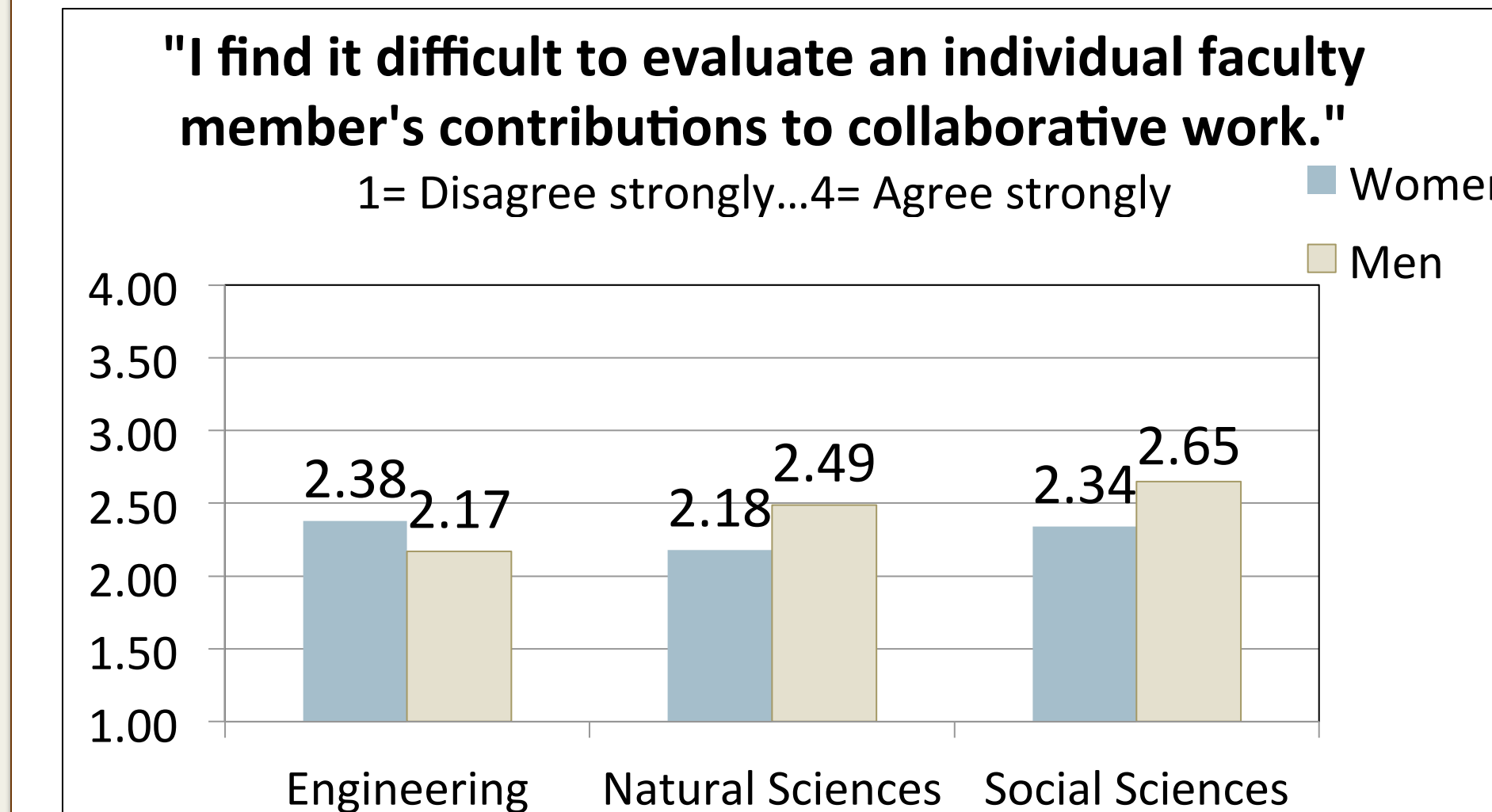


Conclusion 2: Women express a desire for additional opportunities for collaborative and interdisciplinary research, but they also perceive greater institutional constraints. For example, women, but not men, who believe collaborative work is difficult to evaluate, actually have fewer collaborators.

CONCLUSIONS & IMPLICATIONS

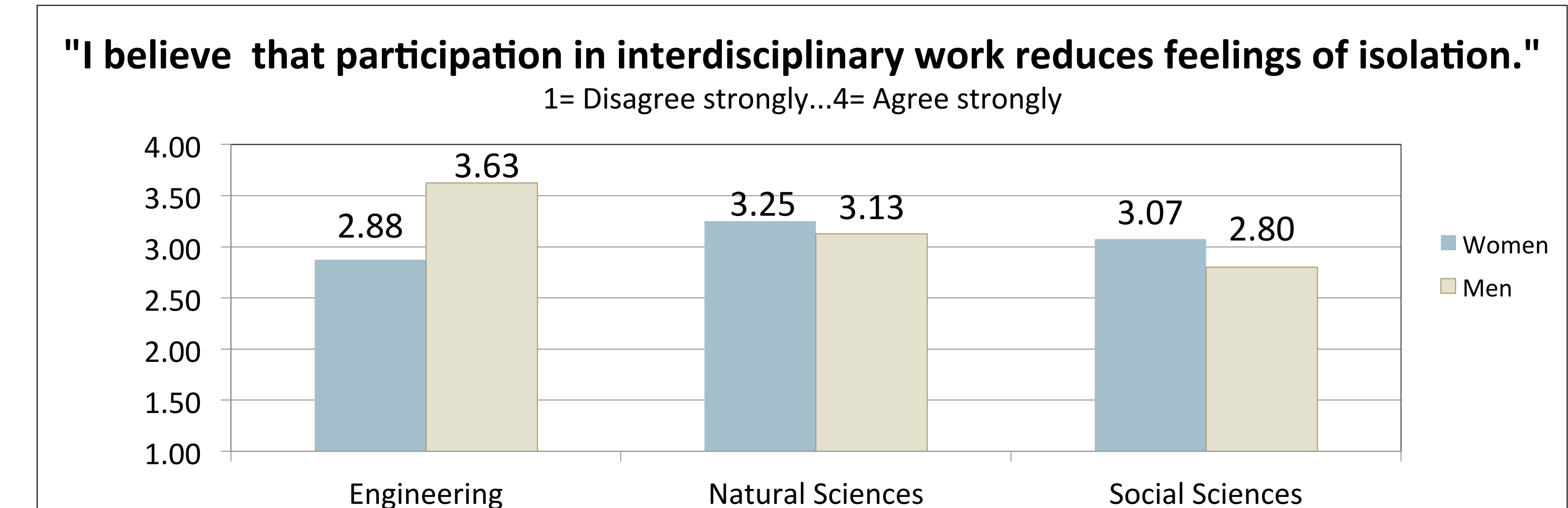
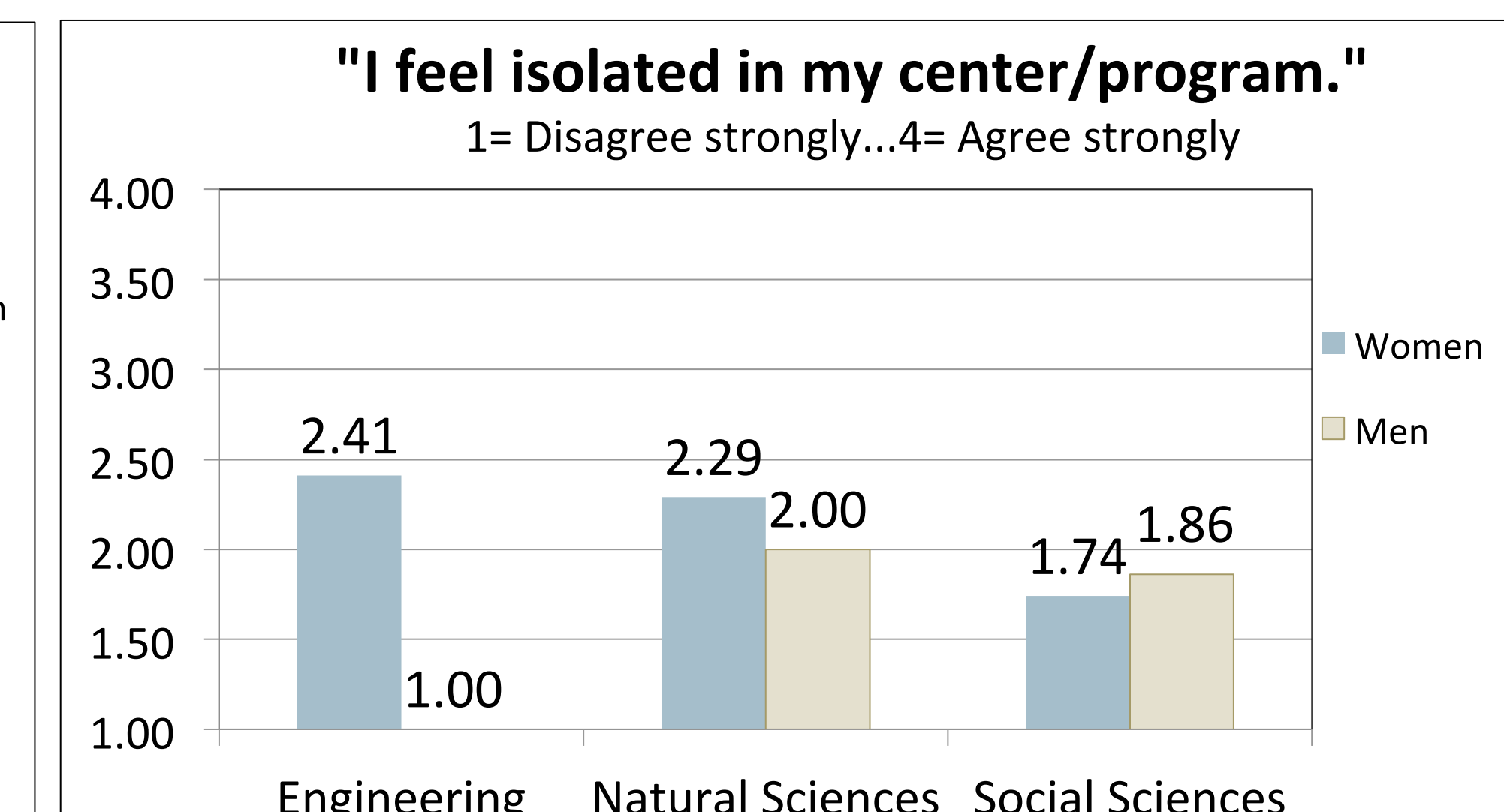
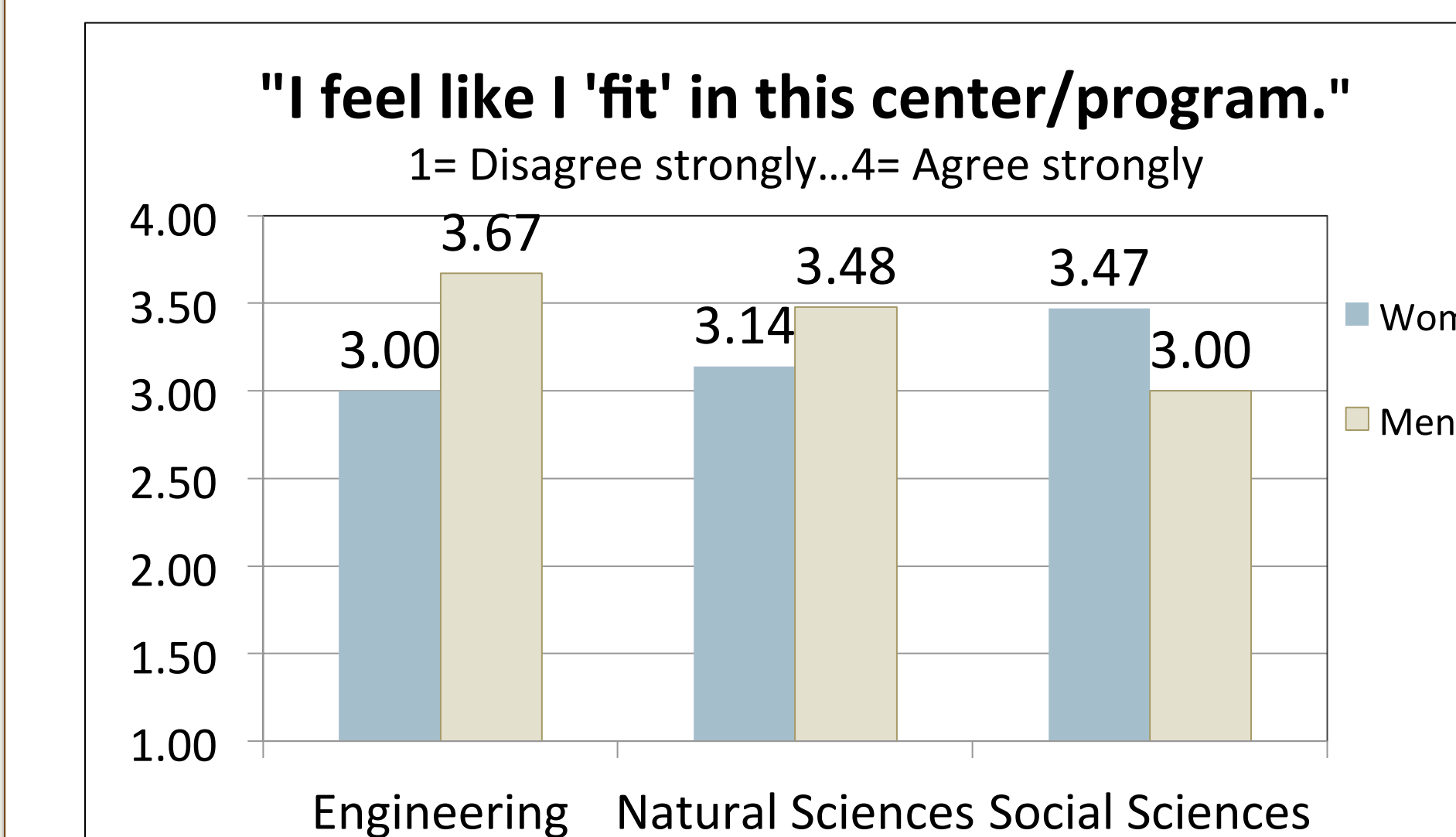
- It is hard to say whether women are more intellectually attracted to collaborative and ID research because many women, especially those in engineering, seem to be cautious about how these choices impact on career progression. In other words, even if you are drawn to this type of work, practical concerns can limit involvement.
- At least for women in engineering, affiliating with an ID center is not necessarily an effective way to mitigate departmental climate issues.
- Simply providing access to potential collaborators is not sufficient. Institutional transformation must ensure that policies and procedures promote unbiased evaluation and appropriate recognition of collaborative and ID research. Faculty should perceive that the institutional culture at all levels truly supports collaborative and ID research.

3. Do the perceptions and experiences of women STEM faculty vary by disciplinary division? YES. For these items there were significant gender x disciplinary division interactions.



Conclusion 3. Women in engineering may experience greater feelings of isolation and more concerns related to departmental and institutional culture, which may dampen their pursuit of collaborative and interdisciplinary research.

4. Does participation in an interdisciplinary center or program influence these perceptions/experiences? Gender x disciplinary division effects were significant. (n=80 women, 52 men)



Conclusion 4: At least for women in engineering, affiliating with a center is not necessarily an effective way to alleviate isolation at the department level.