

# EXECUTIVE SUMMARY

## Summative Report on the Earth Science Women's Network (ESWN) NSF ADVANCE PAID Collaborative Award (2009-2013)

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### 1. Introduction: Purpose, Scope and Structure of this Report

This report serves as a final report on activities conducted by the Earth Science Women's Network (ESWN) under their NSF ADVANCE PAID collaborative awards (9/09-8/13). The stated purpose of the grant was to promote career development, build community, and facilitate professional collaborations for women in the Earth Sciences. In the report, we seek to

- Describe ESWN members, their needs and interests
- Document ESWN's main activities under the PAID grant
- Summarize known outcomes for members of these activities to date
- Characterize aspects of women's work situation, professional and personal perspectives that are gendered and that help to explain how and why the network benefits them
- Describe aspects of ESWN's operations and governance
- Identify challenges and opportunities for the future.

The report draws on several bodies of data, including surveys of ESWN members (women only) in 2010 (491 responses) and 2013 (765 responses); a survey of ES\_JOBS list members (women and men, 171 respondents); surveys of participants in intensive workshops held in 2011, 2012, and 2013 (176 respondents); interviews and focus groups; documents; listserv and web center traffic; participant observation and personal conversations. The report is structured as follows:

- Sections 2 and 3 describe the network's members and activities.
- Sections 4, 5, and 9 report outcomes for individuals of their participation in particular activities and in the network as a whole. These outcomes can be argued as deriving from the network's activities in two ways: directly, because individual respondents reported gains as stemming from their network participation, and indirectly, by examining relationships between the extent of participation and the degree of gain.
- Sections 6-8 report on several indicators of members' career status. These include members' perceptions of their own career progress and success, the relation between their professional and personal lives, and their workplace environment and climate—all typically used in organizational climate surveys, but here applied to diverse workplaces within the discipline of Earth science. These indicators do not directly reflect the impact of ESWN but speak to the career challenges that women geoscientists face and the ways in which these are gendered.
- Sections 10-12 offer evaluative observations and analysis of the network's operations: e-mail listserv and web site traffic, governance and member involvement, and challenges and opportunities for the future.

- Section 13 and the Appendix describe our study methods and the strengths and limitations thereof.

## **2. Characteristics of ESWN Members**

ESWN members' demographic characteristics were largely stable from 2010 to 2013. Majorities of ESWN members have a Ph.D., work at Ph.D.-granting universities, work in the U.S., are white, married, between the ages of 31-40, and have college-educated parents. Roughly half live in dual-career households. Roughly half are graduate students or postdocs and half work as faculty or researchers. ESWN members represent a wide range of scientific disciplines, with atmospheric science most highly represented at approximately one third of members. Over 20% of members are international (work in countries outside of the U.S.).

Members identify a range of professional development needs for advancement in their careers. Needs common to all career groups include building more extensive networks in my field, and developing a long-term career plan or goals. Other needs were more strongly identified by certain groups; for example, faculty were much more likely to identify needs for skills in time management and management of people and budgets, while graduate students identified needs for oral and written communication skills and deeper knowledge in their discipline.

## **3. Activities and Participation**

ESWN has about 1500 members, based on web center registration as of September 2013. This is a ~70% increase since September 2009. Discussion forums and groups on the web center are the main vehicles by which members interact. ESWN has also sponsored face-to-face events, including intensive workshops of 2.5 days in length, mini-workshops of 1-3 hours, town halls and receptions at major meetings. In 2011-2013, three NSF-funded intensive workshops reached 50-60 members each; an additional intensive workshop was held in Norway by the ESWN European board. A dozen mini-workshops have been held at meetings of the American Geophysical Union (AGU), European Geophysical Union (EGU), and Geological Society of America (GSA). ESWN-sponsored receptions and member-initiated informal gatherings have been organized at many scientific meetings across disciplines.

ESWN has partnered with AGU to cosponsor meeting activities for several years; AGU also hosts the ESWN web center under a 2012 memorandum of understanding. ESWN has also made some organizational connections with the Association for Women in Science (AWIS) and Association of Women Geoscientists (AWG).

## **4. Outcomes of Intensive Workshops**

ESWN created three workshops designed to meet the professional development needs identified in the 2010 member survey. In 2011, 48 women participated in a workshop entitled "Developing Your Research Identity." In 2012, 60 women participated in a workshop on "Skills for Networking and Communication." In 2013, 68 women participated in a workshop entitled "Building Leadership and Management Skills for Success." Each 2.5-day workshop was professionally facilitated by two outside facilitators.

Surveys were used to evaluate the effectiveness of these intensive workshops. On both pre- and post-workshop surveys, members evaluated their level of accomplishment in several domains of career development. Analysis of the mean pre/post differences on these items revealed the largest improvements on items most closely related to the content of the workshops, while

survey items on areas that were not emphasized in the workshops showed little or no change. This suggests that the survey items are sensitive to workshop content and support the validity of the results. On the post-workshop survey, members also rated their level of perceived gain on potential workshop outcomes. We deliberately re-used many of the gains items asked on the 2010 member survey, so that we could compare workshop and general network outcomes.

Analysis of mean pre/post changes for participants in all three workshops shows that members reported high growth in areas of career development that were targeted by the workshop presenters. For the 2011 workshop on research identity, these areas of greatest improvement centered on goal clarity, motivation and preparedness to pursue one's goals, and career planning. For the 2012 workshop on networking, the high-growth areas focused on analyzing one's career needs and opportunities and making use of professional networks to meet these career needs. For the 2013 workshop on leadership and management, the greatest improvements were in supervisory communication skills. Areas of low growth are useful in showing that members were rating their accomplishment in a personally meaningful and overall discriminating way: that is, they did not report blanket levels of high achievement, but discriminated among domains where they perceived greater or lesser growth. These items thus help to validate reports of higher growth in other domains.

The means for common gains-related items administered on post-workshop surveys for all three workshops show a similar pattern to the pre/post changes in career accomplishment. Although the gains items appear to be somewhat less sensitive to workshop content than the pre/post items, there are striking, content-specific differences on a few items. For example, high gains in 'confidence in building professional relationships' and 'expansion of your professional network' relate to the workshop content in 2012. Overall, the gains reported from face-to-face workshops are notably higher than those for general network participation. This reflects the lower impact of electronic vs. face-to-face learning, the supportive collegial atmosphere of workshops, and the fact that workshops are accessible to only a subset of members.

Across all three workshops, participants reported the following features as important:

- Openness and approachability of both presenters and participants
- Warm, friendly, and empowering atmosphere
- Opportunities to network and develop a community, and to make new friends
- Talking to other women who are going through or have gone through similar experiences, since fellow participants represented a variety of career stages
- Workshop content presented as specific to women
- The effectiveness of the facilitators and activities.

## **5. Outcomes of General Network Participation**

Several items on the 2010 and 2013 member surveys probed ESWN members' gains from participating in the network. The areas of greatest gain are in knowledge and understanding, as members share information, ideas, resources and perspectives. Sharing one's own ideas and learning about other women's experiences, concerns or challenges provide emotional support and a sense that one is not alone. Gains in career confidence and career preparedness are of more moderate extent. While network-based information, resources and emotional support can help bolster feelings of confidence and preparedness, these are influenced by many other sources and are more slowly developed. Specific kinds of skills are the least easily developed through network participation.

The general stability of gains from 2010 to 2013 suggests that these items hold some validity as measures of individuals' gains. It also suggests that the network steadily provides individuals with certain types of gains that are plausible as outcomes from a virtual network. The network was already well established in 2010, therefore was already offering benefits to its members at the time of our initial survey.

Two lines of evidence may suggest some cumulative benefit from network participation over time. First, there were some statistically significant increases in the mean level of gains from 2010 to 2013. Members reported higher gains in 2013 for three items: recognition that they are not alone, new understanding of obstacles facing women in science, and emotional support in facing challenges.

Second, we tested for differences in gains by time for a subset of 100 individual members who could be matched as completing both the 2010 and 2013 surveys. Within this group, all gains items significantly increased from 2010 to 2013. We cannot determine how well these 100 individuals represent the larger network.

We asked members to provide details about their level of involvement and use of the online network, including activities such as posting to the listserv, reading and sharing posts, and taking action as a result of listserv content. Using these data we classified members into three levels of online participation—low, medium, and high—using a cluster analysis, which is described in greater detail in the Methods appendix to this report. If the online network is benefiting its members, we expect that as participation increases, so will the levels of reported gains; thus we can attribute these gains, at least in part, to the network's activities.

Additionally, we found that gains differed based on several other network participation indicators: participation in at least one in-person ESWN activity, participation in an intensive career workshop, and membership duration. We defined an in-person participant as someone who participated in one or more of ESWN's in-person activities, including:

- Intensive career workshop
- Short workshop or info session at a meeting
- Reception at a meeting
- Informal meeting or get-together

In-person participants include all workshop participants, but because the intensive workshop experiences are vastly different than other, short-duration face-to-face activities, we elected to analyze workshop participants separately as well.

Members' level of participation in the online network was linked to the largest differences in gains. Across all gains items, high-participating respondents reported significantly higher gains than low- and medium-participating respondents. Additionally, medium participators reported significantly higher gains than low-participating respondents on all gains items.

Gains also differed by in-person participation, workshop participation, and membership duration. Members who participated in any in-person (face to face) activity reported higher gains than those who did not. Similarly, members who attended in one of the intensive workshops reported significantly higher gains than those who did not participate. These results suggest that in-person activities (especially workshops) are more effective in producing gains than participation in the electronic network alone. Moreover, the longer someone had been a member of ESWN, the higher were their reported gains. This makes sense given that many of the gains we

measured may take years to develop, and given that longtime members have had more opportunities (and perhaps encouragement) to participate in the full range of ESWN activities.

### ***Sources of gains***

The online network is rated as the most helpful aspect. It is the one activity that all members share and the most important activity for a majority of members.

Only a fraction of members have access to the face-to-face activities, and thus the mean ratings for these are lower, even though they lead to greater gains for those who do participate. For example, a third of respondents who answered gains questions did not participate in in-person activities and thus rated these activities as “no help,” lowering the mean ratings. High-participating members appear to be more active and make more gains from both electronic and face-to-face participation. The greatest increases from 2010 to 2013 are in gains from intensive and mini workshops, both of which were offered more frequently under the grant than previously.

### ***Sense of community***

ESWN members agreed that ESWN provided a sense of community. As participation in the network increased, so did sense of community. Similarly, ESWN members who participated in in-person activities and workshops had higher levels of sense of community than those who did not participate. Sense of community appears to develop over time; as membership duration increases, so do levels of sense of community.

### ***Collaborations***

Because fostering collaborations was an explicit goal of the network, we probed specific gains related to scientific collaboration: initial steps such as learning about another field and meeting people with mutual interests, and more concrete progress toward developing collaborations with others whom members may meet through the network.

Overall, collaboration activity was steady from 2010 to 2013. We found that collaborations differed by several participation indicators: participation level, in-person participation, and workshop participation. Collaborations were generally a function of participation level: high participators reported higher gains in collaborations, as did members who participated in in-person ESWN activities and workshops. Initiating collaborations showed little to no difference based on career stage.

## **6. Perceptions of Career Success**

We probed several indicators of career success for ESWN members, including career satisfaction, productivity, and professional development. These indicators are complex and influenced by many factors, thus they do not measure direct outcomes of network participation, but they are important factors in determining the status of women in the geosciences. Most of these indicators are drawn from validated surveys of workplace climate at single institutions: here we apply them to the status of women in a discipline.

### ***Career satisfaction***

We asked members to report their satisfaction with their career. We found that career progress satisfaction did not differ substantially by survey year, participation level, or career stage. However, this indicator differed by organization type and career change status. Members who

worked at NGOs or at government labs or agencies were less satisfied with their career progress than members who worked in for-profit organizations or in colleges and universities.

### ***Professional development satisfaction***

We asked members to report their level of satisfaction with several dimensions of their own professional development. We found differences in this indicator by survey year, career stage, and career change status. From 2010 to 2013 members were less satisfied with their salary in comparison to colleagues and the level of funding for their work; this may reflect the economic downturn and tight federal funding climate for science. Faculty were more satisfied with their sense of being valued as a teacher or a mentor than were members in other career stages, but they were less satisfied with the level of funding for their work than postdocs or graduate students.

### ***Productivity***

We asked members to report the most important indicators of productivity in their area of research. We found minimal differences in the nature of indicators of research productivity between 2010 and 2013. Productivity indicators showed no meaningful differences on any the top five indicators by any participation, professional, or personal variable. Journal articles, number and dollar amount of grants awarded, and professional presentations were the top four indicators of productivity that members said were valued in their fields.

We also measured members' perceptions of their own productivity in comparison to colleagues in their work unit and in comparison to others in their field nationwide. We found no differences in perceived levels of productivity from 2010 to 2013. Members who reported high participation in the network perceived themselves to be more productive than members with medium and low levels of network participation. Members in faculty and research positions reported being more productive than postdocs and graduate students. Members who worked at government agencies and labs indicated the highest levels of productivity within their work unit and nationally, followed by members at Ph.D.-granting universities and for-profit organizations. Members who worked at NGOs and four-year colleges reported the lowest levels of productivity in their work unit and nationally. Members who reported obtaining a higher position while a member of the network reported higher levels of productivity (within their work unit and nationally) compared to members who had no career change or had a lateral change (i.e., same or similar position and a different organization).

## **7. Perceptions of Work/Life**

Both out of biological necessity and from cultural norms, women tend to carry a larger portion of household and parenting duties in families, a pattern which holds true for women academics and scientists as well as for working women more generally. To explore these issues for women in geoscience, we probed members' household and parenting status and their perceptions of work/life issues in relation to their careers. These are general indicators of issues that ESWN members face, not measures of outcomes due to members' participation in the network.

Overall, the results show that, on average, members were fairly neutral about work/life satisfaction; they did not express strong satisfaction or dissatisfaction with their work/life balance. Mean ratings were neutral on statements about working long hours as a sign of commitment, and personal responsibilities having slowed their career progression. On average, members generally disagreed that they have had to forego professional activities because of

personal responsibilities and disagreed that they had considered leaving their job to improve work/life balance.

There were no meaningful differences from 2010 to 2013 in work/life perceptions, thus revealing a core set of work/life issues that consistently face women geoscientists. However, work/life perceptions differed by career stage, organization type, marital or partnered status, caretaking responsibility status, and parenting responsibility. Members who held research positions were the most satisfied with their work/life balance, while faculty were the least satisfied. Graduate students and postdocs reported their career progress and professional activities to be less negatively affected by personal responsibilities than did members who were more advanced in their careers (faculty and research positions). Graduate students perceived that working long hours was an important sign of commitment in their workplace to a greater degree than did those in all other career stages, while members in research positions reported that working long hours was important to a lesser degree than did others.

Members who work for for-profit organizations were more satisfied with their work/life balance and were less likely to have considered leaving their jobs to improve work/life balance, compared to members from all other organization types. Members who work at four-year colleges more strongly agreed that working long hours was an important sign of commitment than did members from all other organization types, but also less often reported that personal responsibilities slowed their career progress and caused them to forego professional activities.

Married or partnered members perceived that personal responsibilities slowed their career progress and interfered with their professional activities to a greater degree than did single members. Similarly, members with caretaking responsibilities agreed that their career progress was slowed and that they could not participate in professional activities because of personal responsibilities, while members who did not have such responsibilities generally disagreed that personal commitments interfered with their career progress or participation in professional activities. Of the members with child caretaking responsibilities, those who handled more or most of the parenting responsibility in their household reported more personal life spillover and less satisfaction with their work-life balance compared to those who handled equal or less parenting responsibilities in their household.

Finally, members' perceptions of work/life also differed by age: members aged 21 to 30 perceived that personal responsibilities slowed their careers and caused them to forego professional activities to a much lesser degree than did those from all other age groups.

## **8. Perceptions of Workplace**

Members reported on several indicators of the quality and nature of their workplace, including job satisfaction, workplace influence and interactions, gender equality and sexual harassment. Comparison with data from non-members on the ES\_JOBS list provides evidence that women's work/life situation, satisfaction, and workplace perceptions differ from those of men.

### ***Job satisfaction***

In the aggregate, members were satisfied with their current jobs. There were no meaningful differences in job satisfaction by network participation level or career stage. Job satisfaction did differ by organization type and career change status. Job satisfaction was considerably lower for those who worked at an NGO compared to those from all other organization types. However, this

result may not be generalizable to all women working in NGOs in the Earth sciences as only 48 respondents (4% of the sample) worked for this organization type.

### ***Influence in the workplace***

We asked members to report their level of influence in their workplace. In the aggregate, members were generally neutral on their level of influence in their workplace in all but one item. Members generally agreed that meetings in their workplace allowed all participants to share their views. There were no differences in perceived levels of influence from 2010 to 2013, but there were several differences by career stage and career change status. Members in more advanced career stages (faculty and research) reported higher levels of influence than members in earlier stages of their careers (graduate students and postdocs).

### ***Workplace interactions***

We asked members about their interactions in their work unit, which are reflective of respondents' perceptions of their workplace climate. In the aggregate, members had positive impressions of the workplace interactions we measured. Interestingly, members' perceptions of interaction items that were negatively worded were generally neutral, while the positively worded items were reported more favorably. From 2010 to 2013 there were no significant differences in members' perceptions of their workplaces.

Perceptions of workplace interactions were shown to differ by career stage, however most differences were minimal. Members in faculty positions felt more isolated, and reported doing more work that is not recognized and having to work harder than colleagues than did members in other career stages. Postdocs reported most interactions more favorably than did members in other career stages. Interactions also differed by career change status. Additionally, perceptions of workplace interactions differed by members' age. Older members perceived several workplace interactions less favorably than younger members, including having to do work that is not formally recognized, working harder than colleagues, encountering unwritten rules, and retribution for bringing up issues about colleagues.

### ***Gender equality***

Members were asked to report their perceptions of gender equality and discrimination in their workplace. Generally, members reported favorable impressions of gender equality and low levels of sexual discrimination. Perception of gender equality and discrimination were nearly identical from 2010 to 2013.

Perceptions of gender equality and discrimination differed minimally by career stage and child caretaking status, but differed substantially by members' age. Generally, younger members perceived their workplace more favorably, while older members reported less favorable workplace conditions in relation to gender equality and discrimination.

### ***Unwanted sexual attention***

Sexual harassment is a barrier to career success that can impede women's workplace productivity and satisfaction. As a measure of harassment, we asked members to report whether they had experienced unwanted sexual attention in their entire career and in the last two years. Separate items probed harassment in their current workplace.

Overall, a sizable fraction of women reported experiencing unwanted sexual attention: 10% in the past two years, and nearly half over the length of their career. From 2010 to 2013 a slightly



smaller percentage of respondents reported unwanted sexual attention in the last two years and in their careers. We found that reports of unwanted sexual attention differed by career stage and age, which are highly correlated. Generally, members who are younger and earlier in their careers reported more instances of unwanted sexual attention within the last two years but less unwanted sexual attention in their entire careers, than did members who are older and further along in their careers. These results indicate that unwanted sexual attention occurs more often earlier in members' careers than later. However, the career-long data show that this is a persistent problem for women in the geosciences.

Additionally, we asked members to report the prevalence of unwanted sexual attention in their current workplace. In the aggregate, approximately 90% of members reported instances of unwanted sexual attention to be rare or not all prevalent, while roughly 10% reported occasional to frequent unwanted sexual attention. Prevalence of unwanted sexual attention was slightly higher from 2010 to 2013.

Unwanted sexual attention in the workplace differed by career stage, although the differences were minimal. Postdocs reported less unwanted sexual attention than women in other career stages. Unwanted sexual attention also differed by members' age. Members aged 51-60 reported less frequent unwanted sexual attention in their current workplace; this may be related to older women's reports of greater career-long incidence of sexual harassment, as these women may have worked in the same workplace for longer times than have younger women.

## **9. The Nature and Development of Gains: Findings from Qualitative Data**

In the 2013 member survey, we asked several open-ended questions of ESWN members regarding how their involvement in the network has influenced their career change or career decision-making (if any), how their participation in ESWN has positively or negatively influenced their career, and how ESWN has facilitated collaborations. Approximately 28% (n=213) of respondents of the 2013 members survey provided at least one text response. These respondents were fairly representative of the entire 2013 sample in terms of their level of participation in the online network.

Qualitative comments offered by a large subset of respondents offer corroboration of gains reported on numerical items and describe the processes by which members extract benefit from the online network and the informal face-to-face activities that members arrange. Benefits appear to arise in a progression from less to more powerful and from awareness and knowledge, exploration of multiple perspectives, to affective benefits including confidence and motivation to take personal action.

## **10. Nature of Online Activity**

The online interactions made possible by the listserv and now the web center are the connective tissue of the network. Taking part in face-to-face activities often spurs greater participation in the electronic community, and in turn the online tools are used to organize informal face-to-face activities such as get-togethers at conferences. Therefore we analyzed listserv and web center traffic for some key indicators.

First we analyzed the ESWN listserv archives for the PAID grant period (2009-13) to determine the topics raised. For each month, we identified the single thread topic (with at least 3 posts) that generated the most discussion, then classified these threads into four categories:

- General career topic: these topics were related to career development, but were not gender specific; e.g. funding opportunities, job opportunities, books and resource advice.
- Woman-specific career topics: career topics specific to women such as discrimination, underrepresentation of women, name changing as a result of marriage.
- Maternity or childcare topics: breast feeding, maternity leave, childcare, etc.
- No major topic: some months did not have any thread that generated over two responses.

Over the grant period, woman-specific career thread topics dominated more months (32.5%) than any other category. Overall online traffic is roughly evenly split between general professional topics and gendered topics.

Analysis of the number of listserv posts, authors, and original threads per month during the current grant period (9/09-05/13) reveals that the listserv experienced increases in posts, authors, and original threads over this period. There is some evidence for boosts in all activity measures in the months following workshops.

## **11. Governance and Operations**

In this section of the main report we offer some observations of how the board works, its decision-making processes, and member involvement.

### ***Governance***

The board has a participatory, consensus-based governance structure that appears to be well suited to ESWN's current, flat organization. Consensus-based decision-making can be cumbersome at times but yields a sense of joint mission and high willingness to contribute as new tasks arise. The most difficult area of governance was managing priorities for the grant-funded staff position. This is a structural issue that can be addressed by making clear processes such as how new work will be assigned and with what priority. During the grant period, the board took steps toward a governance model that extends beyond the original founding members. In the future, the board may require internal structures and processes for bringing ideas forward and making decisions.

### ***Member engagement***

ESWN members are a vast resource of enthusiasm and ideas. The new web center offers significant opportunities for members to initiate topics and share career-related resources in a manner that is less ephemeral than listserv threads. In addition to the general discussion forum, public and private groups can be initiated that have more limited, interest-based membership and their own discussion forums. Both explicit messaging and modeling by active contributors will continue to be important in encouraging members to participate and take leadership roles, and in setting norms for respectful communication that recognizes members' diverse perspectives.

Members are already involved in organizing informal, local or conference-based, face-to-face activities; this type of activity has the potential to further expand. We see additional potential for members to assist with network-level activities such as organizing formal events and producing the newsletter. Members see taking a leadership role in ESWN as professionally beneficial, both for learning new skills and in holding a visible, professional leadership role.

## **12. Sustainability: Opportunities and Challenges for the Future**

As the ESWN leadership group considers its future, several questions arise. Some were raised by board or network members in the 2009-10 interviews and focus groups, and they remain pertinent today. These issues and the decisions made about them will continue to shape the organization's path as it moves forward. The full report details these questions, which address three key areas: identity and audience; network activities; and governance and organization.

## **13. Strengths and Limitations**

This section of the full report details strengths and limitations of our study methods, especially the survey methods on which most of the findings rely. Strengths of the member surveys include reliability and validity of items, appropriateness of self-report for most measures, and triangulation of results through multiple study methods. The main limitation was a lack of knowledge about the size of the population and characteristics that would let us make statements about the generalizability from the sample to the population. Strengths of the workshop surveys are similar, plus the ability to match individuals' pre- and post-workshop responses to a high degree. The main limitation was that we could not follow up to measure outcomes on a longer time span. An Appendix provides more detail about our study methods.

## **14. Acknowledgments**

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**Summative Report on the Earth Science Women's Network (ESWN)  
NSF ADVANCE PAID Collaborative Award (2009-2013)**

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Ethnography & Evaluation Research, University of Colorado Boulder

October 2013

## **1. Introduction: Purpose and Scope of this Report**

This report serves as a final report on activities conducted by the Earth Science Women's Network (ESWN) under their NSF ADVANCE PAID collaborative awards (9/09-8/13). The stated purpose of the grant was to promote career development, build community, and facilitate professional collaborations for women in the Earth Sciences. In the report, we seek to:

- Describe ESWN members, their needs and interests
- Document ESWN's main activities under the PAID grant
- Summarize known outcomes for members of these activities to date
- Characterize aspects of women's work situation, professional and personal perspectives that are gendered and that help to explain how and why the network benefits them
- Describe aspects of ESWN's operations and governance
- Identify challenges and opportunities for the future.

### **1.1. Sources of Information**

To describe the membership and network outcomes, the main sources of information for the report include:

- Survey responses from 765 ESWN members (women only) gathered in spring 2013
- Survey responses from 491 ESWN members (women only) gathered in summer 2010
- Survey responses from 171 ES\_JOBS list members (men and women who are not ESWN members) gathered in summer 2010. The ES\_JOBS members receive services from ESWN and the men also serve as a comparison group to identify aspects of members' experience that are gendered.
- Pre- and post-workshop surveys conducted for three intensive workshops in summers 2011, 2012 and 2013, plus participant observation of these workshops (176 respondents)

To describe ESWN's activities, future opportunities and challenges, we also draw upon:

- Focus groups with a small number of ESWN members at AGU 2009
- Individual interviews with 9 ESWN leadership board members in spring 2010
- Participation in the ESWN listserv and web site
- Analysis of ESWN listserv archives through May 2013 (when the listserv was retired)
- Analysis of ESWN website data from May 2013-July 2013

- Annual ESWN newsletters (2009-2012).

These data sources have been further enriched through attendance at several receptions, mini-workshops, board meetings, and other face-to-face events; participation in board meeting teleconferences; and personal conversations and e-mail correspondence with ESWN members and leaders.

## **1.2. Structure of the Report**

We begin with a *descriptive* focus, the “who” and “what.” In Section 2 we describe members’ demographics and workplace setting, and the professional needs they identify as priorities. Many of these individual characteristics also serve as independent variables for analyses of the outcomes and indicators discussed below. In Section 3 we summarize ESWN’s activities.

Sections 4 and 5 both report on *outcomes* that can be directly attributed to network activities: Section 4 focuses on outcomes of the intensive (2.5-day) workshops, where pre/post-workshop items measure changes in women’s knowledge, skills, and perceptions, and post-only items probe gains that they attribute to their participation. Section 5 focuses on outcomes for individuals’ participation in the network as a whole. Because the items asked members to report gains “due to your participation,” and because we can also relate the level of gain to members’ level of participation, we can attribute these outcomes to network participation. Members’ responses to open-ended items add information about how these gains come about. These are first-order measures of ESWN’s impact as self-reported by its members.

In Sections 6-8, we report on several *indicators* of members’ career status. These include members’ perceptions of their own career progress and success, the relation between their professional and personal lives, and their workplace environment and climate. Most of these items were drawn from institution-based surveys of climate, but to our knowledge they have not been applied in multi-institution settings previously. These indicators do not directly report on outcomes of ESWN—a wide range of individual and contextual factors influence women’s career success—but they are informative about the career challenges that women scientists face and ways in which these are gendered. These indicators may also reflect women’s awareness and attitudes of gender issues in the workplace, or even steps that women can take (or have taken) to improve their workplace climate—aspects that may be influenced by network participation. Thus it is possible that they may provide second-order indicators of benefits to ESWN members. Here we do not probe changes for individuals nor ask for members’ attribution of changes to the network, but we can examine the indicators as a function of participation level and other individual characteristics to look for evidence that these indicators of women’s career status may be influenced by their network participation.

Section 9 discusses members’ open-ended comments. The analysis focuses on reports of gains that corroborate the gains reported on quantitative items, and on the processes by which members derive benefit from the network.

Sections 10-12 offer observations about the network’s operations: list/web site traffic, governance and member involvement, and challenges and opportunities for the future.

We briefly note the method and data source(s) at the start of each section. Section 13 of the report describes the strengths and limitations of our study methods, and our methods are described in full in the Appendix. It is important to note that, while we can match workshop pre/post surveys for workshop participants and thus report on individual change, we cannot in

general match individual member surveys; the 2010 and 2013 surveys serve as two snapshots of the network as a whole. To report results, we make extensive use of figures, as patterns can be spotted most easily in graphic representations, and numerical values are included on the graphs. Results are presented in the aggregate by survey year. We also highlight statistically significant differences among various outcomes and indicators for important subgroups, using demographic and other characteristics as independent variables. We systematically checked for differences in each indicator and outcome variable by each independent variable. A matrix showing all the tests we conducted and highlighting tests that yielded statistically significant results is provided in the Appendix of this report.

## **2. Characteristics of ESWN Members**

The demographic characteristics presented here reflect a sample of 491 out of a total population of approximately 1000 members when the survey was administered in summer 2010 and a sample of 765 out of a total population of approximately 1900 when the survey was re-administered in April 2013. (In 2013, a precise count was difficult to determine because the transition from the listserv to the web site was underway.) The current membership as of September 2013 is roughly 1500. Based on these approximations, response rates near 50%, which is acceptable but not outstanding for online surveys.

### **2.1. Demographics**

ESWN member's demographics characteristics were largely stable from 2010 to 2013. Members' predominant demographic characteristics included:

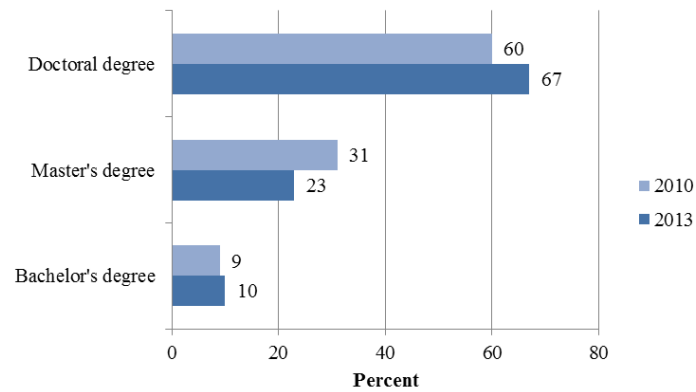
- Most hold a Ph.D.
- Most work at Ph.D.-granting universities.
- Most work in the U.S.
- Most are white.
- Most are married or partnered.
- Most are between the ages of 31-40.
- Most have college-educated parents.
- Roughly half of members live in dual-career households.
- Roughly half of members are graduate students or postdocs, and half work as faculty or researchers.
- ESWN members represent a wide range of scientific disciplines, with atmospheric science being most represented (approximately one third of members).

Compared to 2010, the 2013 membership is older, more likely to have an advanced degree and less likely to be in graduate school. This may be due to the fact that many survey respondents are the same people who answered in 2010, now three years older. Numerically there are more international members and U.S. members of color, although the proportions of these groups overall have changed little. The representation of disciplines outside atmospheric science has increased since 2013; membership of atmospheric scientists was and remains high due to the founding members' concentration in this field and the initial spread of the network through their personal contacts.

In the following graphs, we report members' demographic and professional characteristics. Many of these individual characteristics are used as independent variables in other analyses to examine differences in member outcomes for important subgroups, such as career stage.

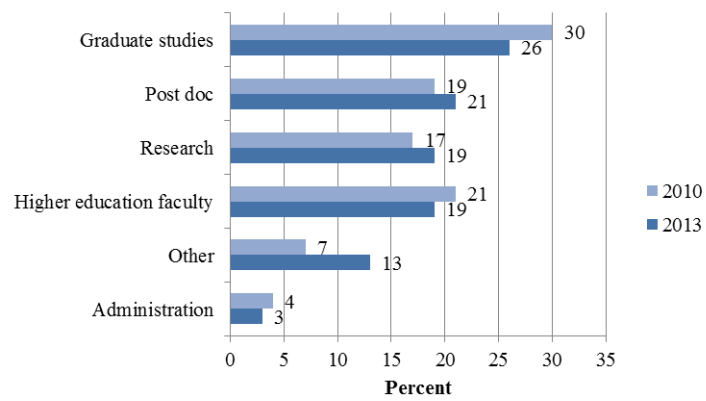
### 2.1.1. Education

**Figure 2.1: Education Level of Respondents by Survey Year**



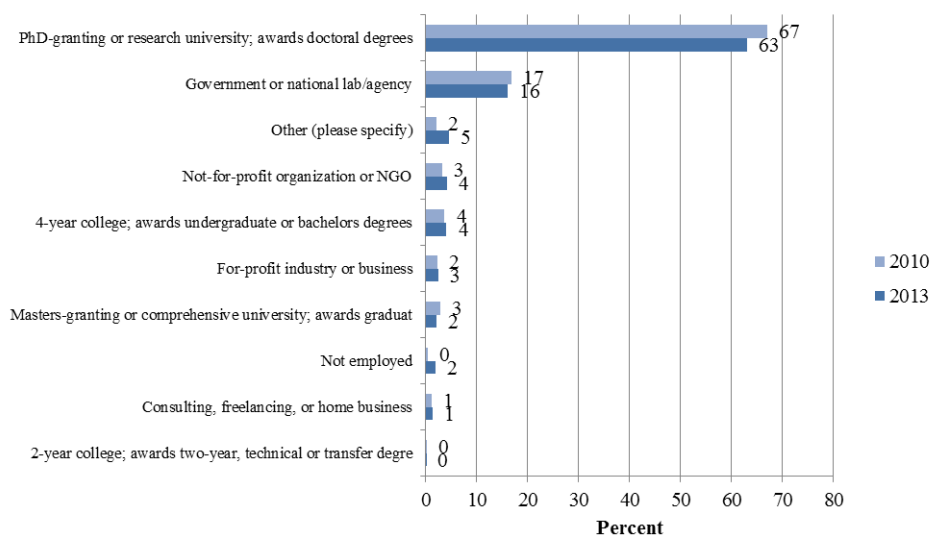
### 2.1.2. Career Stage

**Figure 2.2: Career Stage by Survey Year**



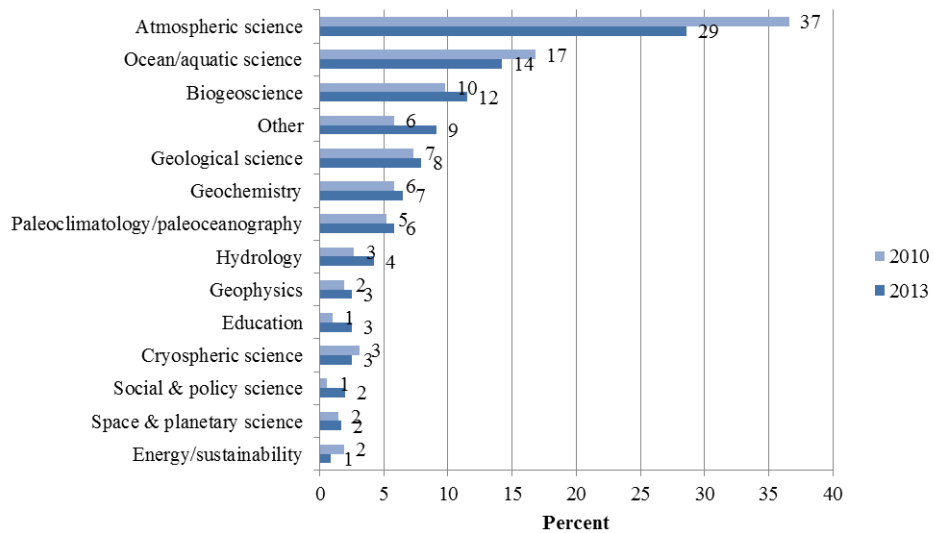
### 2.1.3. Job Situation

**Figure 2.3: Job Situation by Survey Year**



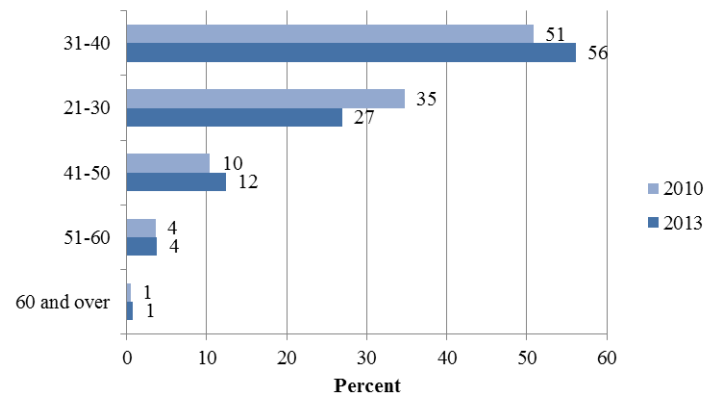
### 2.1.4. Discipline

**Figure 2.4: Discipline by Survey Year**



### 2.1.5. Age

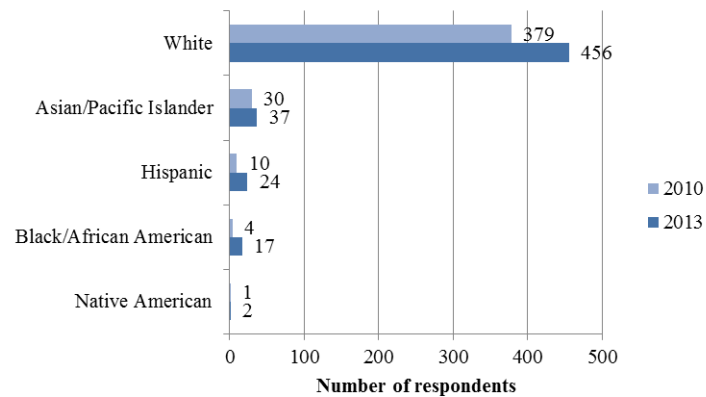
**Figure 2.5: Age by Survey Year**



### 2.1.6. Ethnicity

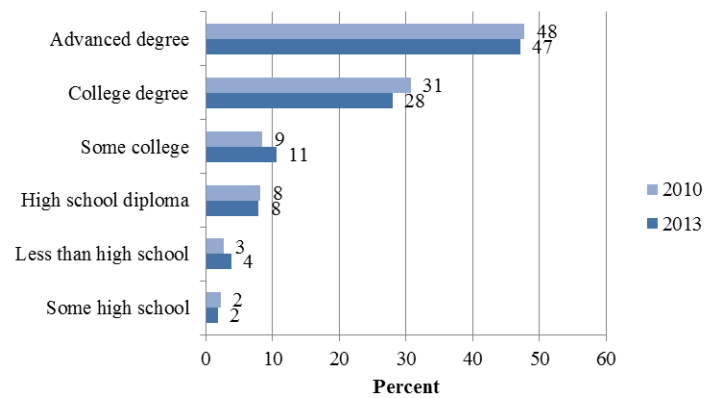
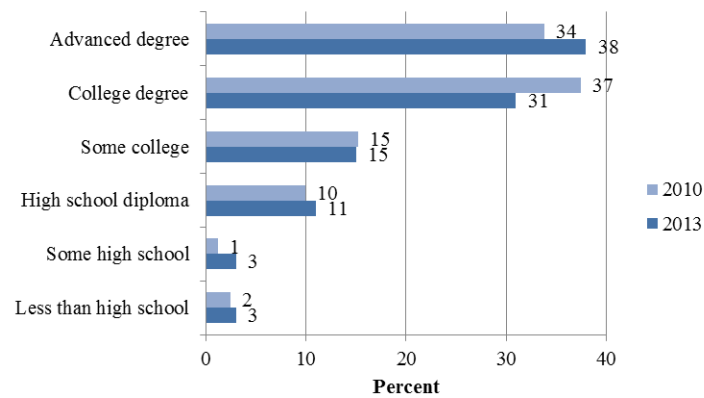
In 2013, this question was asked only of members who worked in the U.S. In later analyses, we group all women of color, because subgroups are too small to disaggregate.

**Figure 2.6: Ethnicity by Survey Year**



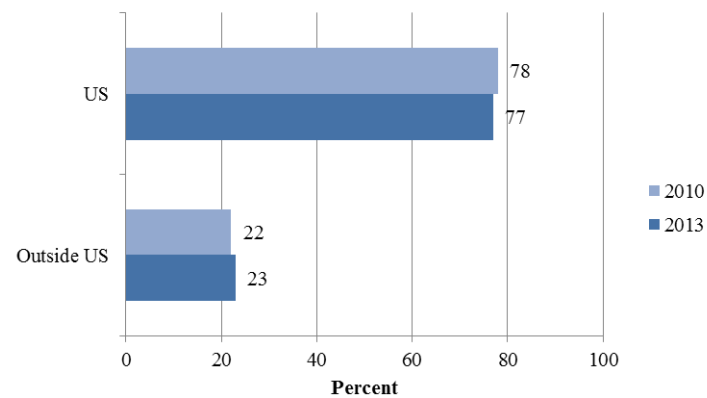
### 2.1.7. Education Level of Parents

Parental education levels are considered measures of socioeconomic status.

**Figure 2.7: Father's Education by Survey Year****Figure 2.8: Mother's Education by Survey Year**

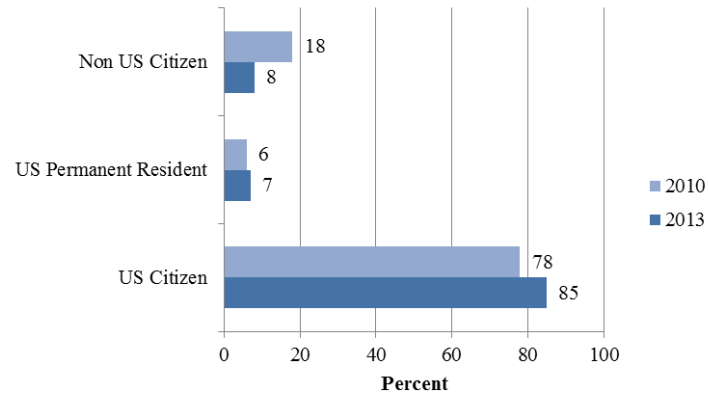
### 2.1.8. *ESWN Worldwide*

We asked respondents to report the country they worked in and their U.S. citizenship status.

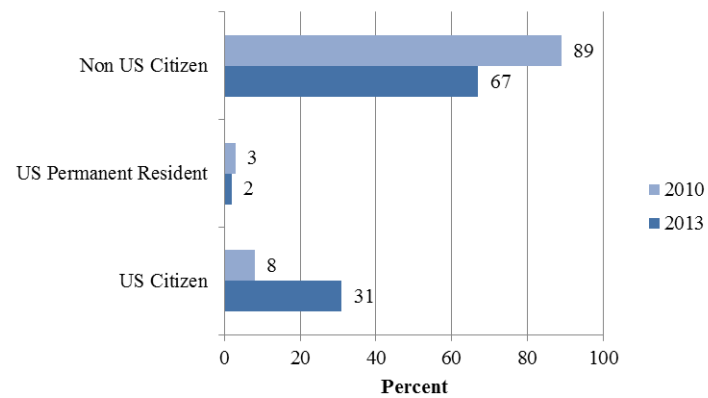
**Figure 2.9: Percentage of Respondents Who Work In and Outside the U.S.**



**Figure 2.10: U.S. Citizenship Status of Respondents Who Work in the U.S.**

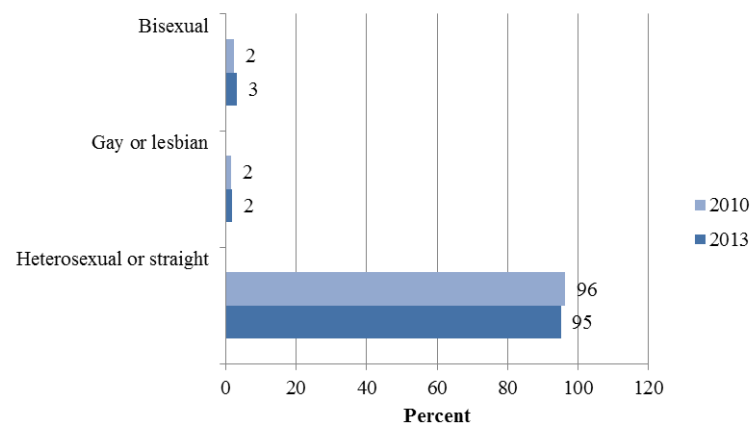


**Figure 2.11: U.S. Citizenship Status of Respondents Who Work Outside the U.S.**



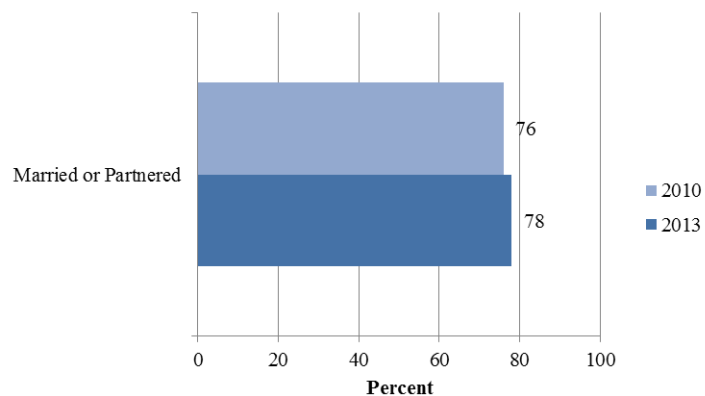
### 2.1.9. Sexual Orientation

**Figure 2.12: Sexual Orientation by Survey Year**



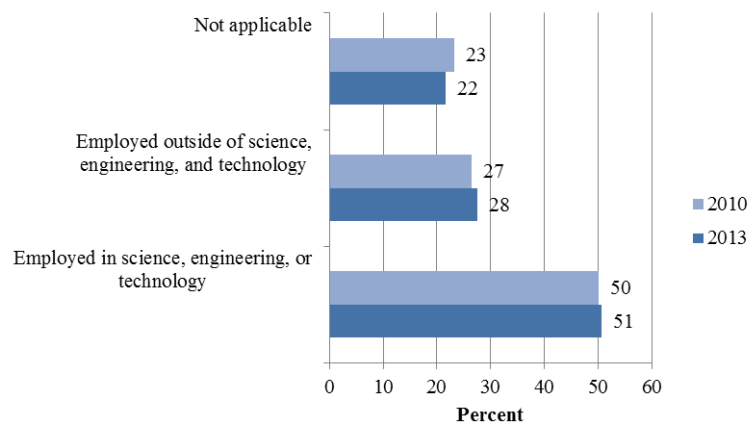
### 2.1.10. Marital or Partnership Status

**Figure 2.13: Percentage of Respondents who are Married or Partnered**



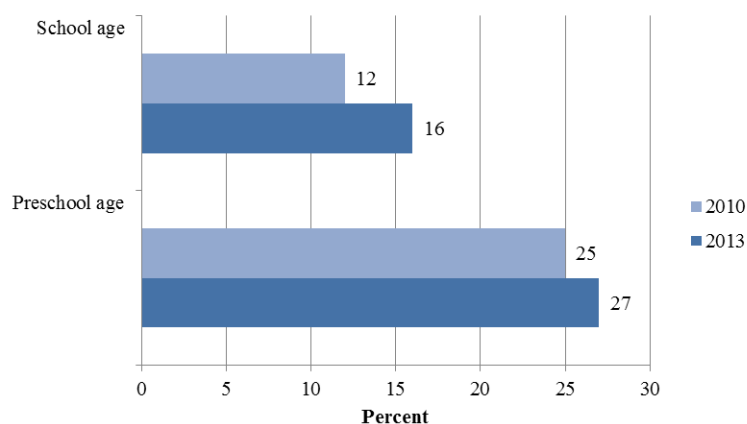
### 2.1.11. Dual Career Status

**Figure 2.14: Percentage of Respondents by Partner's Field of Employment**



### 2.1.12. Child Caretaking Responsibilities

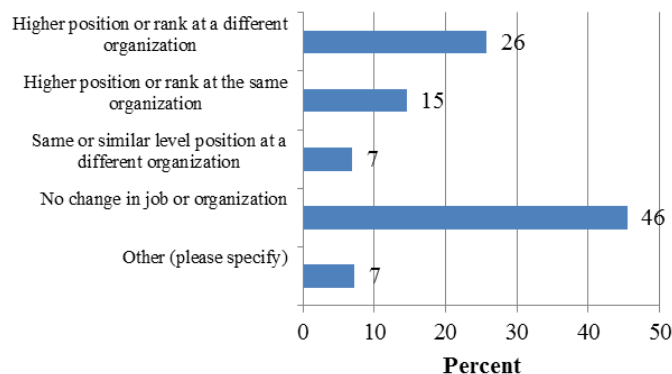
**Figure 2.15: Percentage of Respondents who Have Preschool Age and/or School Age Children in Their Household**



### 2.1.13. Career Change Status (2013 only)

In 2013, we asked members to report career changes during their tenure as ESWN members, hypothesizing that the network might be a particularly useful resource for this subgroup.

**Figure 2.16: Percentage of Respondents who Reported a Career Change While an ESWN Member**



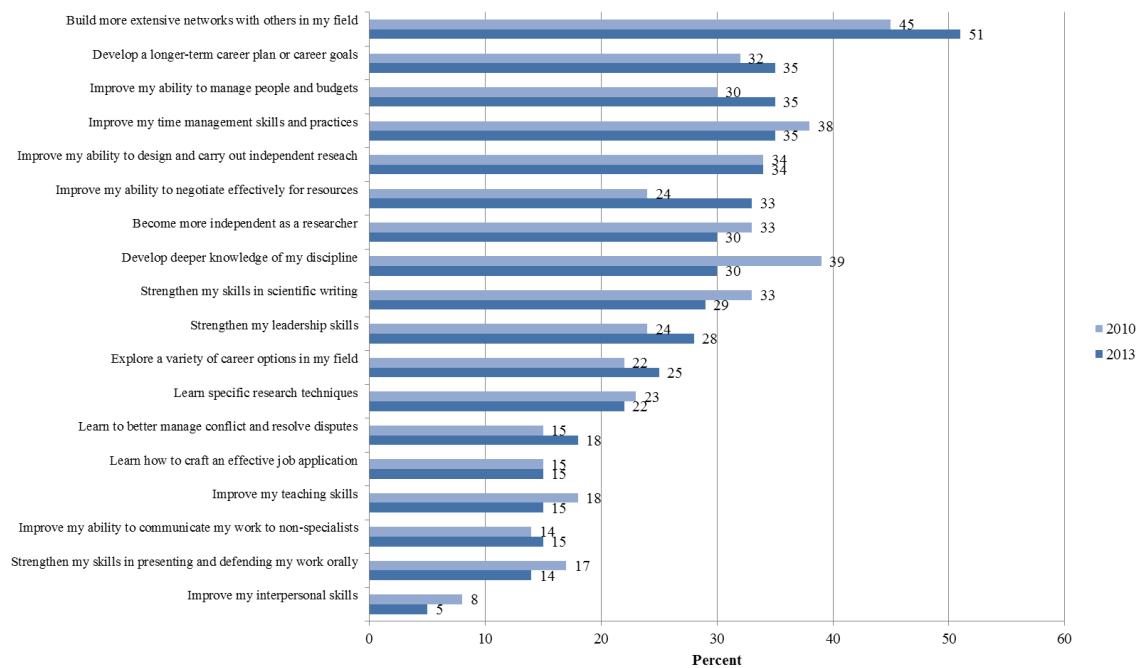
## 2.2. Professional Needs

In the 2010 ESWN member survey, we asked respondents to report their professional development needs. These results, and the member focus groups conducted in winter 2009, have helped to guide the selection of themes and content for ESWN professional development workshops. For example, all of the intensive ESWN workshops (Developing Your Research Identity in 2011, Skills for Networking and Communication in 2012, and Building Leadership and Management Skills for Success in 2013) were designed to meet specific professional needs identified in the 2010 ESWN member survey and in the 2009 focus groups.

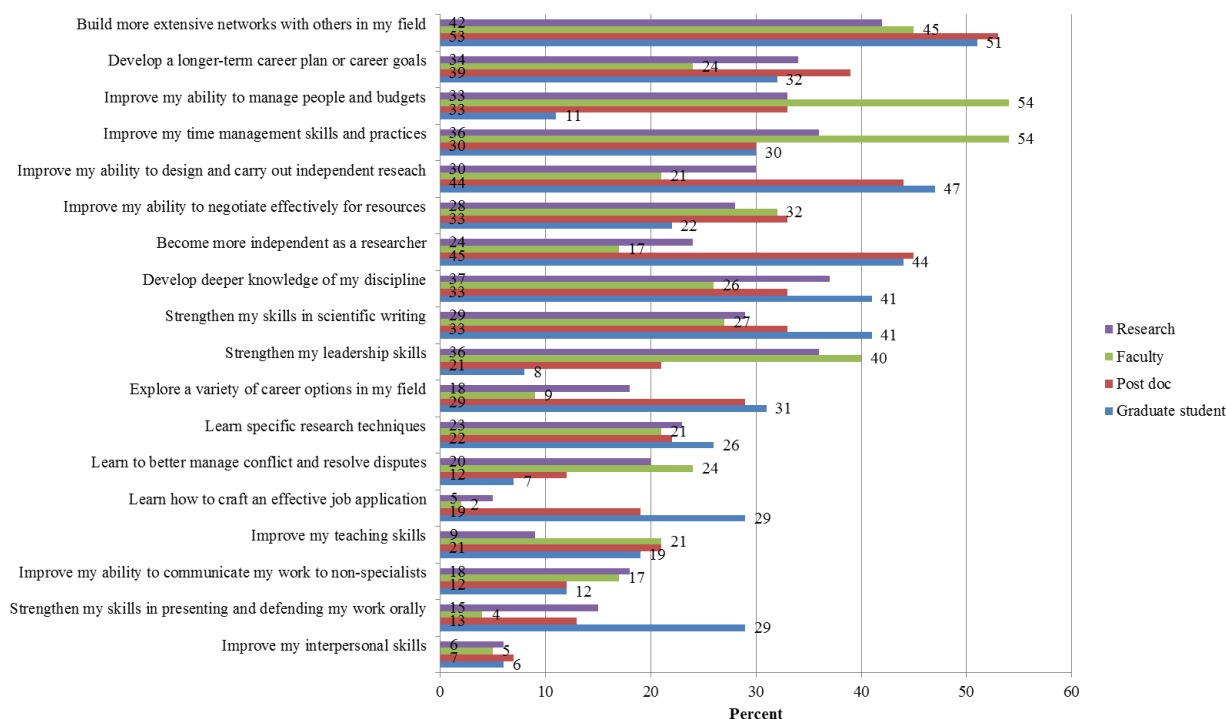
To offer guidance for the board going forward, we repeated these questions in 2013. Figure 2.1 shows the needs expressed by members, ranked in order of percentage of members identifying this need by survey year. Members could mark multiple needs. We also found that professional

development needs varied widely by career stage, as shown in Figure 2.2. In general, the professional development needs of faculty were much different than those for all other career stages.

**Figure 2.17: Professional Growth Needs of ESWN Members by Survey Year**



**Figure 2.18: Professional Growth Needs of ESWN Members by Career Stage**



### 3. Activities and Participation

Here we catalog ESWN's major activities during the PAID project. Where possible, we document the extent of member participation in various activities.

#### 3.1. Online Community

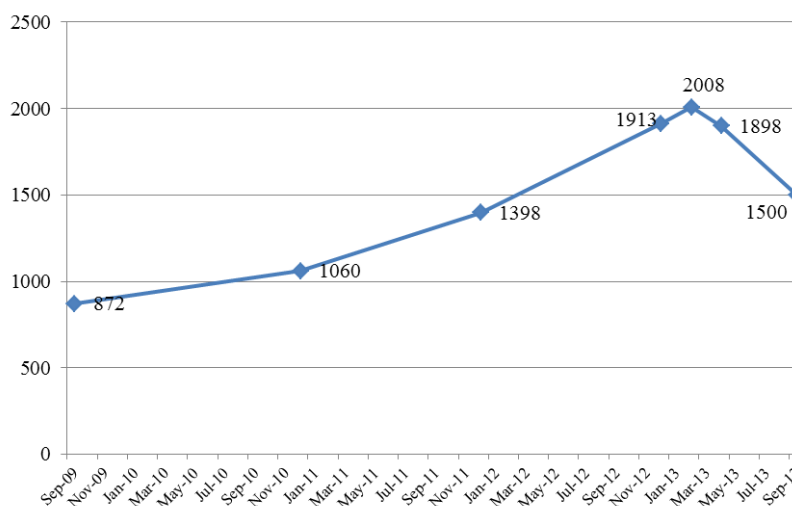
As of March 2013, the ESWN listserv had 2008 members, up from 872 in 2009. At that time, membership in the network was defined by subscription to the listserv; there has been no cost to join and, for the listserv, no information was required other than a valid e-mail address.

The new web center was launched in spring 2013 and the listserv retired. As of September 2013, 1500 people have registered as a user of the new web center. The difference in the listserv membership number and the web center membership number is largely due to members who did not transition from the listserv to the web center. It is also possible that listserv membership numbers were inflated due to some members having multiple and/or old email addresses (thus counted more than once), but the exact number of these individuals is unknown.

The members-only web center allows members to post queries and comments, form and join groups, and search the member list. Eventually it will host a collection of career resources. Compared to the listserv, the web center requests somewhat more information from members through the member profiles; members must provide a real name and confirm their female gender, but most questions are optional. While we initially had anticipated that the profiles would be a good source of membership data, collecting demographic information is problematic on a voluntary, social networking site and the site structure does not make it easy for sensitive profile information to be protected while other profile data are public. After discussion, we have

elected to protect members' privacy and comfort with what information is public in order to protect ESWN's collegial ambiance rather than to request personal data that may be perceived as invasive, that are likely to be incomplete as members opt out, and that are not readily standardized across international settings (e.g. U.S. racial and ethnic categories of interest to the NSF are not applicable in most other countries).

**Figure 3.1: Growth in ESWN Membership During PAID Grant Period**



### 3.2. Face-to-face Events

During the grant period ESWN has hosted a number of face-to-face events. Events sponsored and organized at the network level include intensive workshops of 2.5 days in length, mini-workshops of 1-3 hours, town halls and receptions at major meetings. Three intensive workshops reached 50-60 members each:

- Developing your Research Identity, June 2011, Boulder, CO
- Skills for Networking and Communication, June 2012, Madison, WI
- Building Leadership and Management Skills for Success, June 2013, Providence, RI

Outcomes of the three NSF-funded workshops are discussed in Section 4.

An additional intensive workshop on writing editorials was offered by ESWN's European board and the University of Bergen (UiB) in May 2013, with support from an internal UiB grant. This workshop was offered in collaboration with the OpEd project ([www.theopedproject.org/](http://www.theopedproject.org/)), which seeks to expand the range of voices and quality of ideas heard in public media, starting by increasing the number of women thought leaders in key commentary forums.

Mini-workshops were held at the American Geophysical Union (AGU) and Geological Society (GSA) meetings. These have reached 25-50 persons each (members and non-members):

- AGU 2009: Writing NSF Proposals; Working the NSF System
- AGU 2010: Navigating the NSF; Tips on Publishing
- AGU 2011: Navigating the NSF; How to Network for Professional Growth
- GSA 2011: Navigating the NSF

- AGU 2012: Navigating the NSF; Success on the Tenure Track

Town halls held at the European Geophysical Union (EGU) meetings reached about 50 persons each:

- EGU 2010: What Can EGU Do for Women in Geoscience
- EGU 2012: Women in Geoscience
- EGU 2013: Networking

Receptions for ESWN members have been held at the AGU meetings in San Francisco, annually in 2009-2012 (and some years prior), and at the EGU meetings in Vienna annually in 2009-2013 (and previously). Additional mini-workshops and receptions are being planned for the 2013 AGU and 2014 EGU meetings, with private support and co-sponsorship from the societies. These events typically reach 40-100 members.

Many gatherings at conferences and in towns with concentrations of ESWN members have been organized informally by individual members. Informal gatherings in the U.S. have included meals at conferences on disciplines ranging from atmospheric chemistry, meteorology, geochemistry, ecology, and paleoecology, to climate, ocean, soil and cryosphere sciences, for societies such as the American Association for Aerosol Research, American Meteorological Society, Ecological Society of America, and the Goldschmidt Conference of the Geochemical Society. Outside the U.S., gatherings have included dinners at meetings of the European Meteorological Society, AGU of the Americas, Canadian Meteorological and Oceanographic Society, and International Global Atmospheric Chemistry. Members have also organized meet-ups in cities with many ESWN members, such as Boulder, CO, Seattle, WA, Washington, DC, and Bergen, Norway. Based on examples from newsletters, we estimate that these events typically reach 5-30 members each.

Staff and board members have made presentations about ESWN at AGU, GSA, EGU, ADVANCE PI meetings, and as part of invited campus and laboratory visits (e.g. in conjunction with a seminar presentation). The evaluation team has presented a poster at the AGU meeting each year (2010-12) and at ADVANCE PI meetings (2011, 2013). An article describing one of ESWN's intensive workshops was published as a meeting report in the AGU's weekly newsletter *Eos* in summer 2012 (<http://onlinelibrary.wiley.com/doi/10.1029/2012EO410011/abstract>), and other manuscripts describing the network are underway or in review.

### **3.3. Organizational Connections**

The examples above highlight the use of professional society meetings as venues for gathering members, publicizing the network, and disseminating results of ESWN activities and data-gathering efforts. Many of these activities are natural outgrowths of members' participation in professional meetings *as individuals*; they have proceeded through standard channels such as submitting a presentation to a conference session or as add-ons to the meeting program. Here we note some more formal relationships that have begun to develop between ESWN *as an organization* and other groups:

- AGU has been a partner since 2010, providing space and publicity for mini-workshops and co-sponsoring a workshop in December 2012.
- AGU and ESWN signed a memorandum of understanding for AGU to support ESWN's online platform, launched in 2013.

- ESWN partnered with AGU and two other women scientists' organizations to offer a half-day workshop at AGU in December 2012 on "Work-Life Effectiveness for Individuals in STEM." The workshop was designed by leaders from the Association for Women in Science (AWIS) with support from their current NSF PAID grant. Its offering at AGU was co-sponsored by ESWN, AWIS, AGU, and the Association for Women Geoscientists (AWG) and was attended by about 40 persons (members and non-members).
- EGU has cosponsored conference-based events by providing spaces, advertising and refreshments.

#### **4. Outcomes of Intensive Workshops**

ESWN created three workshops designed to meet the professional development needs identified in the 2010 member survey. In 2011, 48 women participated in a workshop entitled "Developing Your Research Identity." In 2012, 60 women participated in a workshop on "Skills for Networking and Communication." In 2013, 68 women participated in a workshop entitled "Building Leadership and Management Skills for Success." Each 2.5-day workshop was professionally facilitated by two outside facilitators. We conducted pre- and post-workshop surveys to evaluate the effectiveness of these intensive workshops. Our team did not evaluate any mini-workshops; formative data gathered at some of these were provided directly to other sponsors.

We asked workshop participants to evaluate their level of accomplishment on several items related to career development before they participated in a workshop and again at the conclusion of a workshop. An analysis of the mean pre/post differences on these items revealed the largest improvements to occur on items most closely related to the content of the workshops. Additionally, survey items on areas that were not emphasized in the workshops showed little or no change. These findings suggest that our survey instrument is sensitive to workshop content, meaning that we can be confident in the validity of these findings.

On the post-workshop survey we also asked participants to report their level of perceived gain on a variety of potential workshop outcomes. We deliberately re-used many of the gains items asked on the 2010 member survey, so that we could compare workshop and general network outcomes (see Section 4.3).

##### **4.1. 2011 ESWN Workshop: "Developing Your Research Identity"**

The first workshop, "Developing Your Research Identity," took place in June 2011 in Boulder, Colorado. It focused on helping the participants develop a vision of their desired career and transform it into a research mission. The workshop also aimed at helping participants devise a career plan and offered a variety of practical tools and skills helpful in implementing that plan.

##### **4.1.1. Pre-to-post-workshop Improvements in Accomplishment**

Based on comparison of their self-reported ratings before and after the workshop, participants reported significant improvements in several aspects of professional accomplishment. They reported the largest pre-to-post improvement in:

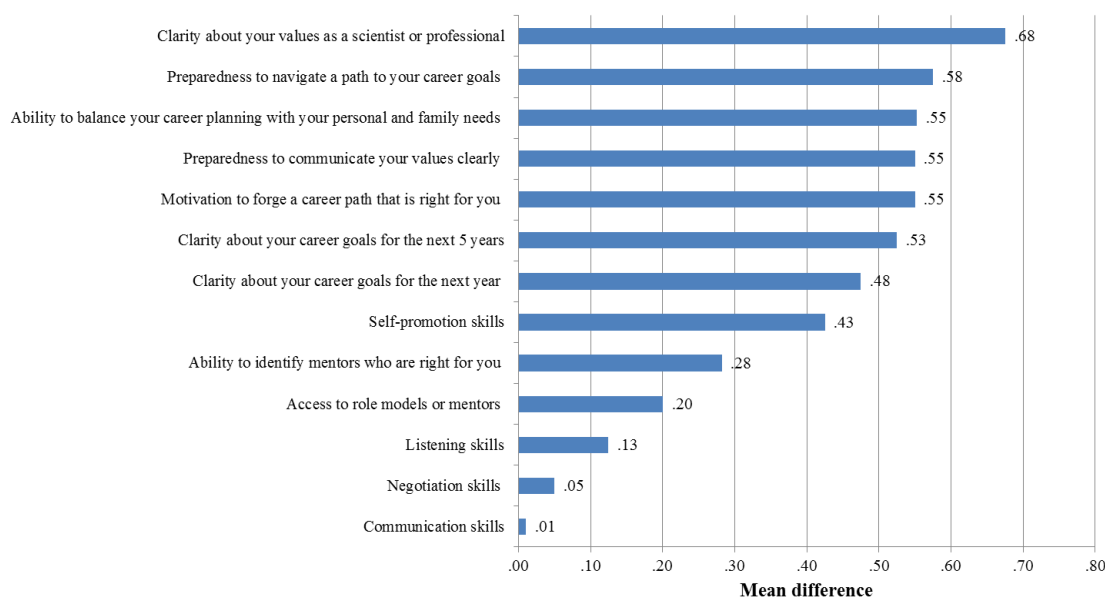
- clarity about their goals for the next year and the next 5 years
- clarity about their values as scientists
- preparedness to communicate those values clearly
- motivation to forge career paths that are right for them



- preparedness to navigate a path to their career goals
- self-promotion skills
- ability to identify mentors who are right for them
- ability to balance career planning with personal needs

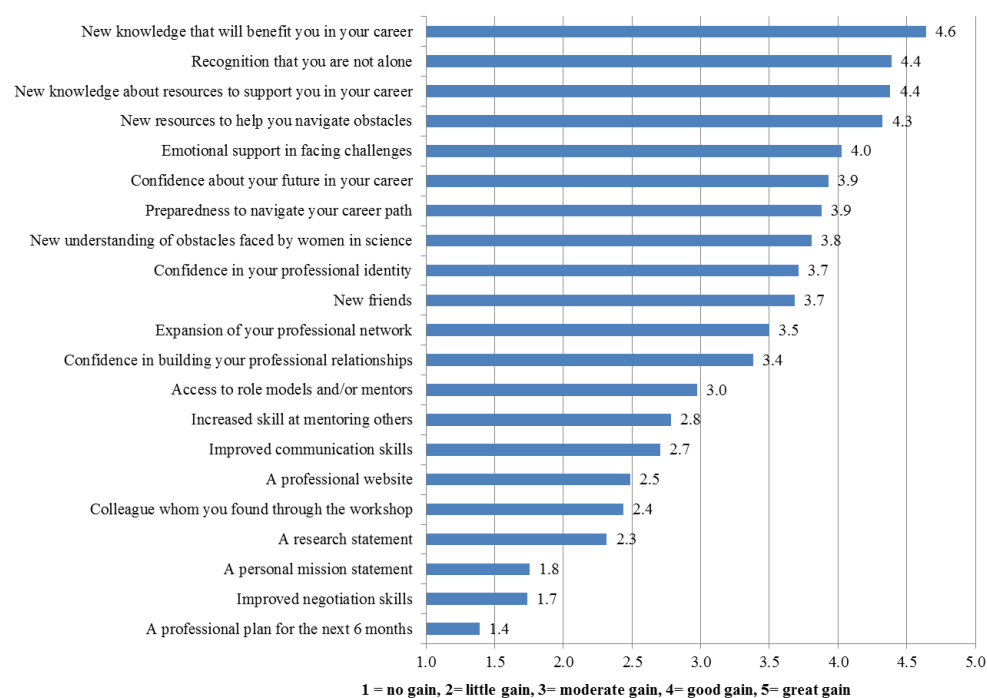
Figure 4.1 shows these changes in career accomplishment, ranked from greatest to least change pre- to post-workshop on a 5-point scale.

**Figure 4.1: Mean Pre-to-post Improvement in Accomplishment from 2011 Workshop**



#### ***4.1.2. Post-workshop Gains***

On the post-workshop survey, participants were asked to rate their level of gains resulting from participation in the workshop for items related to career development. Figure 4.2 shows these self-reported gains, ranked from greatest gain to least gain. Participants reported gains in all aspects of career development. Some items near the bottom of the scale were emphasized in the workshop (developing a research statement, personal mission statement, and professional plan) but required additional work time that was not available during the workshop and had not occurred at the time the survey was administered. Skill gains were also generally rated lower; skills are difficult to develop during the short duration of a workshop.

**Figure 4.2: Mean Professional Development Gains from 2011 Workshop**

#### **4.2. 2012 ESWN Workshop: Skills for Networking and Communication**

This workshop took place in June 2012 in Madison, Wisconsin. The workshop was focused on the following skills:

- Learning to “see” networking opportunities, and take full advantage of them.
- Getting the most from professional networks.
- Assessing personal strengths, so that participants can connect with colleagues with maximum results and minimum anxiety
- Communicating effectively on a personal and professional level.
- Learning about different communication styles to prepare participants for a diversity of working environments
- Realizing the opportunities and limitations of online networking
- Working with formal and informal mentors
- Practicing networking skills with leading scientists and educators.

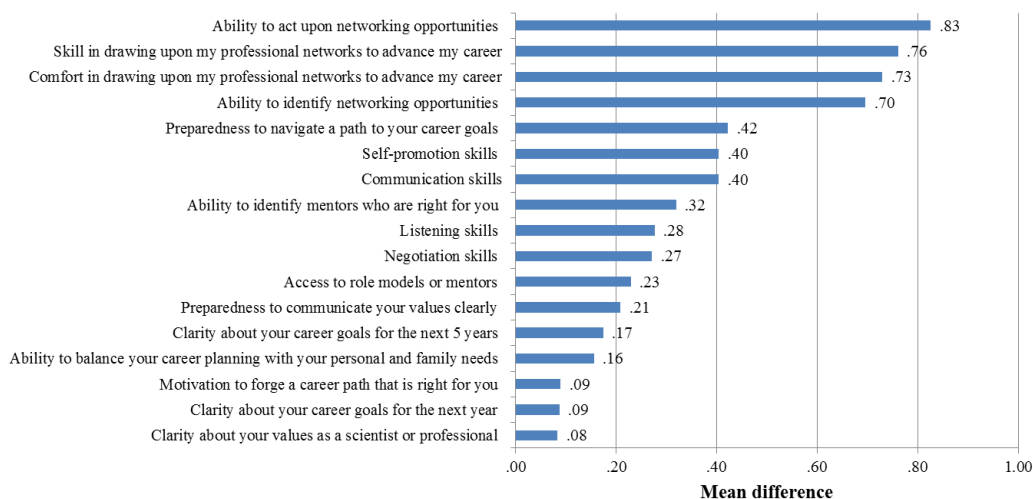
##### **4.2.1. Pre-to-post-workshop Improvements**

Workshop participants reported the largest pre- to post-test differences in career development areas that were emphasized in the workshop, including:

- Skill in drawing upon professional networks to advance their career
- Ability to act upon networking opportunities
- Ability to identify networking opportunities
- Comfort in drawing upon professional networks to advance their career.

Figure 4.3 shows these improvements, ranked from greatest to least change from pre- to post-workshop.

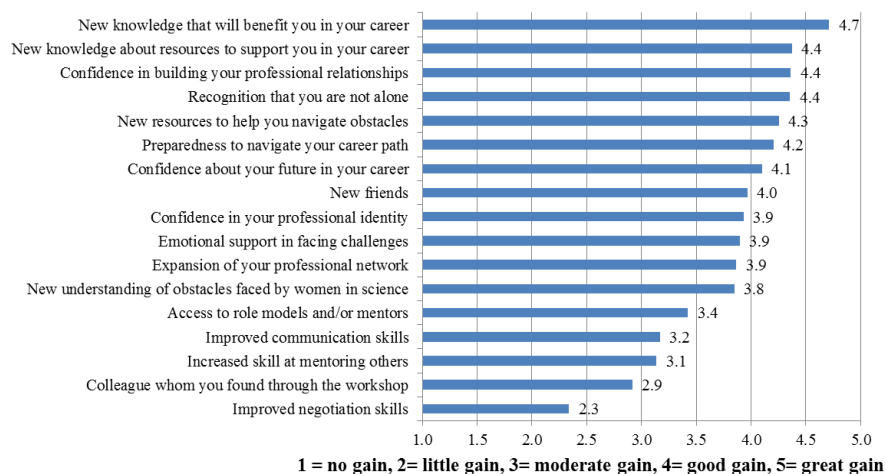
**Figure 4.3: Mean Pre-to-post Improvement in Accomplishment from 2012 Workshop**



#### 4.2.2. Post-workshop Gains

On the post-workshop survey, participants were asked to rate their level of gain resulting from participation in the workshop for several items describing career development. Figure 4.4 shows participants' gains, ranked from greatest gain to least gain.

**Figure 4.4: Mean Professional Development Gains from 2012 Workshop**



#### 4.3. 2013 ESWN Workshop: Building Leadership and Management Skills for Success

This workshop took place in June 2013 in Providence, Rhode Island. The workshop was focused on the following skills:

- Identify participants' strengths, weaknesses, and essential needs as based on their personality types.

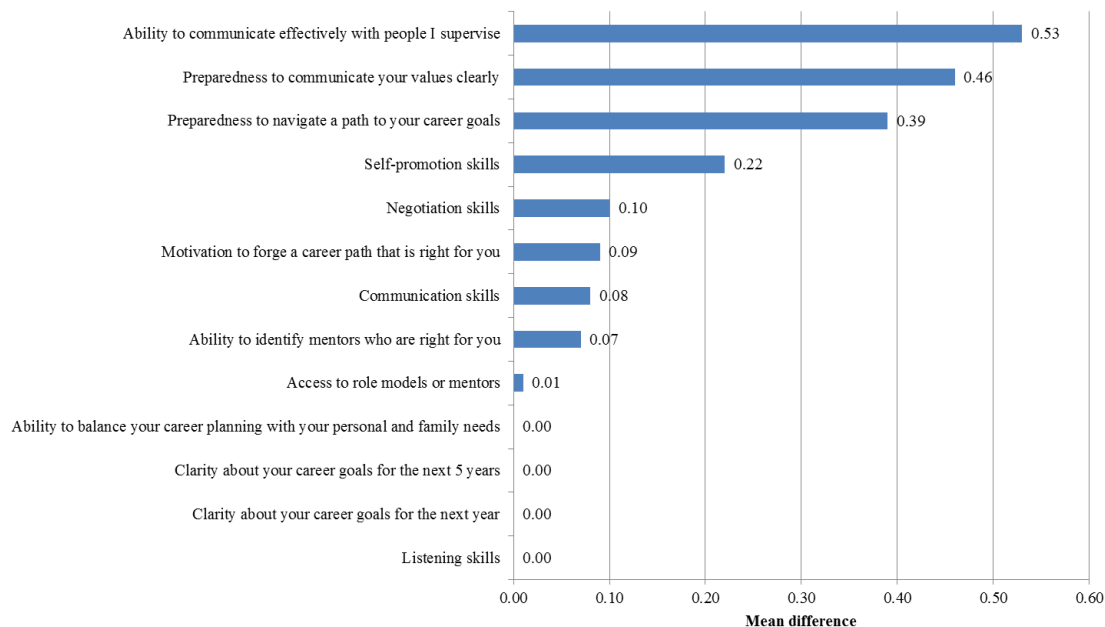
- How understanding other people’s personality types can help to better understand, motivate and navigate potentially conflict inducing situations.
- The importance of regular and consistent communication.
- Strategies for giving constructing feedback.
- Techniques for communicating needs to supervisors.

#### 4.3.1. Pre-to-post-workshop Improvements

The largest pre to post-test improvements were in career development areas emphasized by the workshop including:

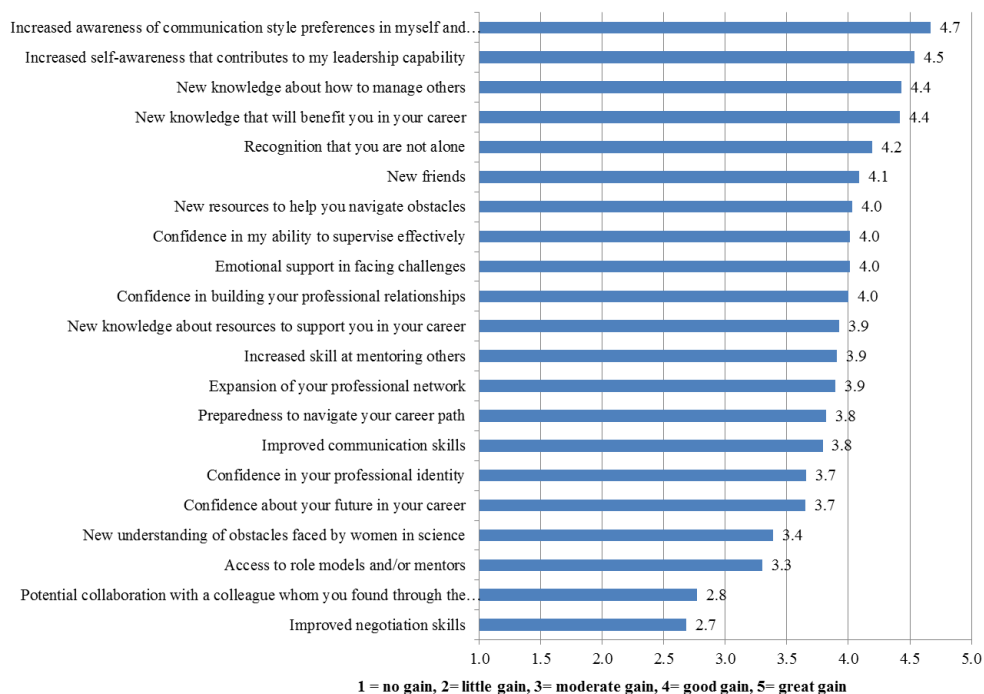
- Ability to communicate effectively with subordinates
- Preparedness to communicate values clearly
- Preparedness to navigate a path to career goals.

**Figure 4.5: Mean Pre-to-post Improvement in Accomplishment from 2013 Workshop**



#### 4.3.2. Post-workshop Gains

On the post-workshop survey, participants were asked to rate their level of gain resulting from participation in the workshop for several items describing career development. Figure 4.6 shows participants’ gains, ranked from greatest gain to least gain. Similar to the pre- and post-test measures, the greatest gains were reported in areas emphasized by the workshop.

**Figure 4.6: Mean Professional Development Gains from 2013 Workshop**

#### **4.4. Comparison of Gains between Workshops and among Workshops and General Network Participation**

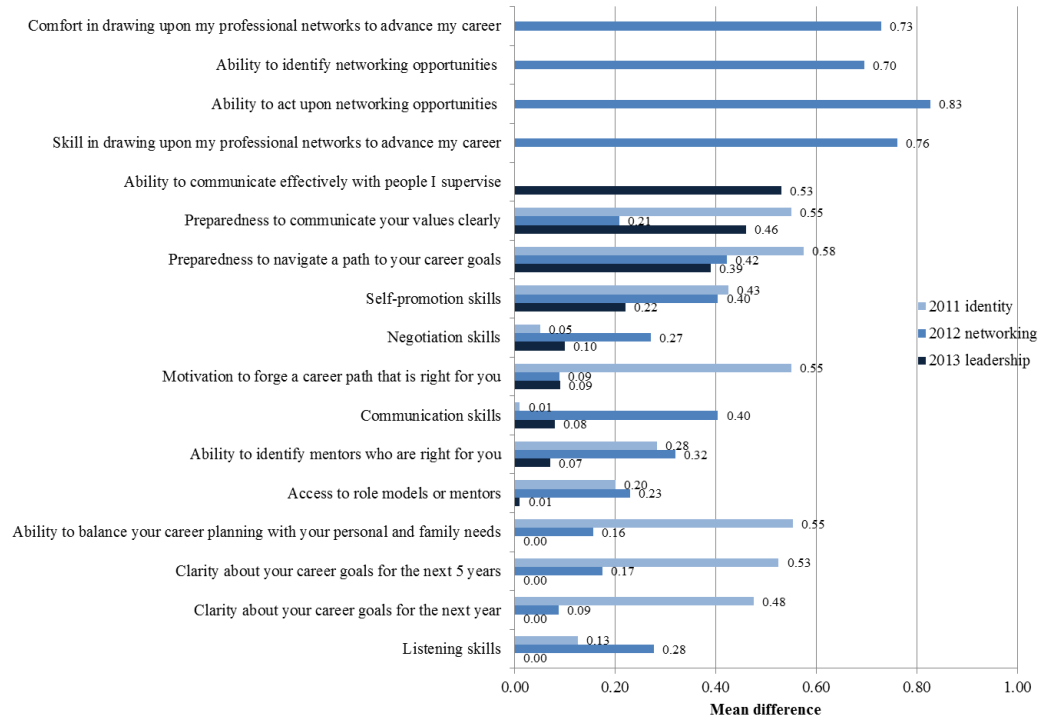
As the analysis of pre/post changes for all three workshops (Figure 4.7) shows, members reported high growth in areas of career development that were targeted by the workshop presenters. For the 2011 workshop on research identity, these areas of greatest improvement centered on goal clarity, motivation and preparedness to pursue one's goals, and career planning. For the 2012 workshop on networking, the high-growth areas focused on analyzing one's career needs and opportunities and making use of professional networks to meet these career needs. For the 2013 workshop on leadership and management, the greatest improvements were in supervisory communication skills. Areas of low growth are useful in showing that members were rating their accomplishment in a personally meaningful and overall discriminating way: that is, they did not report blanket levels of high achievement, but discriminated among domains where they perceived greater or lesser growth. These items thus help to validate reports of higher growth in other domains.

Figure 4.8 compares the means for common gains-related items administered on surveys for the three workshops. The gains items show a similar pattern to the pre/post changes in career accomplishment. Although the gains items appear to be somewhat less sensitive to workshop content than the pre/post items, there are striking, content-specific differences on a few items, such as 'confidence in building professional relationships' and 'expansion of your professional network' which are highly related to the workshop content in 2012.

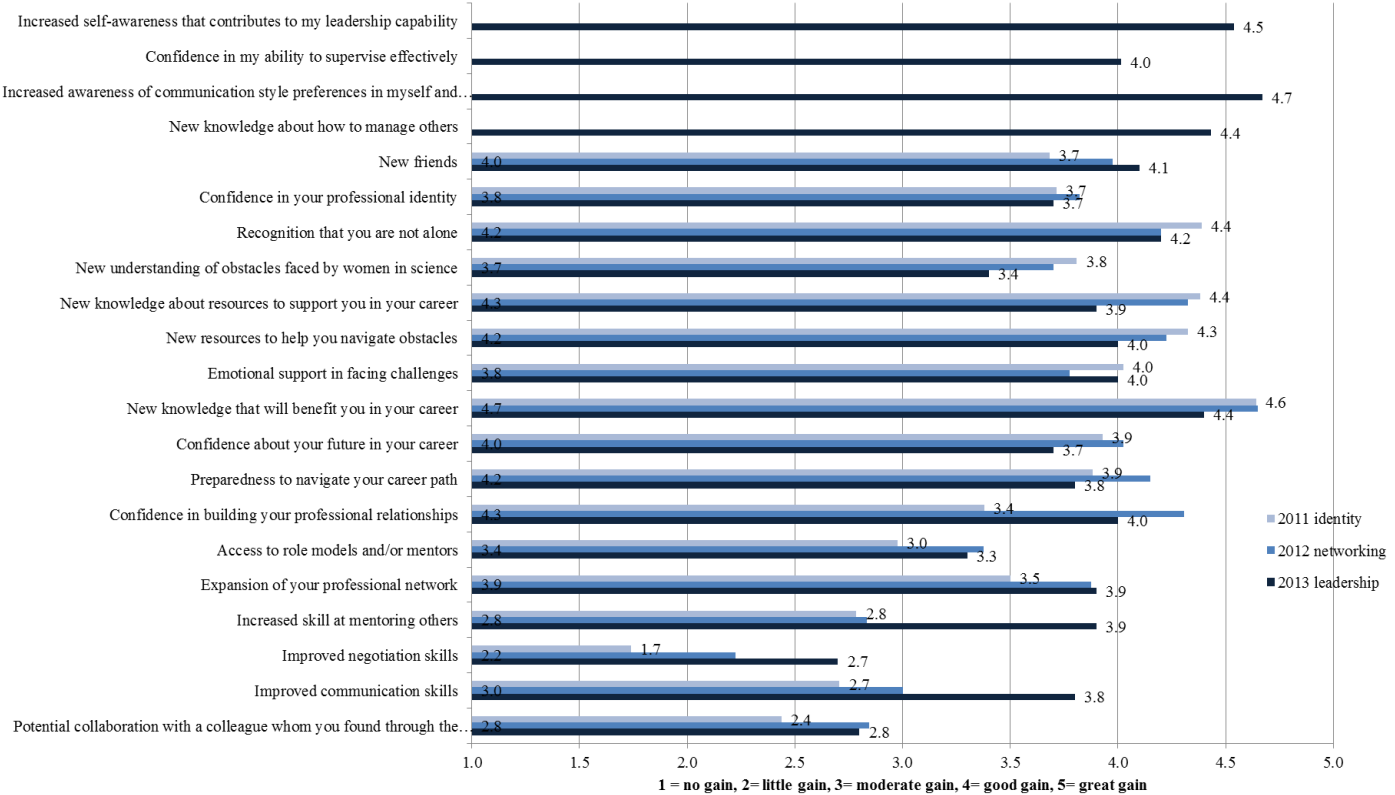
Overall, the gains reported from face-to-face workshops are notably higher than those for general network participation shown in the next section. This reflects both the lower impact of

information exchange from electronic than face-to-face learning and the fact that workshops are accessible to only a subset of members. We discuss general network gains further in Section 5.

**Figure 4.7: Comparison of Mean Pre-to-post Improvement in Accomplishment from Workshops**



**Figure 4.8: Comparison of Mean Gains from Workshops**



#### **4.5. Processes by which Workshop Gains Come About**

We asked workshop participants to identify important features of the workshops. Across all three workshops, participants reported the following features as important:

- Openness and approachability of both presenters and participants
- Warm, friendly, and empowering atmosphere
- Opportunities to network and develop a community, and to make new friends
- Talking to other women who are going through or have gone through similar experiences, since fellow participants represented a variety of career stages
- Workshop content presented as specific to women
- The effectiveness of the facilitators and activities.

#### **5. Outcomes of General Network Participation**

Several items on the 2010 and 2013 member surveys probed ESWN members' gains from participating in the network. As Figure 5.1 shows, the areas of generally greatest gain are in knowledge and understanding, as members share information, ideas, resources and perspectives. Sharing one's own ideas and learning about other women's experiences, concerns or challenges provides emotional support and a sense that one is not alone. Understandably, gains in career confidence and career preparedness are of more moderate extent. While network-based information, resources and emotional support can help bolster feelings of confidence and preparedness, they are influenced by many other sources and are more slowly developed. At the lower end of the gains scale, specific kinds of skills are the least easily developed through network participation.

The general stability of gains from 2010 to 2013 suggests that these items hold some validity as measures of individuals' gains. It also suggests that the network consistently provides individuals with certain types of gains; moreover, the gains ranked more highly are plausible as outcomes from this type of online network. We point out that the network was already well established in 2010, therefore was already offering benefits to its members.

Two lines of evidence hint that members' gains from network participation may be cumulative in nature. First, we tested for differences in the mean levels of gains from the 2010 survey to the 2013 survey. In the aggregate, several gains items showed meaningful differences from 2010 to 2013. Members reported higher gains in 2013 for three items: recognition that they are not alone, new understanding of obstacles facing women in science, and emotional support in facing challenges. These affective outcomes may be strengthened over time as members read or participate in online discussions of a wider range of issues. Our analysis of open-ended comments in Section 9 provides some corroboration for development of such gains over time.

We were also able to test for differences in gains by time among individual members who completed both the 2010 and 2013 surveys (n=100). Among individuals whom we were able to track and who completed both surveys, all gains items significantly increased from 2010 to 2013. This smaller subsample is representative of the larger sample in terms of participation level. In the subsample, 22% were high participators, 47% were medium participators, and 31% low participators, which is nearly identical to the proportions in the larger sample shown in Figure 5.16 in Section 5.4.2. While these individuals gains are impressive, we do not know the extent to which either the subsample or the larger sample are representative of the whole population of the network.



### 5.1. *Gains Attributed to Network Participation*

We asked members to provide details about their level of involvement and use of the online network, including activities such as posting to the listserv, reading and sharing posts, and taking action as a result of listserv content. Using these data we classified members into three levels of online participation—low, medium, and high—using a cluster analysis, which is described in greater detail in the Methods appendix to this report. If the online network is benefiting its members, we expect that as participation increases, so will the levels of reported gains; thus we can attribute these gains, at least in part, to the network's activities.

Additionally, we found that gains differed based on several other network participation indicators: participation in at least one in-person ESWN activity, participation in an intensive career workshop, and membership duration. We defined an in-person participant as someone who participated in one or more of ESWN's in-person activities, including:

- Intensive career workshop
- Short workshop or info session at a meeting
- Reception at a meeting
- Informal meeting or get-together

In-person participants include all workshop participants, but because the intensive workshop experiences are vastly different than other, short-duration face-to-face activities, we elected to analyze workshop participants separately as well.

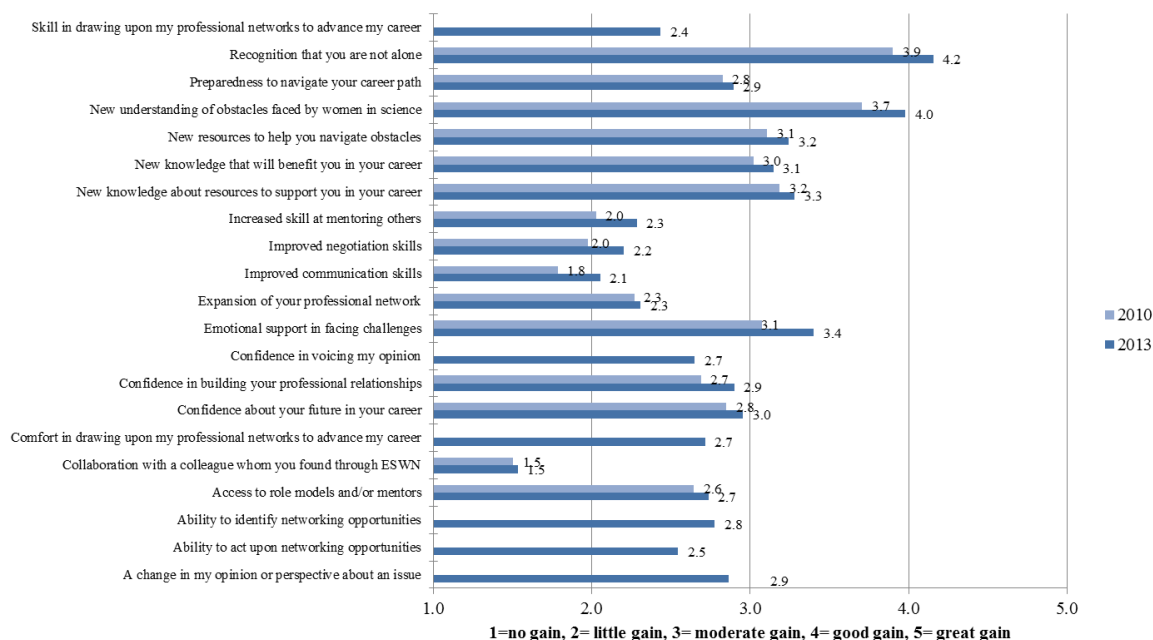
Members' level of participation in the online network was linked to the largest differences in gains. Across all gains items, high-participating respondents reported significantly higher gains than low- and medium-participating respondents. Additionally, medium-participating respondents reported higher gains than low-participating respondents on all gains items. Figure 5.3 shows the means for gains by participation level, focusing on gains that support career growth, such as career resources and support, career confidence and preparedness, connections with role models and mentors, and skills.

Gains also differed by in-person participation, workshop participation, and membership duration. Members who participated in any in-person (face to face) activity had higher gains than those who did not. Similarly, members who participated in one of the intensive workshops reported significantly higher gains than those who did not participate. These results suggest that in-person activities (especially workshops) are more effective in producing gains than participation in the electronic network alone. Moreover, we found that the longer someone had been a member of ESWN, the higher were her reported gains. This makes sense given that many of the gains we measured may take years to develop, and given that longtime members have had more opportunities (and perhaps encouragement) to participate in the full range of ESWN activities.

### 5.1.1. Gains by Survey Year

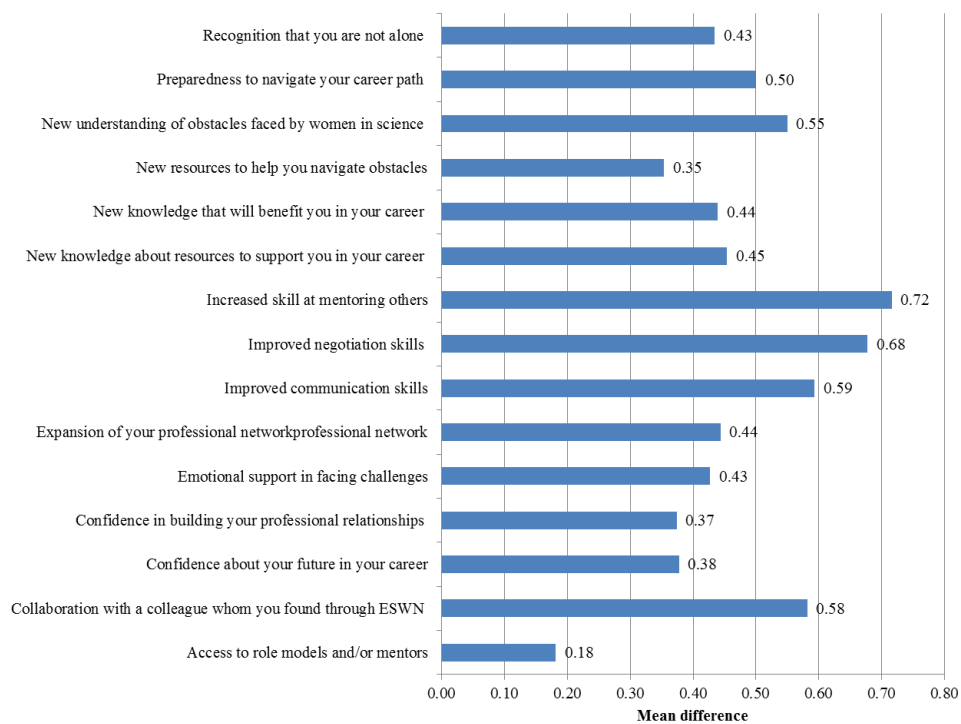
Some gains were not surveyed in 2010; these were added to the 2013 survey based on workshop topics and additional gains areas of interest to the ESWN board.

**Figure 5.1: Mean Gains by Survey Year**



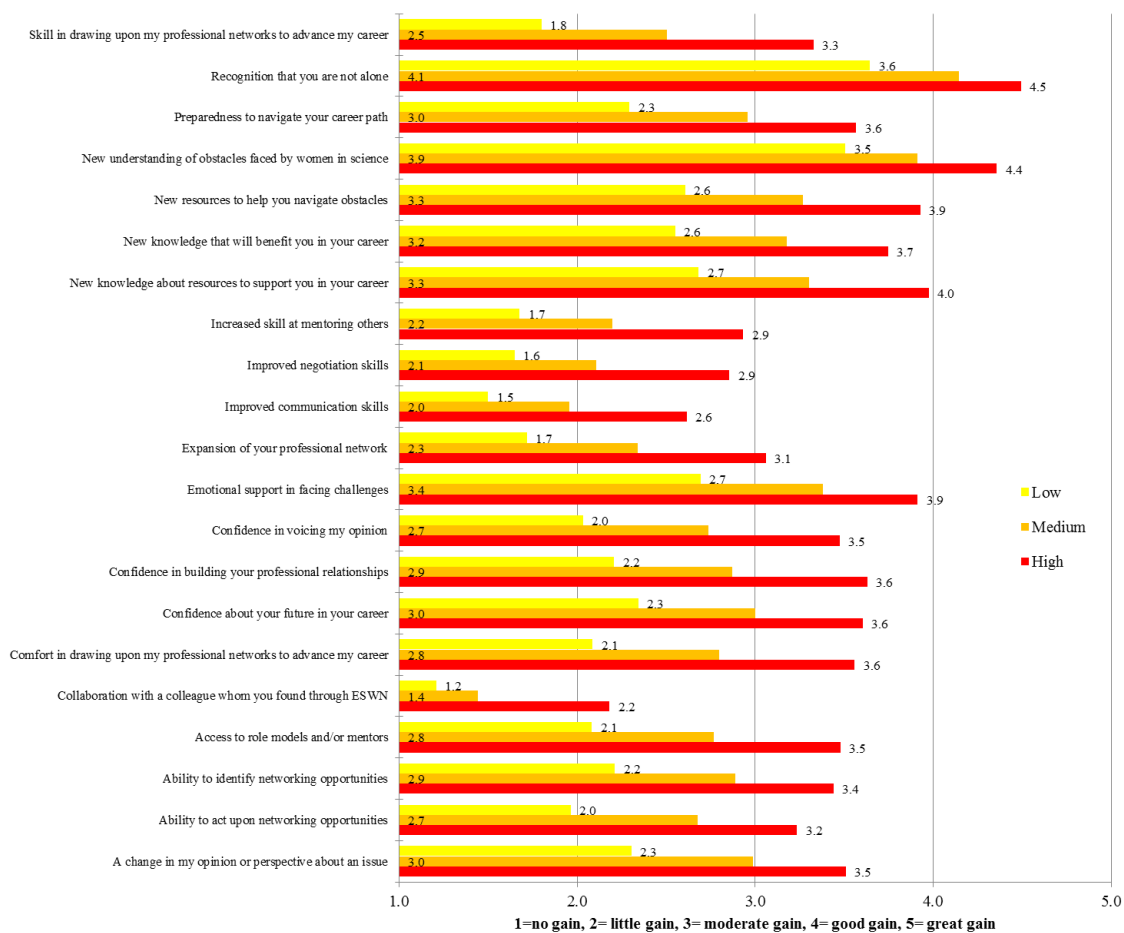
### 5.1.2. Difference in Gains by Survey Year: Paired Samples T-test

We were able to match 100 respondents who completed both the 2010 and 2013 surveys. We conducted a paired samples T-test to determine the average difference in individuals' reported gains from 2010 to 2013. These positive values all indicate that on average, individuals reported significantly higher gains in 2013. This result may suggest that gains are cumulative over time.

**Figure 5.2: Average Individual Difference in Gains From 2013 to 2010**

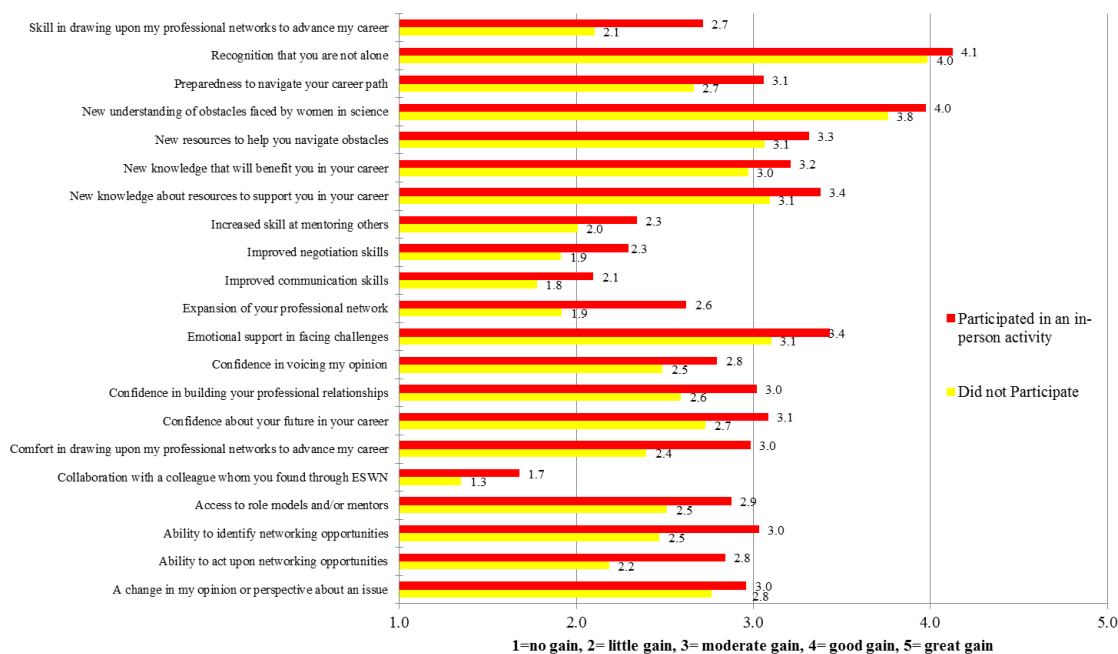
### 5.1.3. Gains by Online Participation Level

Figure 5.3: Mean Gains by Online Participation Level



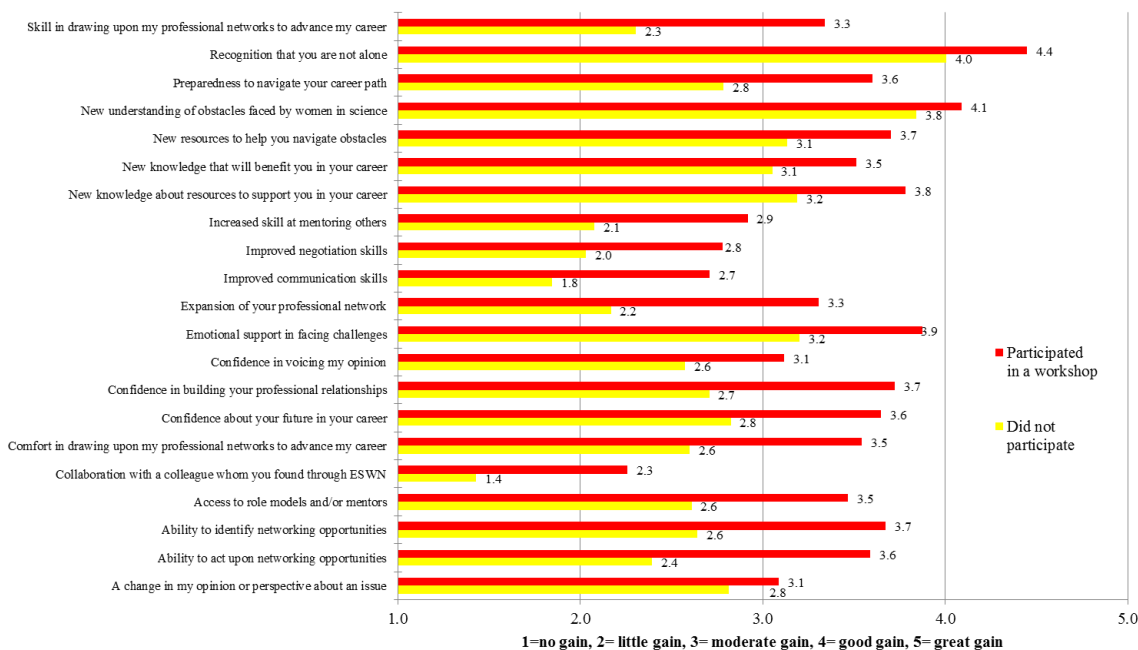
### 5.1.4. Gains by Participation in ESWN In-person Activity

Figure 5.4: Mean Gains by Participation in at least One In-person Activity



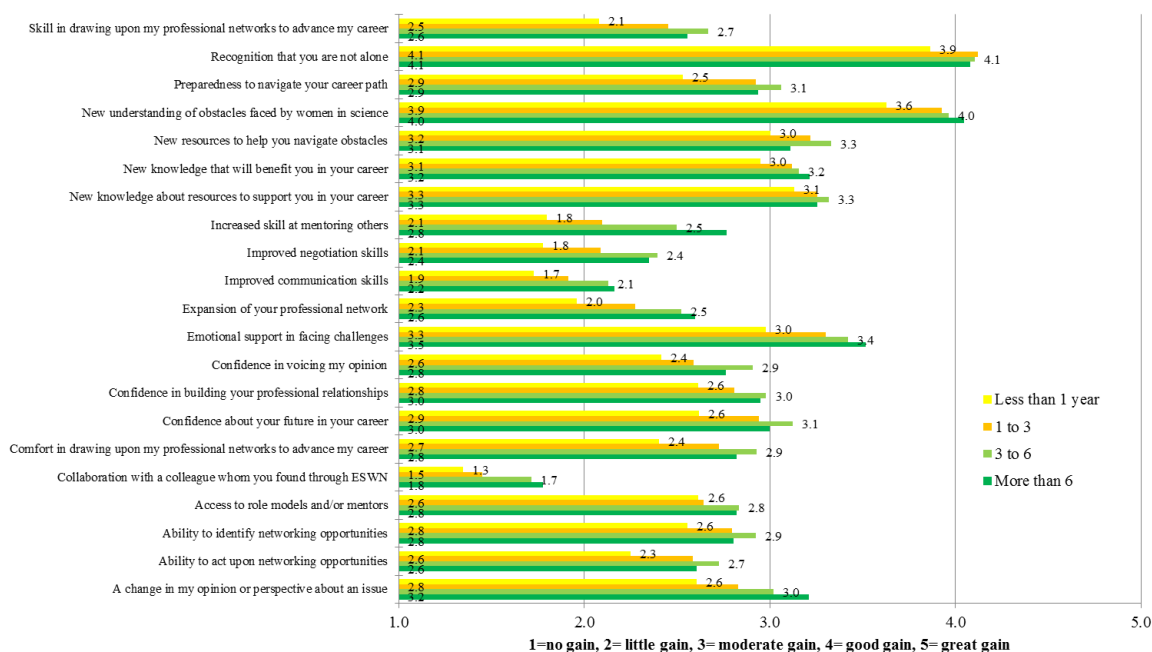
### 5.1.5. Gains by ESWN Intensive Workshop Participation

Figure 5.5: Mean Gains by Intensive Workshop Participation



### 5.1.6. Gains by Membership Duration (years)

Figure 5.6: Mean Gains by Membership Duration



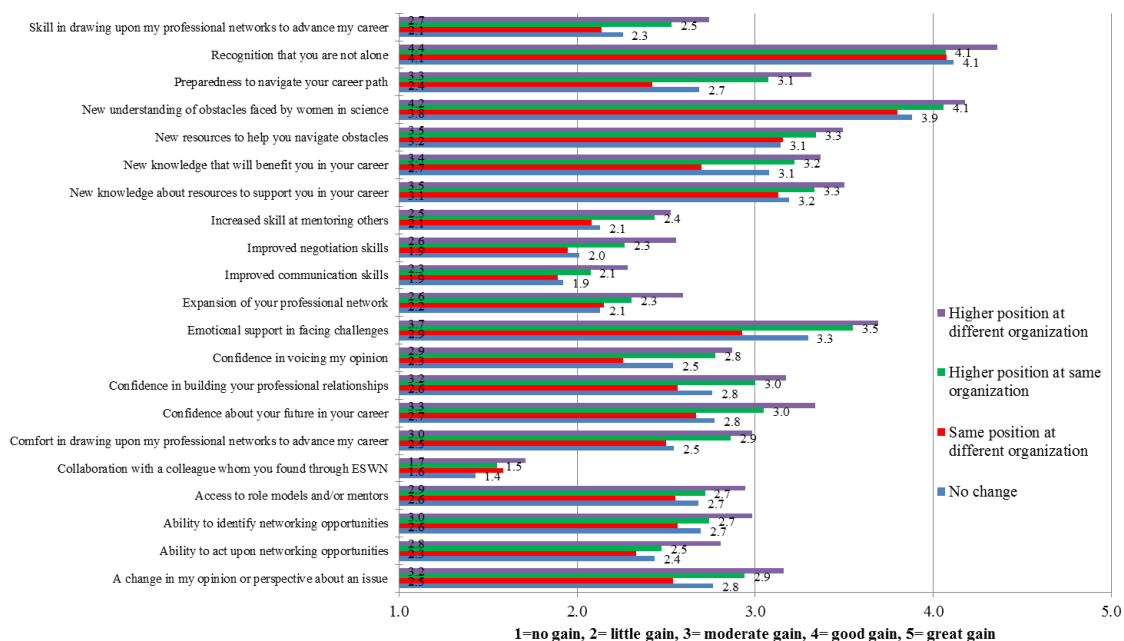
### 5.2. Gains by Professional Status

We tested for differences in the level of gains from network participation based on several indicators of members' professional status. We found that gains did not differ by career stage, but they did differ for members who reported making a career *change* while a member of ESWN. Respondents who reported obtaining a higher position at a different organization reported the highest gains, followed by respondents who obtained a higher position at the same institution. Interestingly, respondents who reported a lateral career change reported the lowest gains.

There were no meaningful differences in gains by career stage, suggesting that members at a variety of career stages benefit in similar ways from the network. This is an interesting finding given that members report rather different career-related needs (Section 2.2).

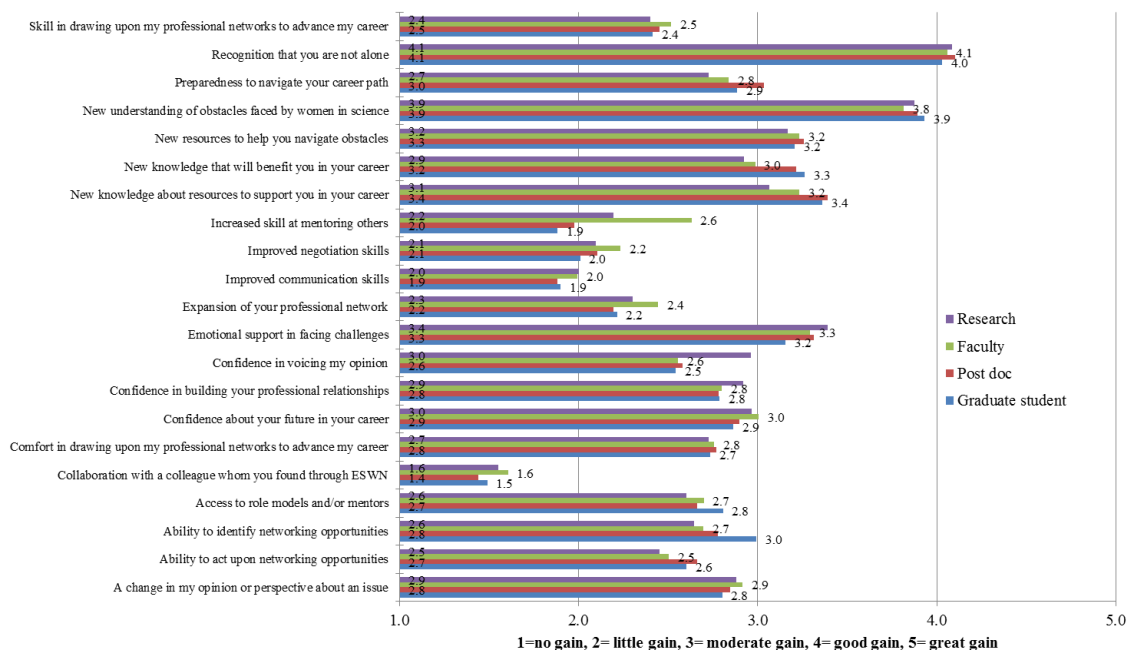
### 5.2.1. Gains by Career Change Status

Figure 5.7: Mean Gains by Career Change Status



### 5.2.2. Gains by Career Stage

Figure 5.8: Mean Gains by Career Stage



### 5.3. Processes by which General Network Gains Come About

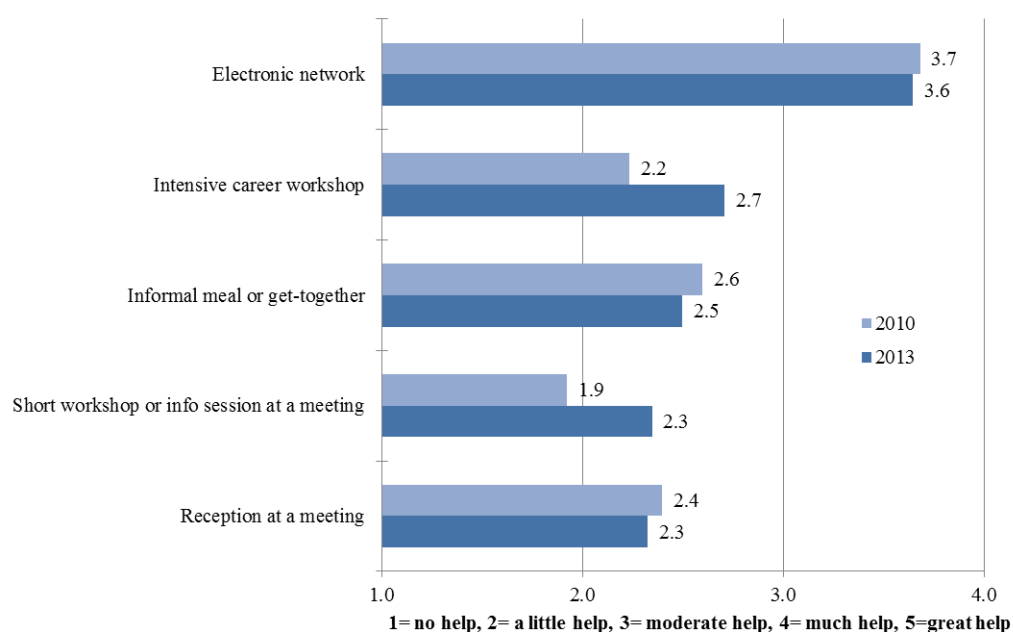
We asked members to rate various network activities as to how much they helped in securing the gains described above. Figure 5.9 shows these aspects, again sorted by participation level.

### 5.3.1. Source of Gains by Survey Year

As Figure 5.9 shows, the online network is rated as the most helpful aspect. It is the one activity that all members share (by definition, members were on the listserv or in the web-based community) and the most important activity for a majority of members.

Only a fraction of members have access to the face-to-face activities, and thus the mean ratings for these are lower, even though they lead to greater gains for those who do participate (Figure 4.5). For example, a third of respondents who answered gains questions did not participate in in-person activities and thus rated these activities as “no help,” lowering the mean ratings (although an N/A rating is provided and intended for this situation, not all respondents used it appropriately). High-participating and long-duration members appear to be more active and make more gains from both electronic and face-to-face participation. The greatest increases from 2010 to 2013 are in gains from intensive and mini workshops, both of which were offered more frequently under the grant than previously.

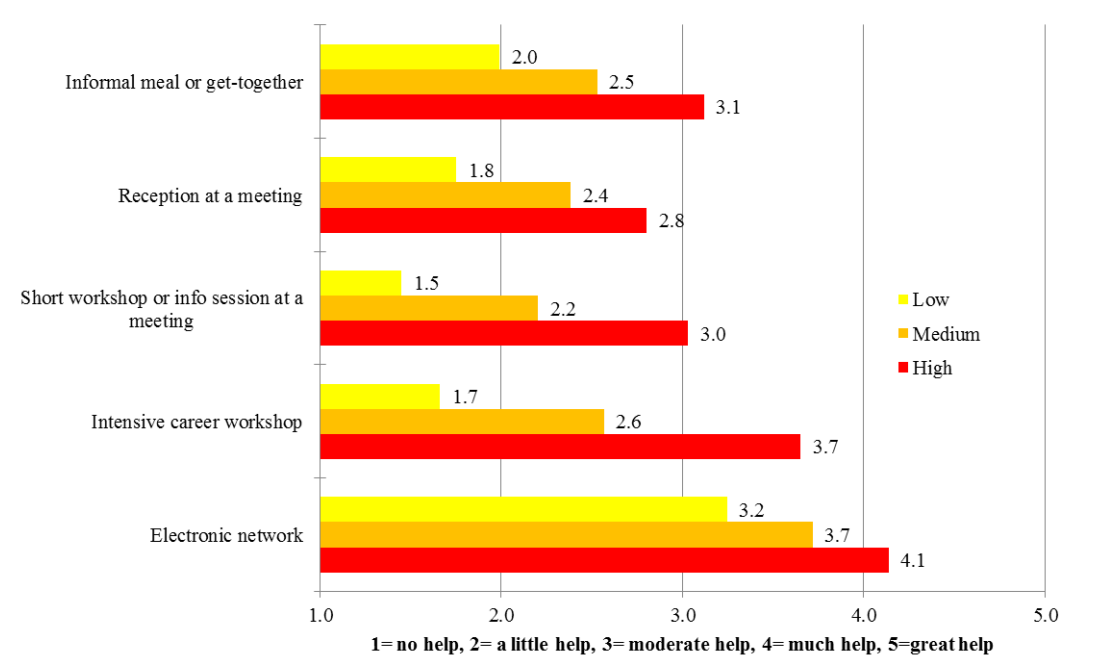
**Figure 5.9: Mean Helpfulness of Network Activities in Helping Members to Make Gains**





### 5.3.2. Source of Gains by Participation Level

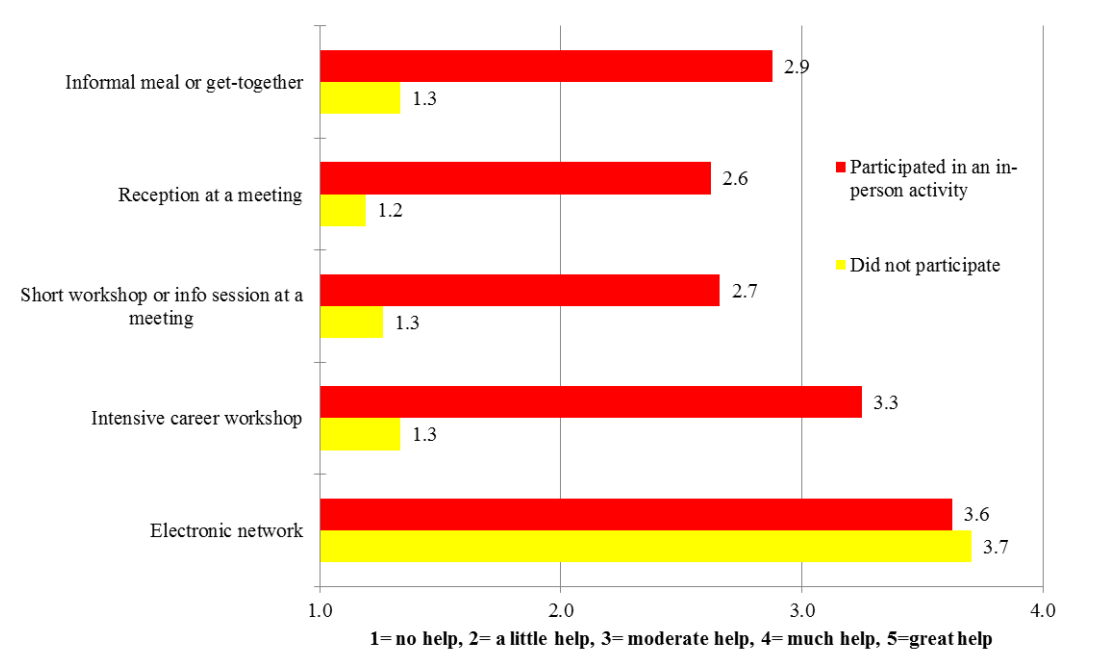
**Figure 5.10: Mean Helpfulness of Network Activities in Helping Members to Make Gains**



### 5.3.3. Source of Gains by In-person Participation

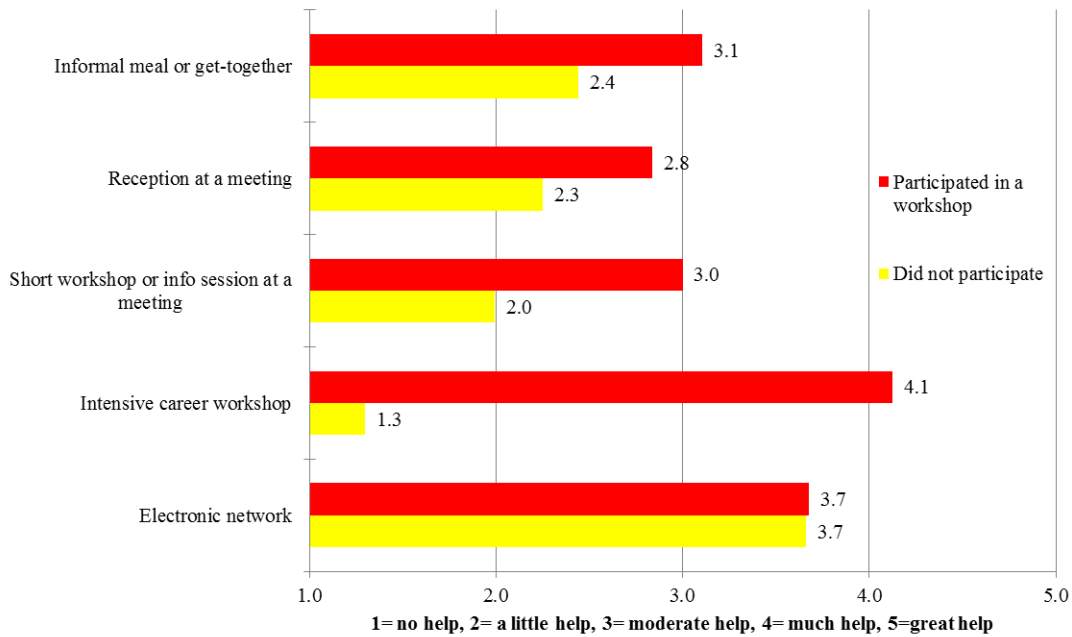
We compared the helpfulness of network activities by in-person participation. Members who did not participate in any in-person activity were compared with members who participated in at least one of the in-person activities shown in Figure 5.11.

**Figure 5.11: Mean Helpfulness of Network Activities in Helping Members to Make Gains by Participation in Any In-person Activity**



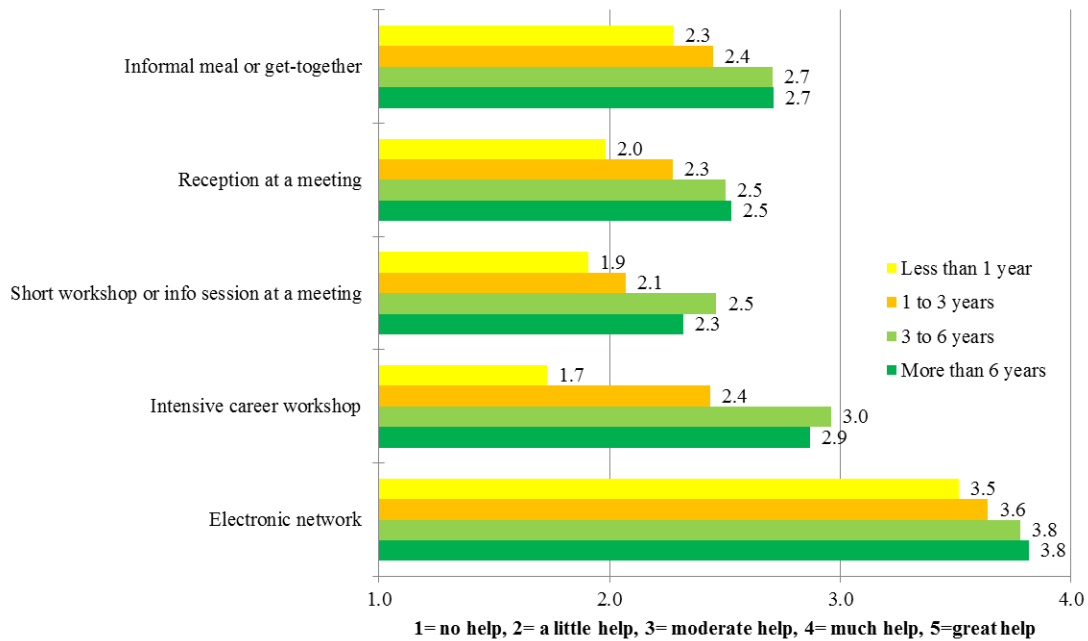
**5.3.4. Source of Gains by Workshop Participation**

**Figure 5.12: Mean Helpfulness of Network Activities in Helping Members to Make Gains by Workshop Participation**



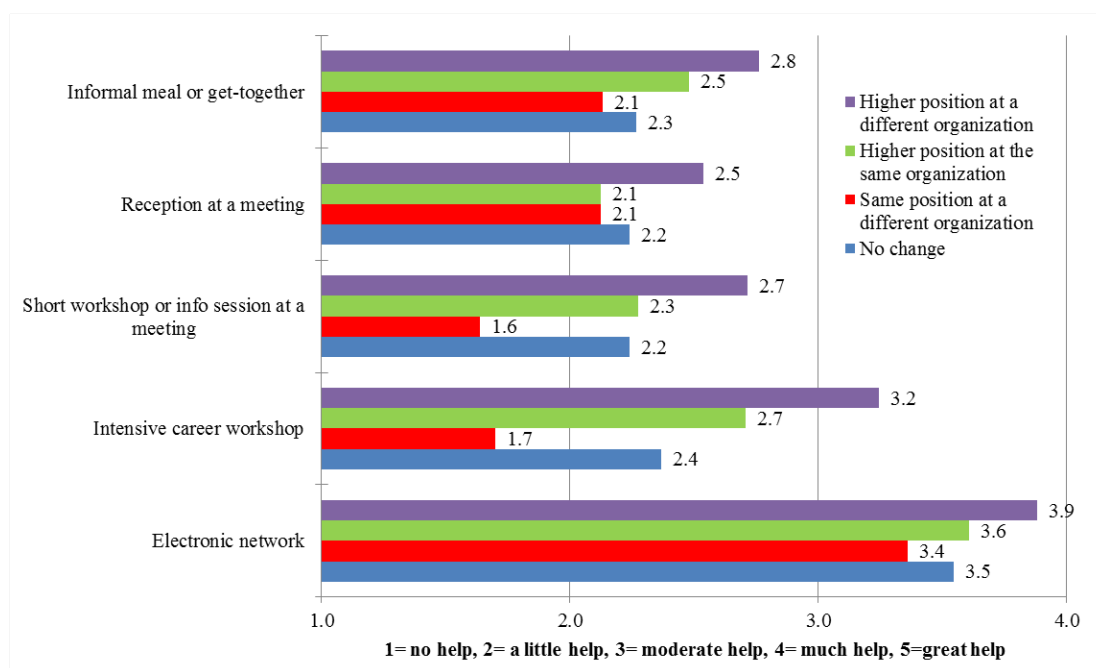
**5.3.5. Source of Gains by Membership Duration**

**Figure 5.13: Mean Helpfulness of Network Activities in Helping Members to Make Gains by Membership Duration**



### 5.3.6. Source of Gains by Career Change Status

**Figure 5.14: Mean Helpfulness of Network Activities in Helping Members to Make Gains by Career Change Status**



### 5.4. Network Participation

As shown in the previous section, network participation was the most influential predictor of gains. Generally, members who participated more in the network (both in the electronic network and in face-to-face activities) also reported higher gains. In this section we present participation indicators and characteristics of those who participate at high, medium, or low levels. To increase meaning and interpretability, we used a cluster analysis to classify members' participation into low, medium, and high categories based on several online network participation indicators shown in Figure 5.15 below. The most frequent forms of participation in the network were reading email messages from the list and reading articles or news items shared on the list. The majority of members participate in "quiet" ways that are not visible to the rest of the community; public activity in the online community is, on average, uncommon.

Participation indicators and proportions of members in each participation category showed no significant differences from 2010 to 2013. About 20% of respondents were in the high participation category, nearly half were in the medium participation category, and a third were in the low participation category. We do not know if these proportions are representative of the total population of ESWN members, although we do expect that the proportion of high-participating members is relatively small and that these active members are also more likely to respond to surveys.

Of the respondents who participated in an in-person activity and/or an intensive workshop, most were medium to high participators. This result suggests that in-person activities and workshops generally attracted individuals who were already active in the electronic network. We also have anecdotal evidence for a reciprocal effect, when those who attended a face-to-face activity

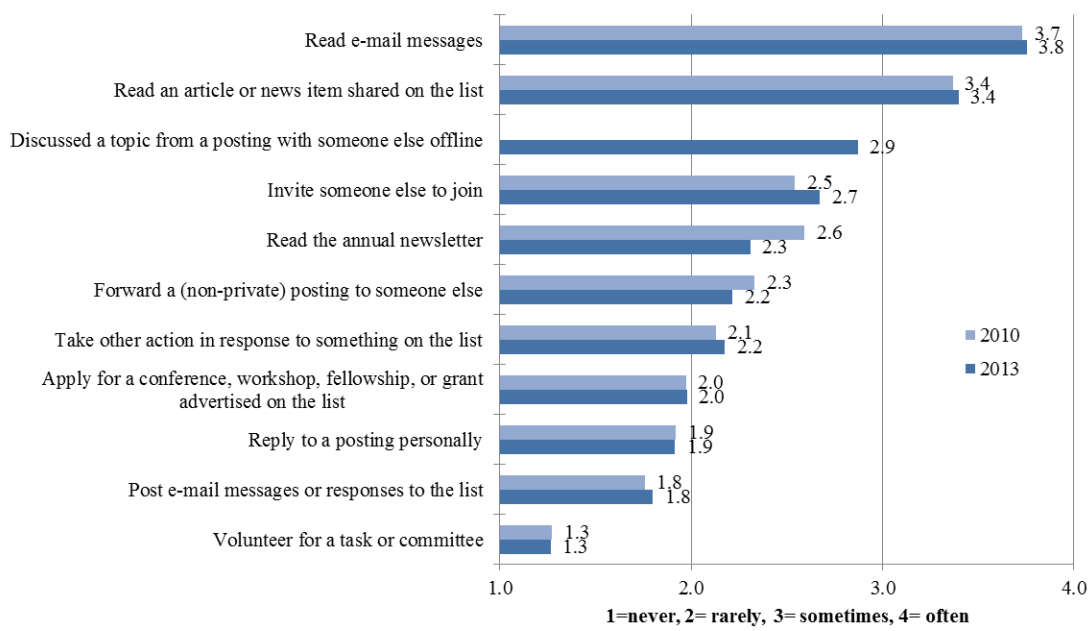
declared their intent to subsequently become more active in the online network, and some evidence that this in fact occurred.

We tested for differences in participation levels based on membership duration, career stage, career change status, discipline, country of employment, child caretaking status, and ethnicity. These results are highlighted below:

- Participation levels differed significantly by membership duration. Generally, those who had been a member for a shorter time participated at a lower level than more established members.
- Participation levels differed by career stage. Graduate students comprised a much smaller proportion of high participators than other career stages, while faculty showed the largest proportion of high participators.
- Career change status was related to some interesting differences in participation levels. Almost two thirds of high-participating members reported obtaining a higher position while being a member of ESWN, while 60% of the low participators reported having no career change while a member of ESWN.
- Members who reported having child caretaking responsibilities were a greater proportion of high-level participators than those who did not have caretaking responsibilities. This is probably connected to previous findings, with parents being older, more likely to be long-time members, and in established careers. It may also reflect their interest in discussion topics related to work/family issues.
- Participation levels showed some interesting differences by ethnicity. Members who classified themselves other than white made up a greater proportion of high participators than white members.
- There were no meaningful differences in the levels of participation by scientific discipline or by country of employment.

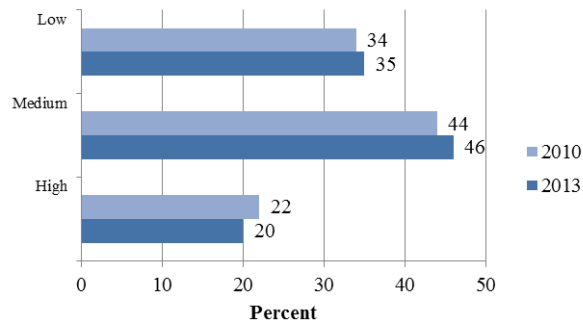
**5.4.1. Online Network Participation Indicators by Survey Year**

**Figure 5.15: Mean Participation Indicators by Survey Year**



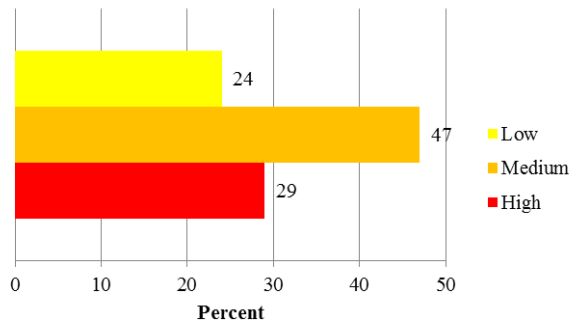
**5.4.2. Online Network Participation Level by Survey Year**

**Figure 5.16: Percent of Respondents in Low, Medium & High Participation Levels by Survey Year**



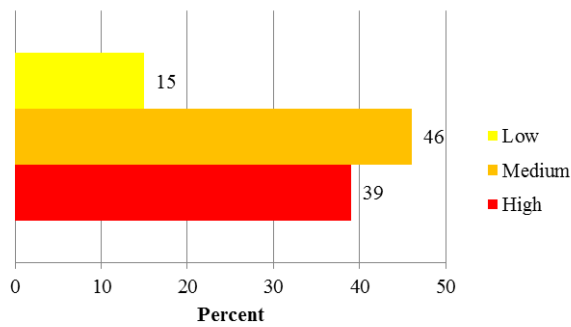
**5.4.3. Online Network Participation Level of In-person Activity Participants**

**Figure 5.17: Online Participation Level of In-Person Activity Participants**



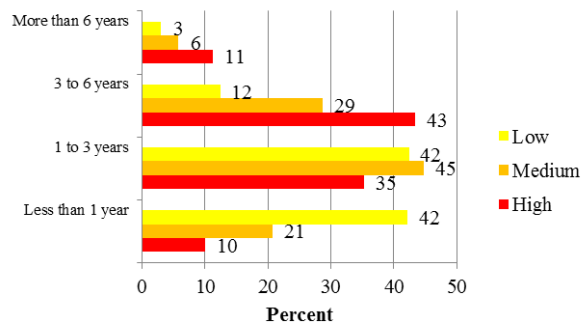
**5.4.4. Online Network Participation Level of Workshop Participants**

**Figure 5.18: Online Network Participation Level of Workshop Participants**



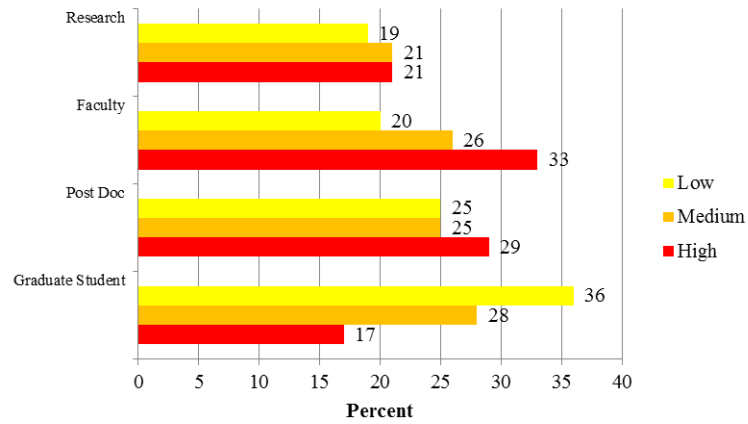
**5.4.5. Online Network Participation Level by Membership Duration**

**Figure 5.19: Online Network Participation Level by Membership Duration**



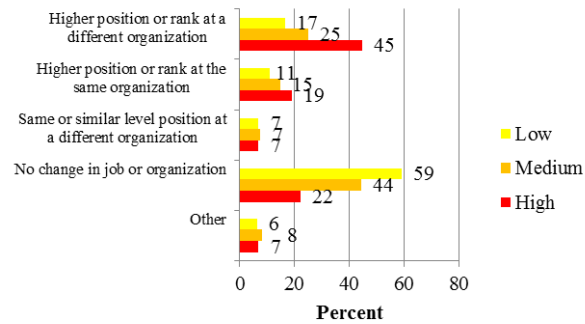
#### 5.4.6. *Online Network Participation Level by Career Stage*

**Figure 5.20: Online Network Participation Level by Career Stage**



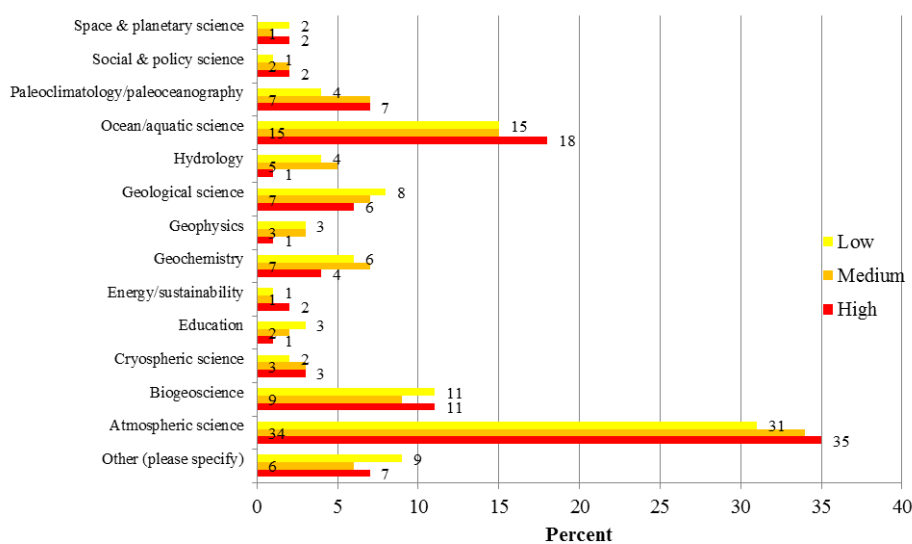
#### 5.4.7. *Online Network Participation Level by Career Change Status*

**Figure 5.21: Online Network Participation Level by Career Change Status**



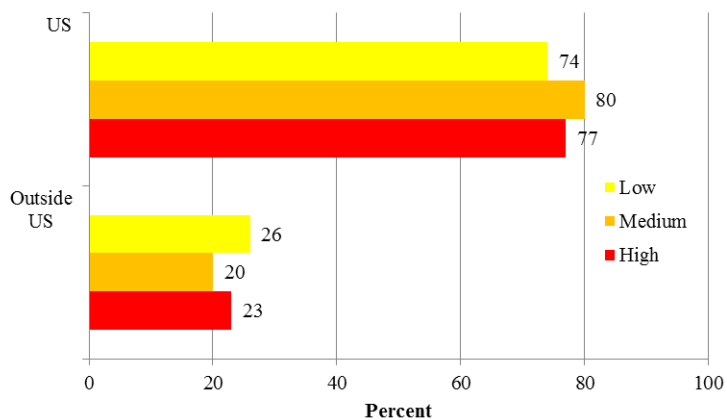
#### 5.4.8. Online Network Participation Level by Discipline

Figure 5.22: Online Network Participation Level by Discipline



#### 5.4.9. Online Network Participation Level by Country Where Employed

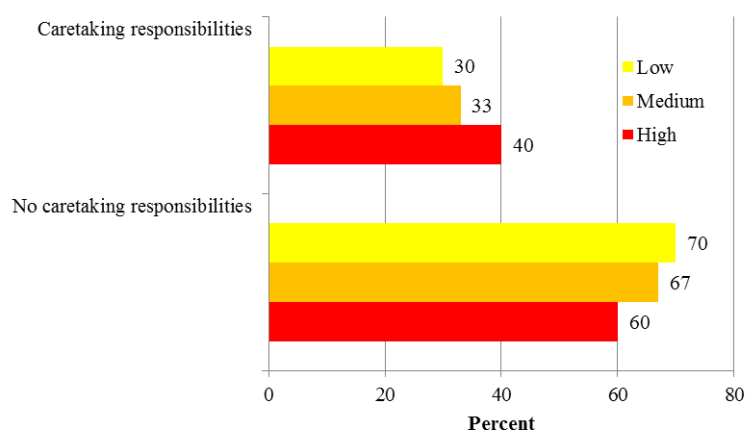
Figure 5.23: Online Network Participation Level by Country Where Employed





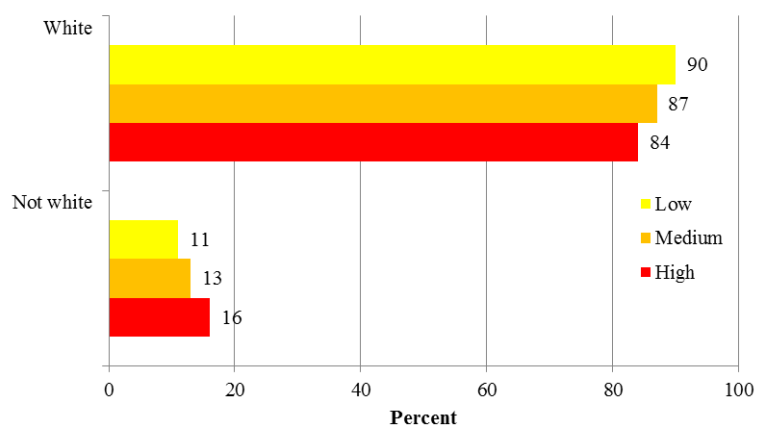
#### 5.4.10. Online Network Participation Level by Child Caretaking Status

**Figure 5.24: Online Network Participation Level by Child Caretaking Status**



#### 5.4.11. Online Network Participation Level by Ethnicity

**Figure 5.25: Online Network Participation Level by Ethnicity**



### 5.5. Sense of Community

From our analysis of open-ended responses of the 2010 members' survey, a common theme arose that ESWN was valued because of the sense of community it provided to members. To probe this further, in the 2013 survey we included an eight-item index to measure the extent to which members identify and belong to the ESWN community. We also used an average of these eight items to determine the overall sense of community perceived by members.

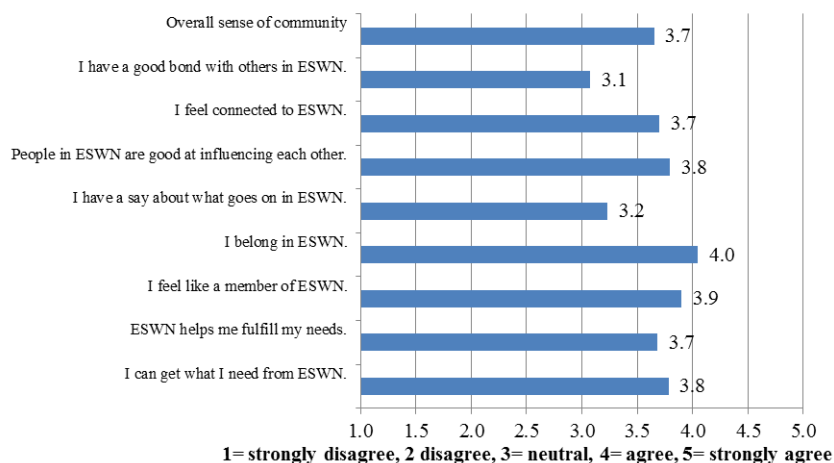
In the aggregate, ESWN members agreed that ESWN provided a sense of community. Figure 5.26 shows that as participation in the network increased, so did sense of community. Similarly, ESWN members who participated in in-person activities and workshops reported higher levels of sense of community than those who did not participate. Sense of community appears to develop over time; as membership duration increased, so did members' level of sense of community.

Sense of community did not differ by members' career stage, indicating this network outcome accommodates all career stages. Interestingly, members' level of sense of community differed

by career change status. That is, members who had obtained a higher position at a different institution reported noticeably higher levels of sense of community than members who had made other career changes, or none. The items “I have a good bond with others in ESWN” and “I have a say about what goes on in ESWN” were rated considerably lower than were all other sense of community items in the aggregate and across all comparisons by subgroup.

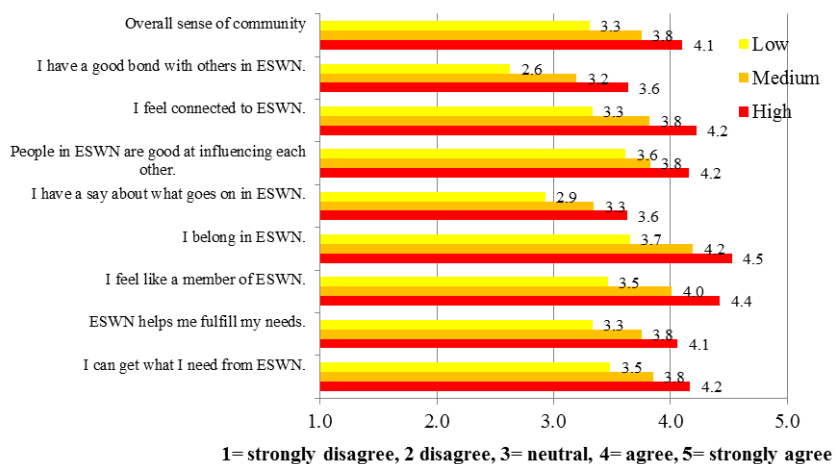
### 5.5.1. Aggregate Sense of Community (2013 data only)

**Figure 5.26: Mean Sense of Community**



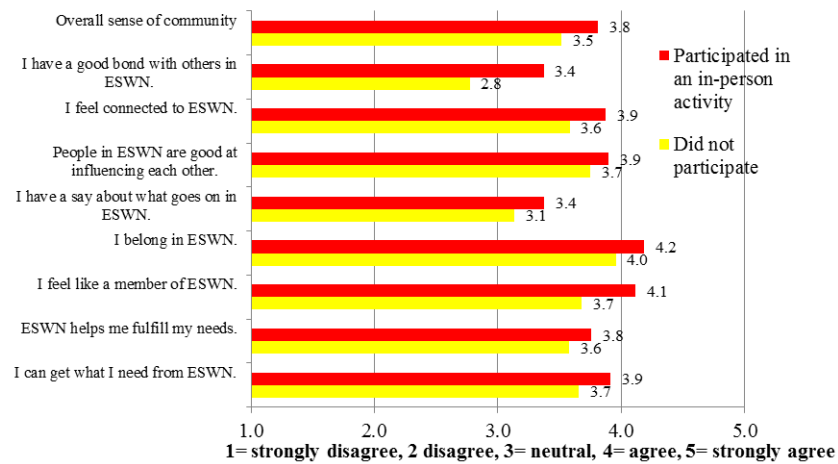
### 5.5.2. Sense of Community by Participation Level

**Figure 5.27: Mean Sense of Community by Participation Level**



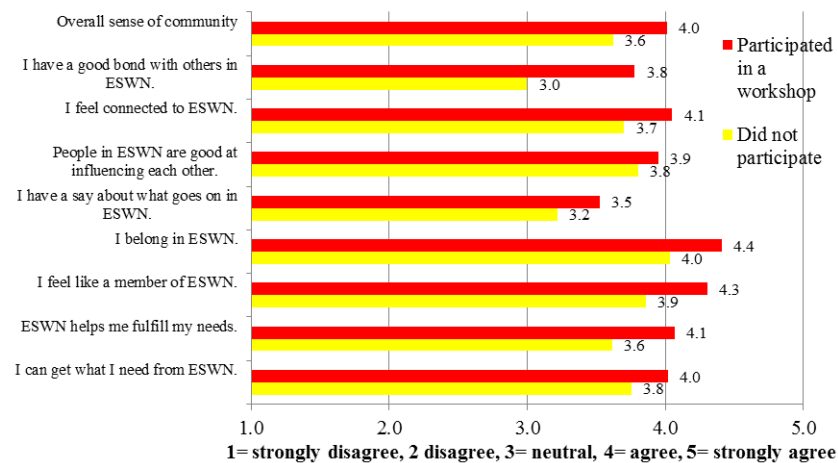
### 5.5.3. Sense of Community by In-person Participation

**Figure 5.28: Mean Sense of Community by In-person Participation**



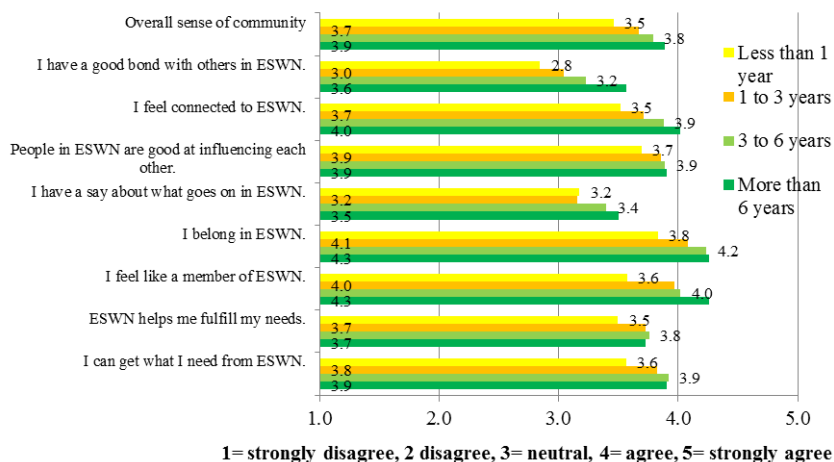
### 5.5.4. Sense of Community by Workshop Participation

**Figure 5.29: Mean Sense of Community by Workshop Participation**



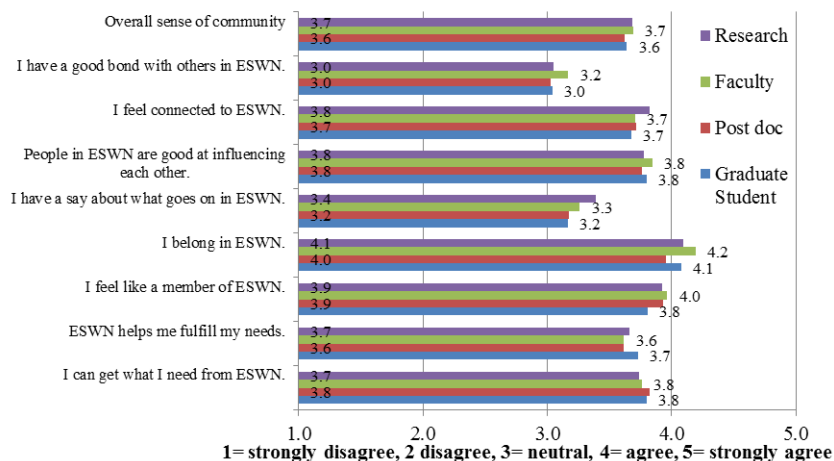
5.5.5. *Sense of Community by Membership Duration*

Figure 5.30: Mean Sense of Community by Membership Duration



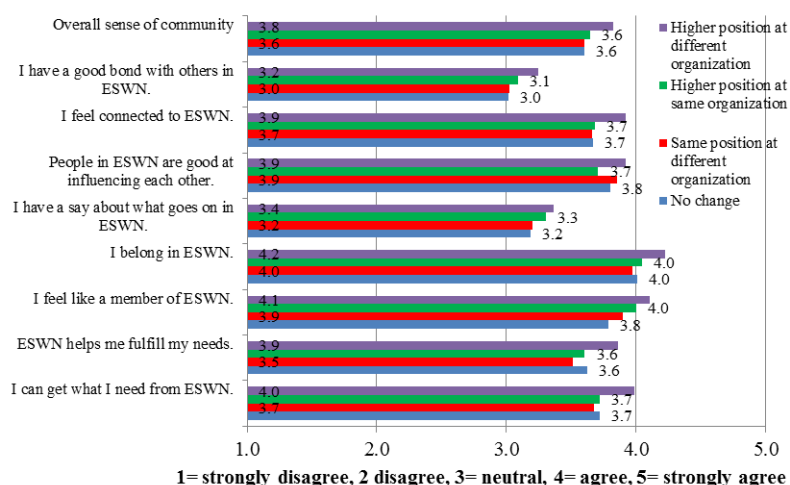
5.5.6. *Sense of Community by Career Stage*

Figure 5.31: Mean Sense of Community by Career Stage



### 5.5.7. Sense of Community by Career Change Status

Figure 5.32: Mean Sense of Community by Career Change Status



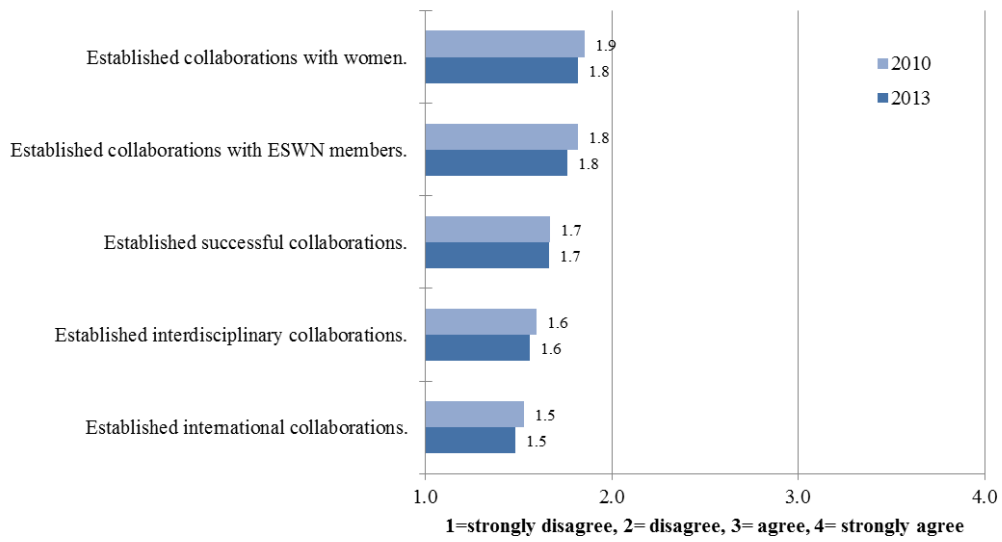
## 5.6. Collaborations

As shown in Section 5.1 of this report, we found that collaborations do not develop easily through network activities. But because fostering collaborations was an explicit goal of the network, we probed specific gains related to scientific collaboration: initial steps such as learning about another field and meeting people with mutual interests, and more concrete progress toward developing collaborations with others whom members may meet through the network.

Overall, collaboration activity was steady from 2010 to 2013. We found that collaborations differed by several participation indicators: participation level, in-person participation, and workshop participation. Collaborations were generally a function of participation level: high participators reported higher gains in collaborations, as did members who participated in in-person ESWN activities and workshops. We wondered whether members later in their career were more likely to initiate collaborations, but this item showed little to no difference based on career stage.

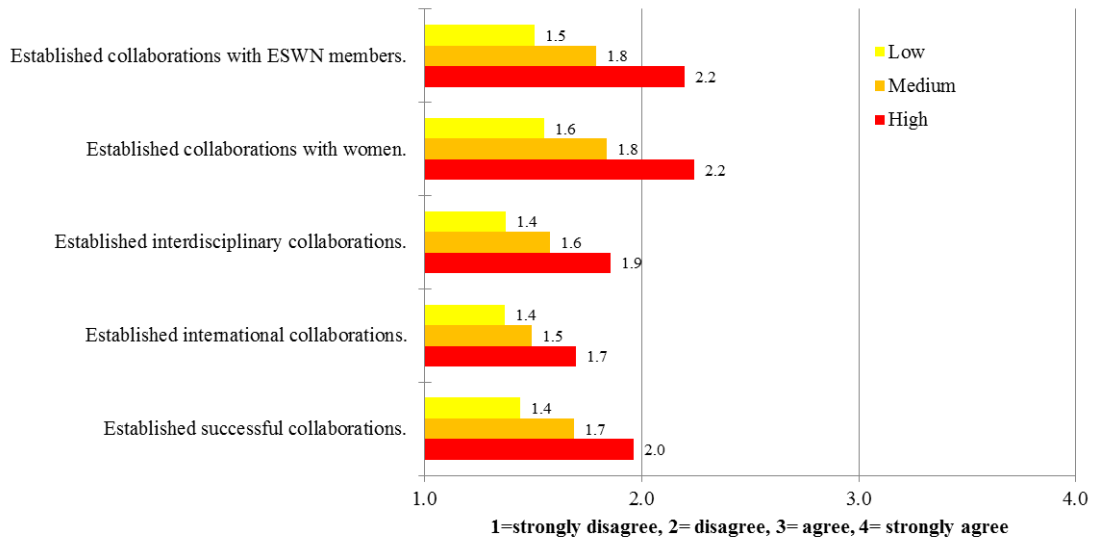
**5.6.1. Collaborations by Survey Year**

**Figure 5.33: Mean Collaboration Ratings by Survey Year**



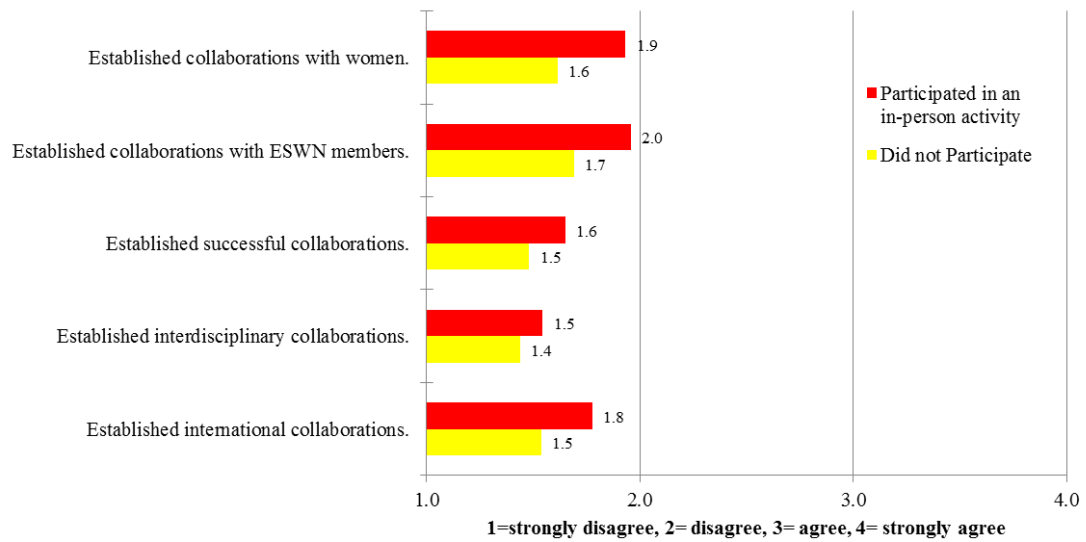
**5.6.2. Collaborations by Participation Level**

**Figure 5.34: Mean Collaboration Ratings by Participation Level**



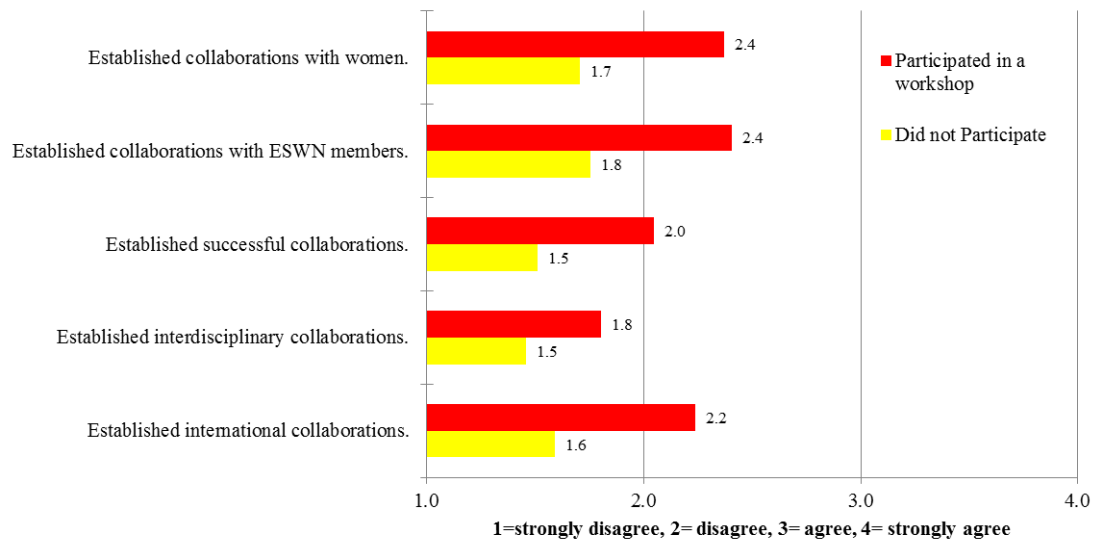
### 5.6.3. Collaborations by In-Person Participation

**Figure 5.35: Mean Collaboration Ratings by In-person Participation**



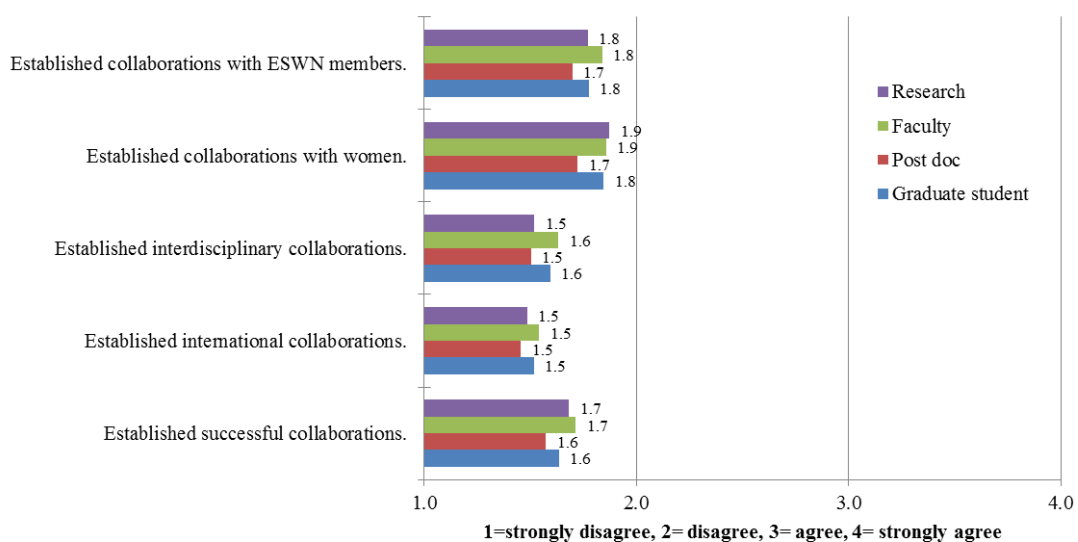
### 5.6.4. Collaborations by Workshop Participation

**Figure 5.36: Mean Collaboration Ratings by Workshop Participation**



### 5.6.5. Collaborations by Career Stage

**Figure 5.37: Mean Collaboration Ratings by Career Stage**



## 6. Perceptions of Career Success

In this section we present data on career success indicators for ESWN members, including career satisfaction, productivity, and professional development. These indicators are complex and influenced by many factors, thus they do not measure direct outcomes of network participation, but they are important factors in determining the status of women in the geosciences. Most are drawn from validated surveys of workplace climate at single institutions: here we apply them to the status of women in a discipline.

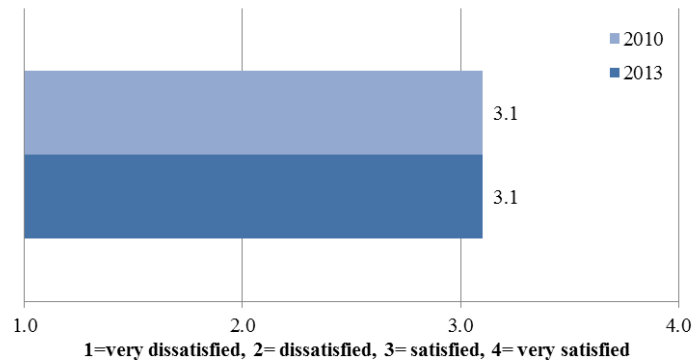
### 6.1. Career Progress Satisfaction

We asked members to report their satisfaction with their career. Members' satisfaction with their own career progress was stable from 2010 to 2013. We found that career progress satisfaction did not differ substantially by participation level or career stage. However, career progress satisfaction differed by organization type and career change status. Members who worked at NGOs or government labs or agencies were less satisfied with their career progress than were members who worked in for-profit organizations or in colleges and universities.



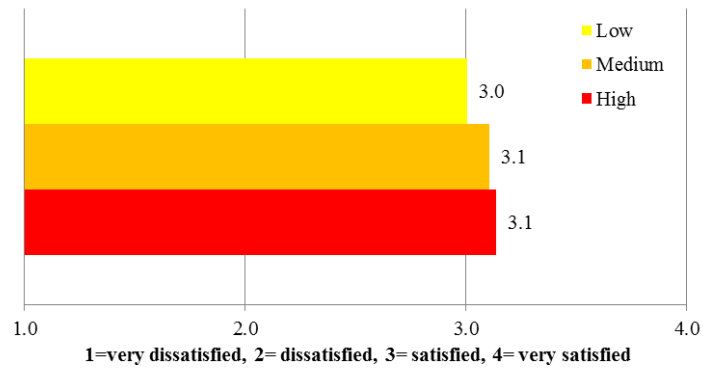
**6.1.1. Career Progress Satisfaction by Survey Year**

**Figure 6.1: Mean Career Progress Satisfaction by Survey Year**



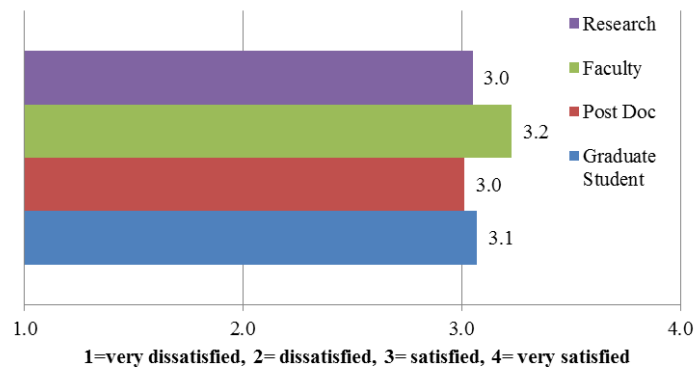
**6.1.2. Career Progress Satisfaction by Participation Level**

**Figure 6.2: Mean Career Progress Satisfaction by Survey Year**



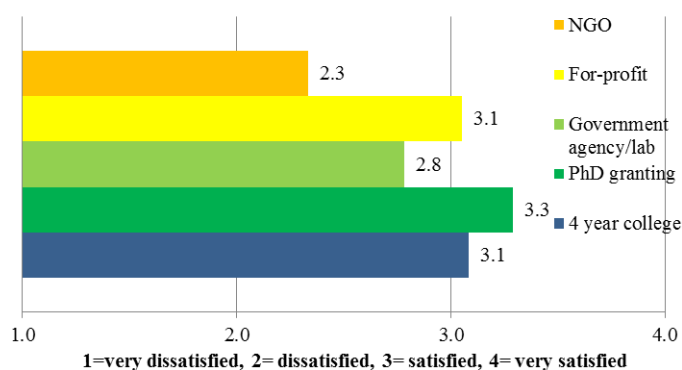
**6.1.3. Career Progress Satisfaction by Career Stage**

**Figure 6.3: Mean Career Progress Satisfaction by Career Stage**



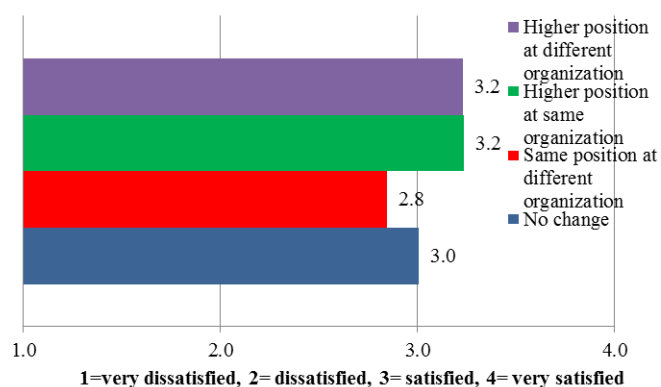
### 6.1.4. Career Progress Satisfaction by Organization Type

Figure 6.4: Mean Career Progress Satisfaction by Organization Type



### 6.1.5. Career Progress Satisfaction by Career Change Status

Figure 6.5: Mean Career Progress Satisfaction by Career Change Status



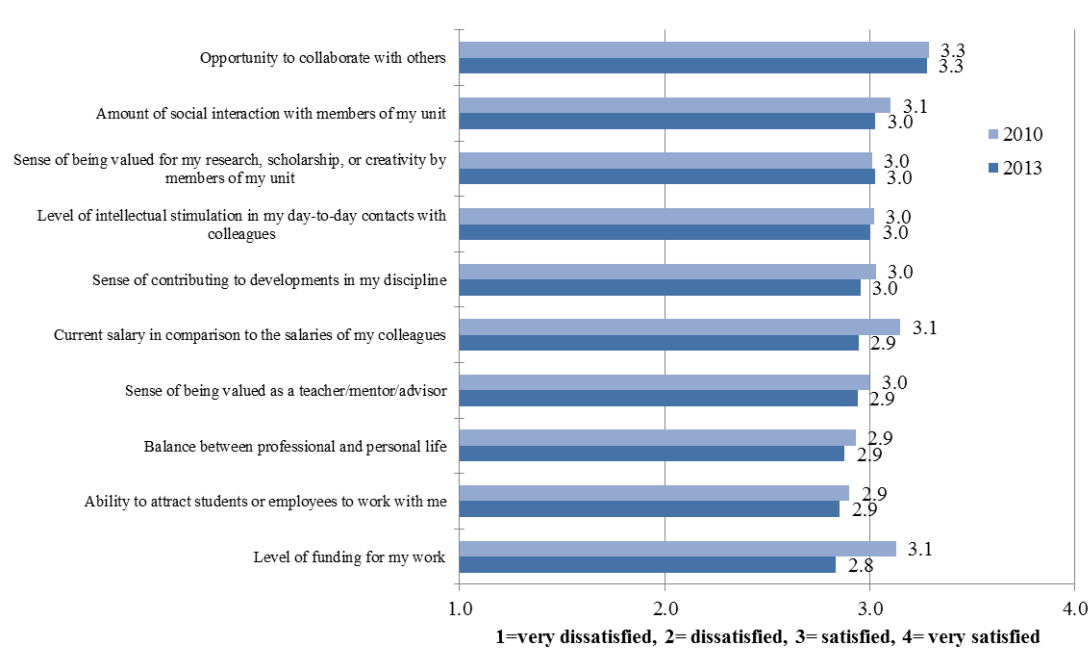
## 6.2. Professional Development Satisfaction

As an outside organization, ESWN can provide some forms of professional development to its members, but other types of professional development are largely obtained in the workplace itself. We asked members to report their level of satisfaction with several dimensions of their own professional development.

We found differences in professional development satisfaction by survey year, career stage, and career change status. From 2010 to 2013 members were less satisfied with their salary in comparison to colleagues and with the level of funding for their work; this may reflect the economic downturn and tight federal funding climate for science. Faculty were more satisfied with their sense of being valued as a teacher or a mentor than were members in other career stages, but they were less satisfied with the level of funding for their work than postdocs or graduate students. Members who reported obtaining a higher position (either at the same or a different organization) were more satisfied with their professional development than members who reported no change in career status or members who reported getting a lateral (same or similar) position at a different organization.

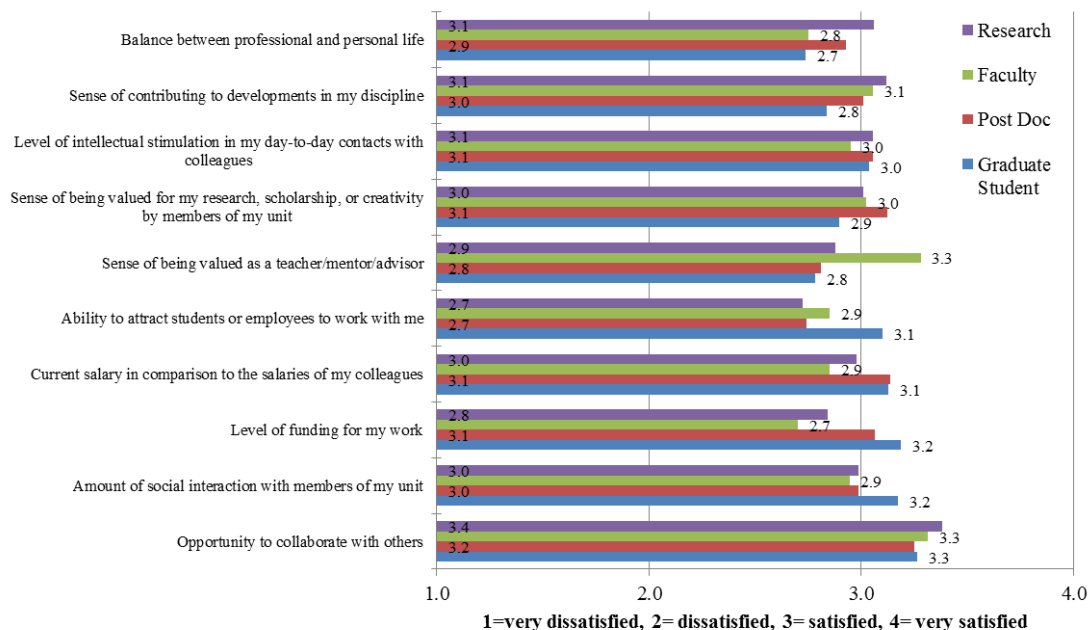
### 6.2.1. Professional Development Satisfaction by Survey Year

**Figure 6.6: Mean Professional Development Satisfaction by Survey Year**



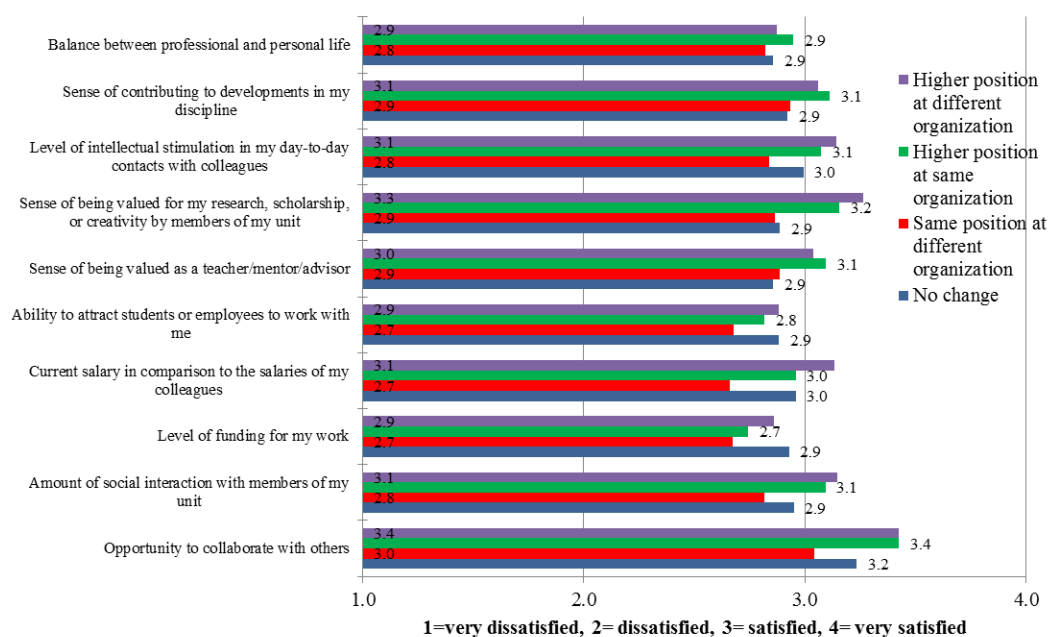
### 6.2.2. Professional Development Satisfaction by Career Stage

**Figure 6.7: Mean Professional Development Satisfaction by Career Stage**



### 6.2.3. Professional Development Satisfaction by Career Change Status

**Figure 6.8: Mean Professional Development Satisfaction by Career Change Status**



### 6.3. Productivity

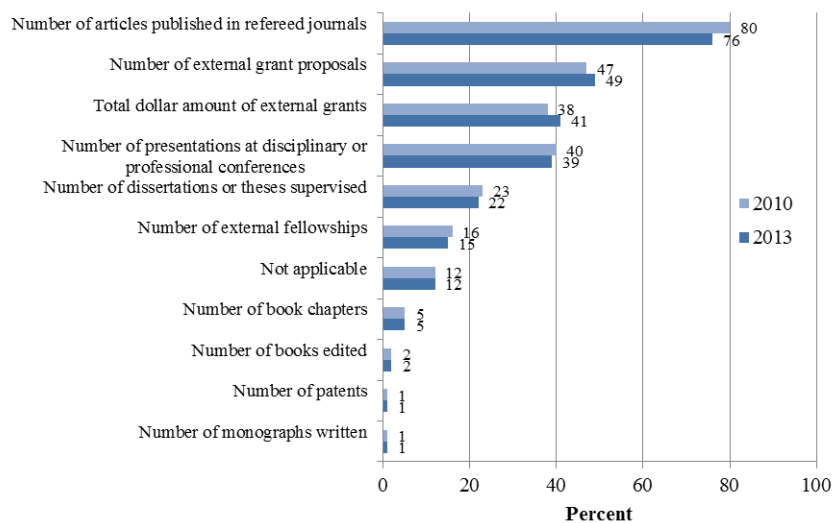
We asked members to report the most important indicators of productivity in their area of research. We found minimal differences in the nature of indicators of research productivity between 2010 and 2013. Productivity indicators showed no meaningful differences on any the top five indicators by any participation, professional, or personal variable. Journal articles, number and dollar amount of grants awarded and professional presentations were the top four indicators of productivity that members said were valued in their fields.

We also measured members' perceptions of their own productivity in comparison to colleagues in their work unit and in comparison to others in their field nationwide. We found no differences in these self-rated levels of productivity from 2010 to 2013. Members who reported a high level of participation in the network perceived themselves to be more productive than did members with medium and low levels of network participation.

Members in faculty and research positions reported being more productive than postdocs and graduate students. Members who worked at government agencies and labs indicated the highest levels of productivity within their work unit and nationally, followed by members at Ph.D.-granting universities and for-profit organizations. Members who worked at NGOs and four-year colleges reported the lowest levels of productivity in their work unit and nationally. Members who reported obtaining a higher position while a member of the network reported higher levels of productivity (both within their work unit and nationally) compared to members who had no career change or had a lateral change (i.e., same or similar position and a different organization).

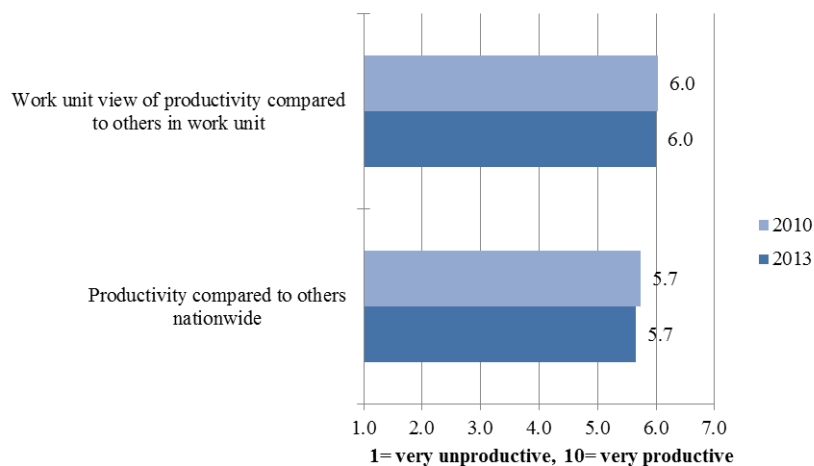
### 6.3.1. Productivity Indicators by Survey Year

**Figure 6.9: Productivity Indicators by Survey Year**



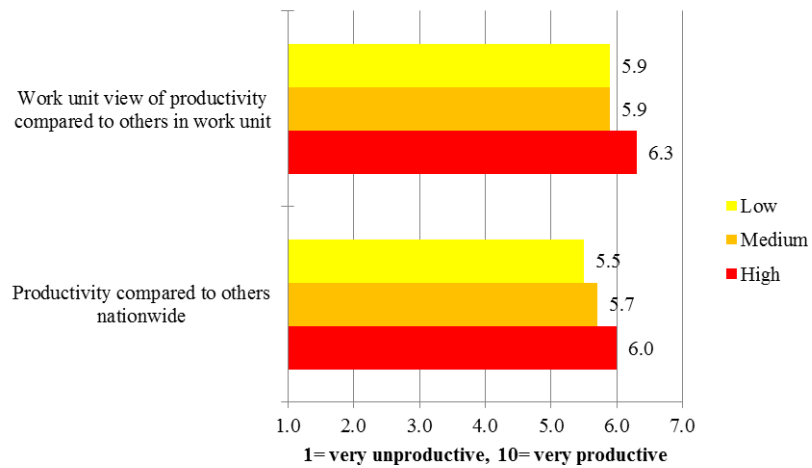
### 6.3.2. Productivity by Survey Year

**Figure 6.10: Mean Productivity by Survey Year**



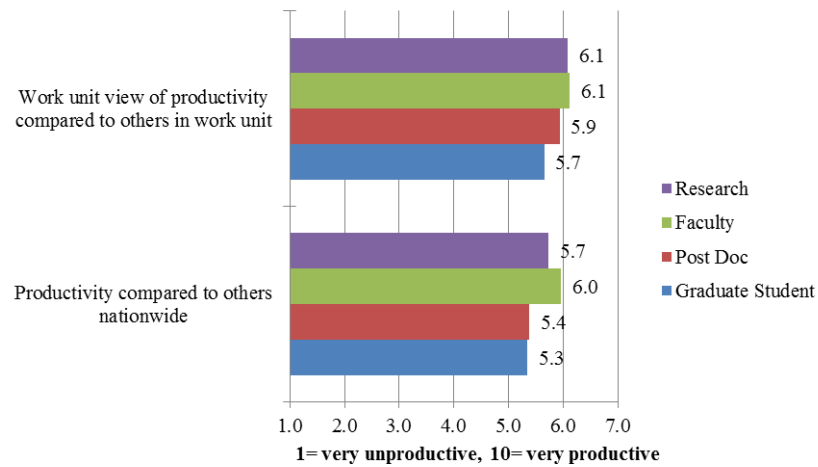
### 6.3.3. Productivity by Participation Level

**Figure 6.11: Mean Productivity by Participation Level**



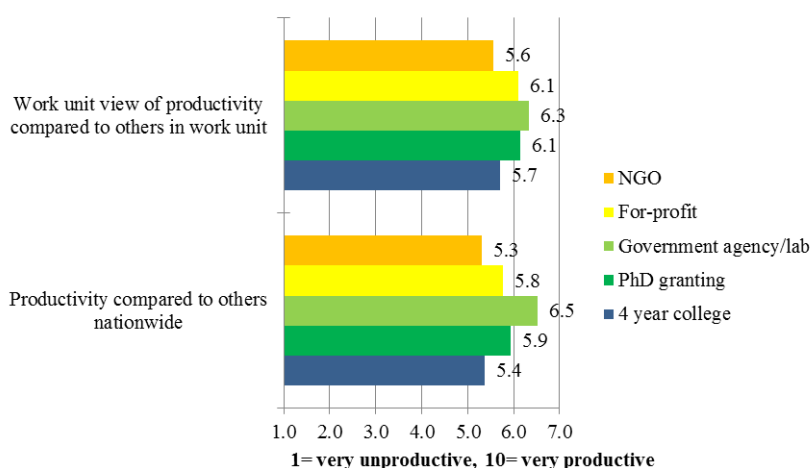
### 6.3.4. Productivity by Career Stage

**Figure 6.12: Mean Productivity by Career Stage**



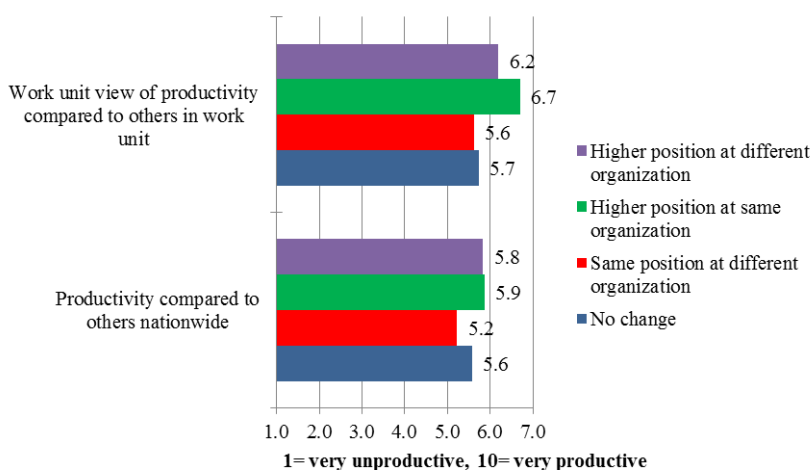
### 6.3.5. Productivity by Organization Type

**Figure 6.13: Mean Productivity by Organization Type**



### 6.3.6. Productivity by Career Change Status

**Figure 6.14: Mean Productivity by Career Change Status**



## 7. Perceptions of Work/life

Both out of biological necessity and from cultural norms, women tend to carry a larger portion of household and parenting duties in families, a pattern which holds true for women academics and scientists as well as for working women more generally. To explore these issues for women in geoscience, we probed members' household and parenting status and their perceptions of work/life issues in relation to their careers. Again, these are general indicators of issues that ESWN members face, not measures of outcomes due to members' participation in the network.

### 7.1. Household Status

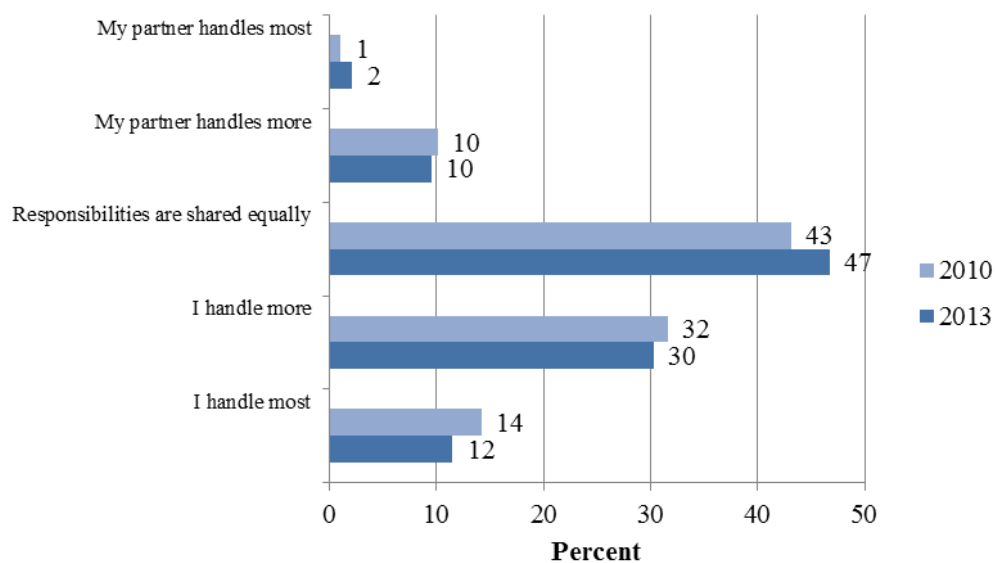
We asked members about the distribution of responsibility for household upkeep and parenting duties in their household. Of members who are married or partnered, roughly half reported they

handled more or most of the upkeep in their household. Additionally, of the members who are married or partnered, roughly half reported they handled more or most of the parenting responsibility in their household. These results suggest that household upkeep and parenting responsibilities may come into conflict with some members' professional responsibilities, an issue that is explored in the following section.

### 7.1.1. Household Upkeep

Roughly 75% of members reported living in a household with a partner; Figure 7.1 shows how household duties are distributed in these households.

**Figure 7.1: Household Upkeep by Survey Year**

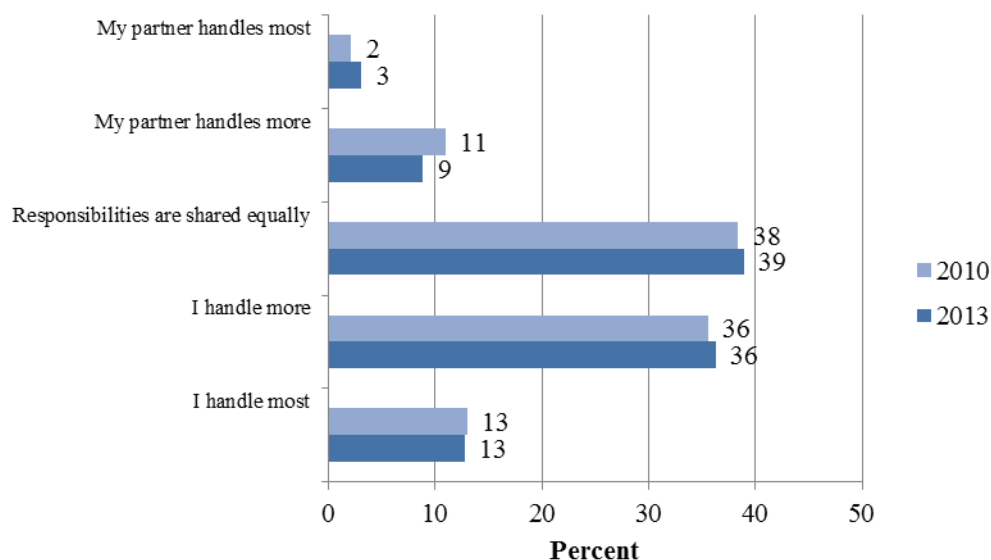




### 7.1.2. Parenting Responsibility

Roughly 30% of members reported living in a household with preschool and/or school age children; Figure 7.2 shows how parenting responsibilities are distributed in these households.

**Figure 7.2: Parenting Responsibility by Survey Year**



### 7.2. Work/life Balance

Members were asked to report several aspects of their work/life interface. We asked members about their level of satisfaction with their own work/life balance, the degree to which their personal responsibilities have slowed their career and participation in professional activities, the expectation of working long hours in their workplace, and the degree to which they have considered leaving their job to improve their work/life balance.

Overall, the results show that, on average, members did not express strong satisfaction or dissatisfaction with their work/life balance. Approximately 60% of respondents from both survey years agreed or strongly agreed that they were satisfied with their work/life balance, while 40% disagreed or strongly disagreed that they were satisfied with work/life balance. Mean ratings were neutral on statements about working long hours as a sign of commitment, and personal responsibilities having slowed their career progression. On average, members generally disagreed that they have had to forego professional activities because of personal responsibilities and disagreed that they had considered leaving their job to improve work/life balance.

There were no meaningful differences from 2010 to 2013 in work/life perceptions, thus these reports reveal a core set of work/life issues that consistently face women geoscientists. However, work/life perceptions differed by career stage, organization type, marital or partnered status, caretaking responsibility status, and parenting responsibility. Members who held research positions were the most satisfied with their work/life balance, while faculty were the least satisfied. Graduate students and postdocs reported their career progress and professional activities to be less negatively affected by personal responsibilities than did members who were more advanced in their careers (faculty and research positions). Graduate students perceived that working long hours was an important sign of commitment in their workplace to a greater degree

than did those in all other career stages, while members in research positions reported that working long hours was important to a lesser degree than did others.

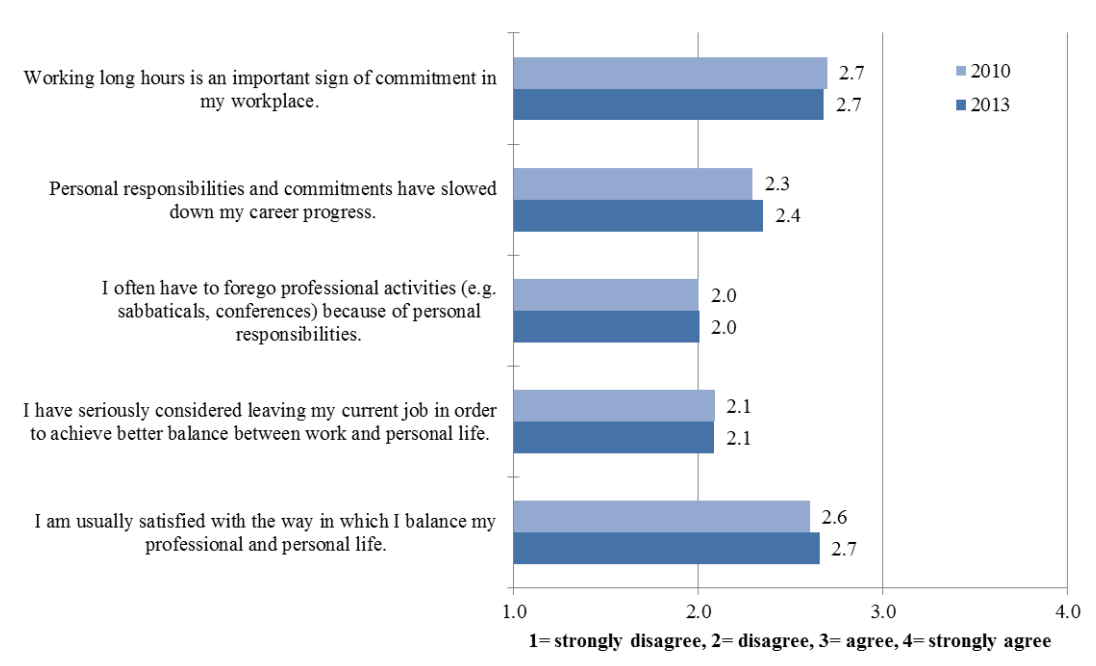
Members who work for for-profit organizations were more satisfied with their work/life balance and were less likely to have considered leaving their jobs to improve work/life balance, compared to members from all other organization types. Members who work at four-year colleges more strongly agreed that working long hours was important sign of commitment than did members from all other organization types, but they also less often reported that personal responsibilities slowed their career progress and caused them to forego professional activities.

Married or partnered members perceived that personal responsibilities slowed their career progress and interfered with their professional activities to a greater degree than did single members. Similarly, members with caretaking responsibilities agreed that their career progress was slowed and they could not participate in professional activities because of personal responsibilities, while members who did not have child caretaking responsibilities generally disagreed that personal commitments interfered with their career progress or participation in professional activities. Of the members with child caretaking responsibilities, those who handled more or most of parenting responsibility in their household reported more personal life spillover and less satisfaction with their work-life balance compared to those who handled equal or less parenting responsibilities in their household.

Finally, members' perceptions of work/life also differed by age: members aged 21 to 30 perceived that personal responsibilities slowed their careers and caused them to forego professional activities to a much lesser degree than did those from all other age groups.

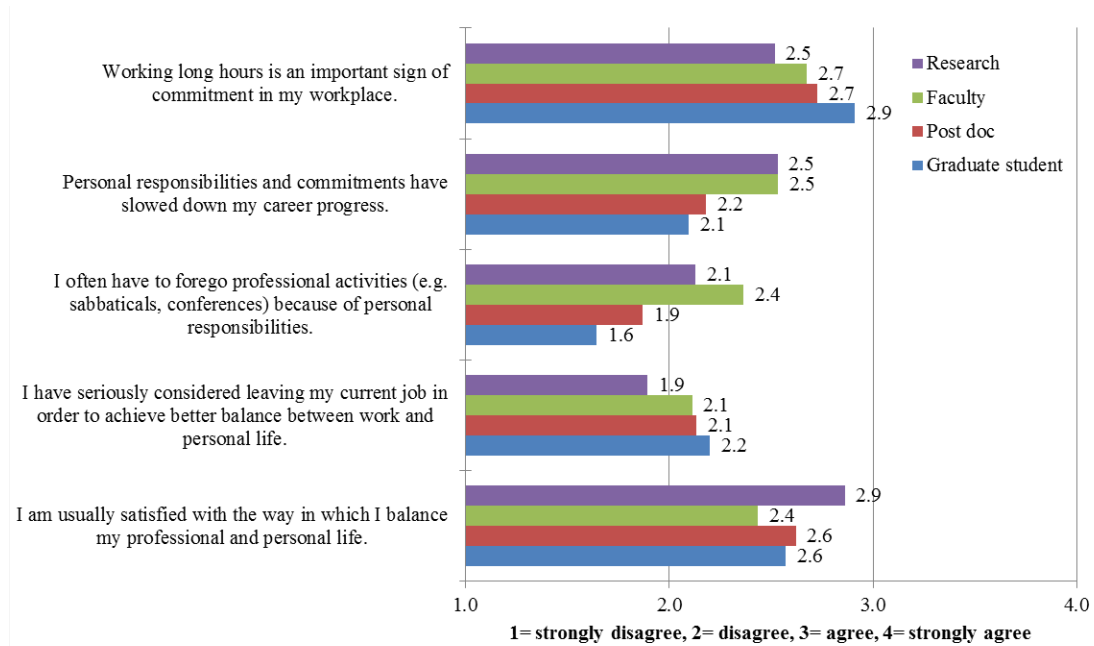
### 7.2.1. *Work/life Balance by Survey Year*

**Figure 7.3: Mean Work/life Balance Ratings by Survey Year**



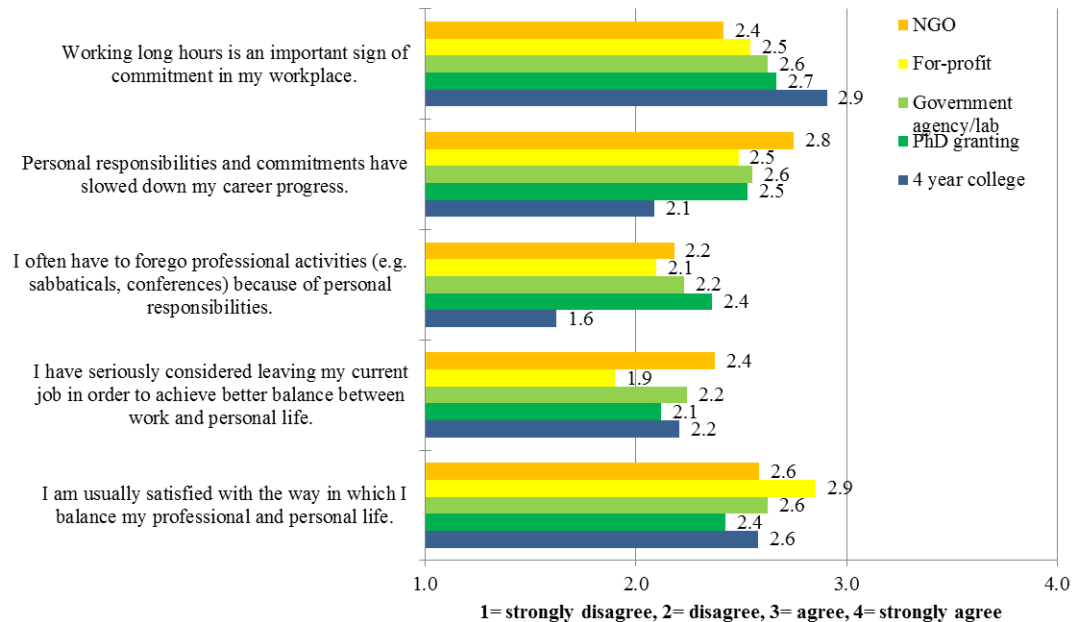
7.2.2. *Work/life Balance by Career Stage*

**Figure 7.4: Mean Work/life Balance Ratings by Career Stage**



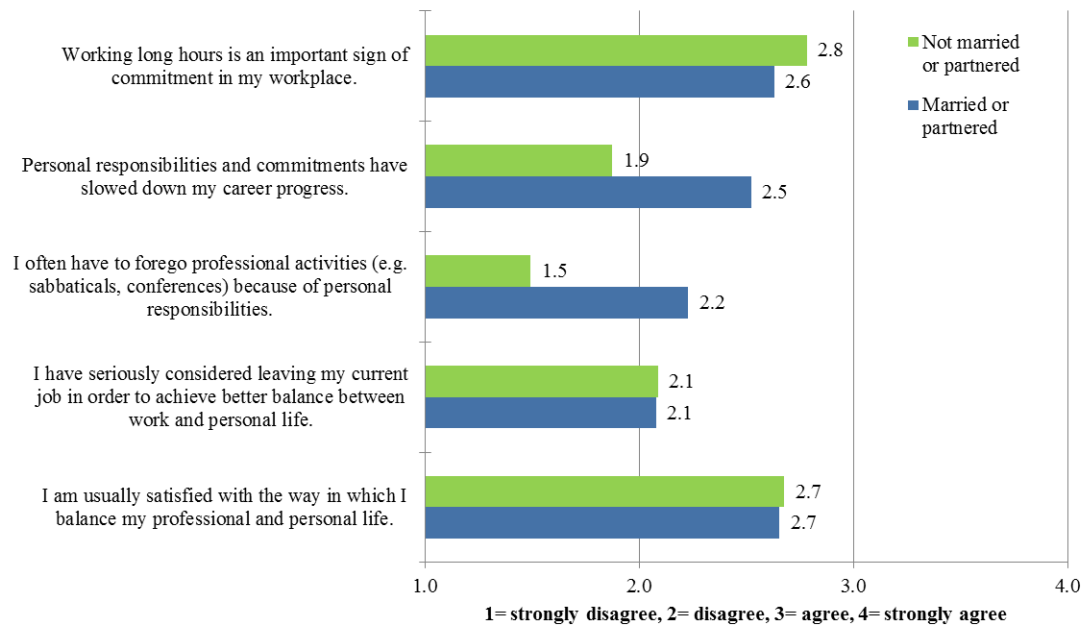
7.2.3. *Work/life Balance by Organization Type*

**Figure 7.5: Mean Work/life Balance Ratings by Organization Type**



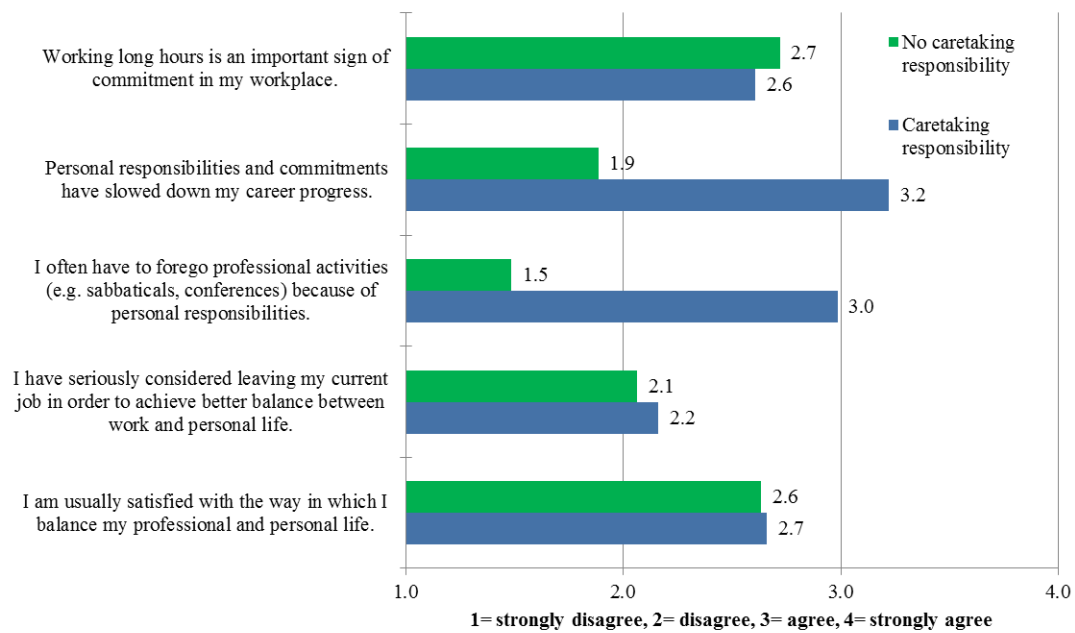
### 7.2.4. Work/life Balance by Relationship Status

**Figure 7.6: Mean Work/life Balance Ratings by Relationship Status**



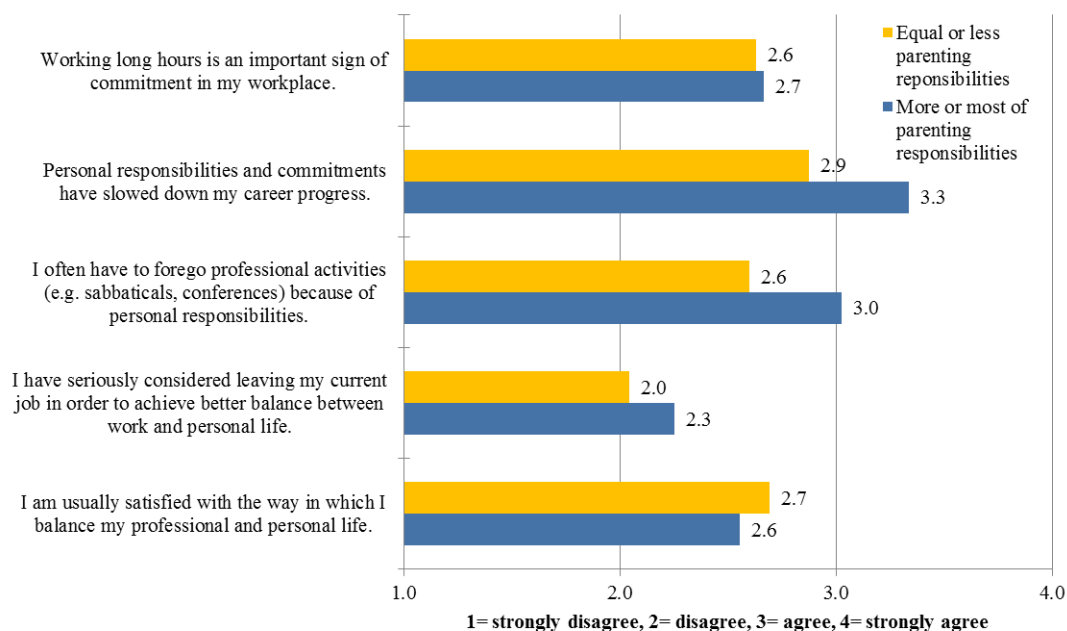
### 7.2.5. Work/life Balance by Caretaking Responsibility

**Figure 7.7: Mean Work/life Balance Ratings by Caretaking Responsibility**



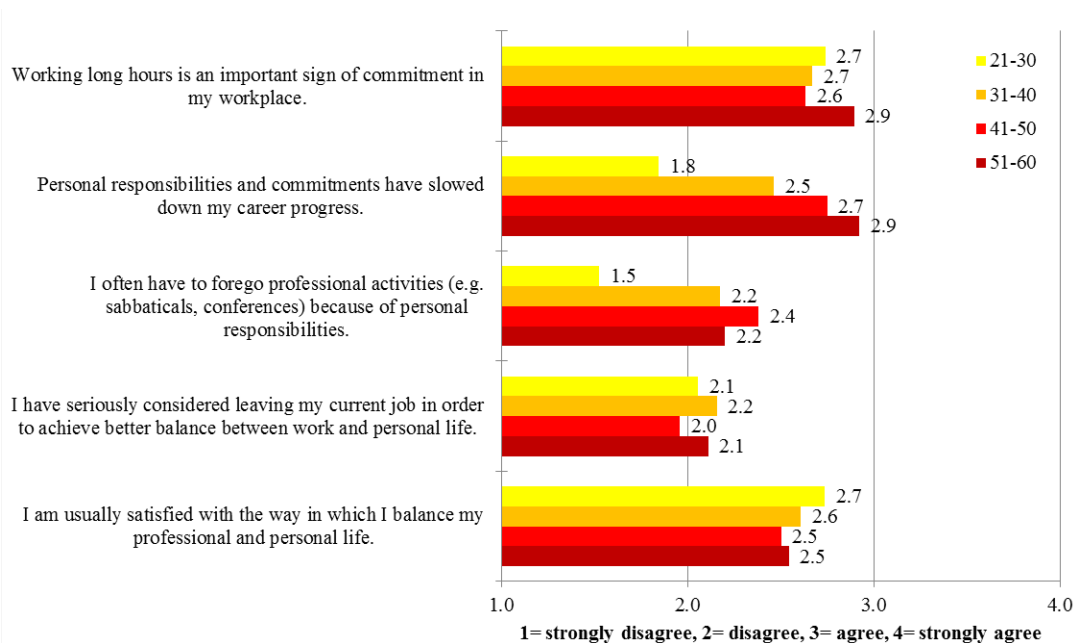
### 7.2.6. Work/life Balance by Parenting Responsibility

**Figure 7.8: Mean Work/life Balance Ratings by Parenting Responsibility**



### 7.2.7. Work/life Balance by Age

**Figure 7.9: Mean Work/life Balance Ratings by Age**



## 8. Perceptions of Workplace

A final group of indicators addresses members' perceptions of their workplace environment. Because members work in many different environments, these indicators highlight workplace

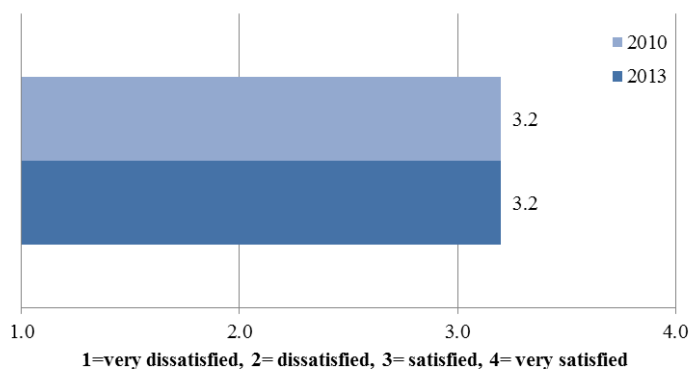
issues that are common for women geoscientists and may reflect aspects of disciplinary culture in the Earth sciences. We asked members about several dimensions of their workplace: job satisfaction, the degree to which they would recommend their workplace, influence, interactions and climate, gender equality, and unwanted sexual attention.

### 8.1. Job Satisfaction

In the aggregate, members were satisfied with their current jobs. There were no meaningful differences in job satisfaction by network participation level or career stage. Job satisfaction did differ by organization type and career change status. Job satisfaction was considerably lower for those who worked at an NGO compared to those from all other organization types. However, this result may not be generalizable to all women working in NGOs in the Earth sciences, as only 48 respondents (4% of the sample) worked for this organization type. Members who reported obtaining a higher position (either at the same or a different organization) while a member of ESWN had marginally higher levels of job satisfaction than did members who reported no change or a lateral change (at the same or different organization).

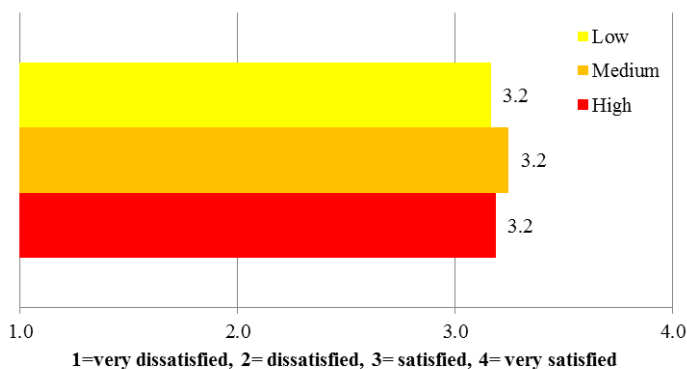
#### 8.1.1. Job Satisfaction by Survey Year

**Figure 8.1: Mean Job Satisfaction by Survey Year**



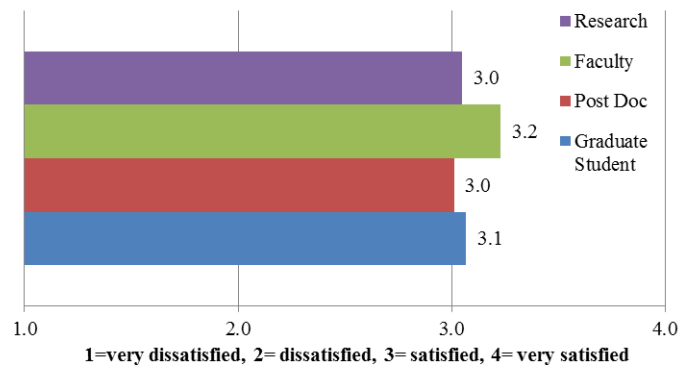
#### 8.1.2. Job Satisfaction by Participation Level

**Figure 8.2: Mean Job Satisfaction by Participation Level**



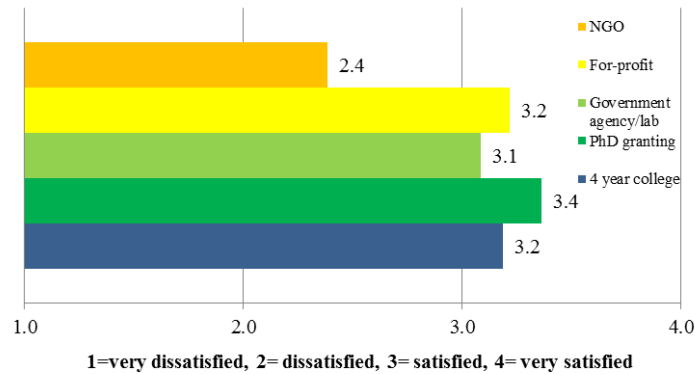
### 8.1.3. Job Satisfaction by Career Stage

Figure 8.3: Mean Job Satisfaction by Career Stage



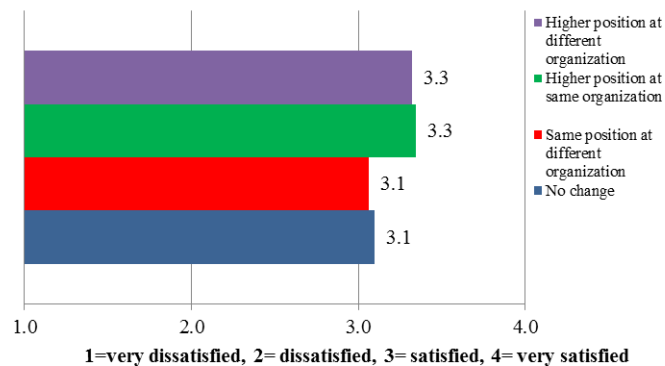
### 8.1.4. Job Satisfaction by Organization Type

Figure 8.4: Mean Job Satisfaction by Organization Type



### 8.1.5. Job Satisfaction by Career Change Status

Figure 8.5: Mean Job Satisfaction by Career Change Status



## 8.2. Recommend Work Unit

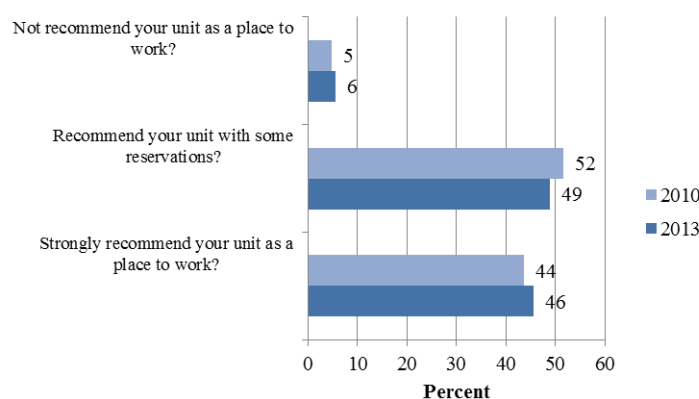
As an indicator of their general satisfaction with their current work unit, we asked respondents if they would recommend their work unit as a place to work. Generally, most members would

strongly recommend their work unit or would recommend their work unit with some reservations; only a few would not recommend it at all.

There was no difference in work unit recommendations from 2010 and 2013, but members' recommendation of their workplace did differ by career stage and career change status. The percentage of faculty who strongly recommended their work unit was substantially higher than among all other career types. Members who had obtained a higher position at a different organization recommended their work unit more favorably than did those in all other career change categories. But members who reported no career change recommended their work unit less favorably than did those in all other career change categories.

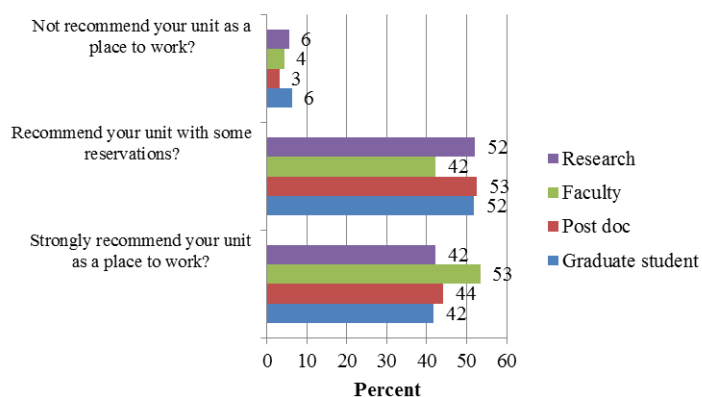
### 8.2.1. Recommend Work Unit

**Figure 8.6: Work Unit Recommendations by Survey Year**



### 8.2.2. Recommend Work Unit by Career Stage

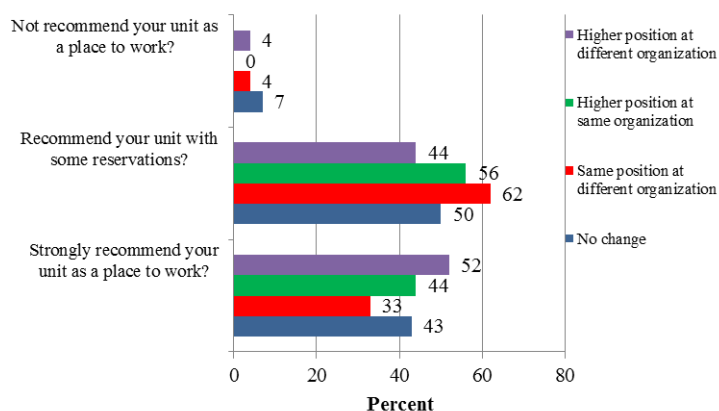
**Figure 8.7: Work Unit Recommendations by Career Stage**





### 8.2.3. Recommend Work Unit by Career Change Status

**Figure 8.8: Work Unit Recommendations by Career Change Status**



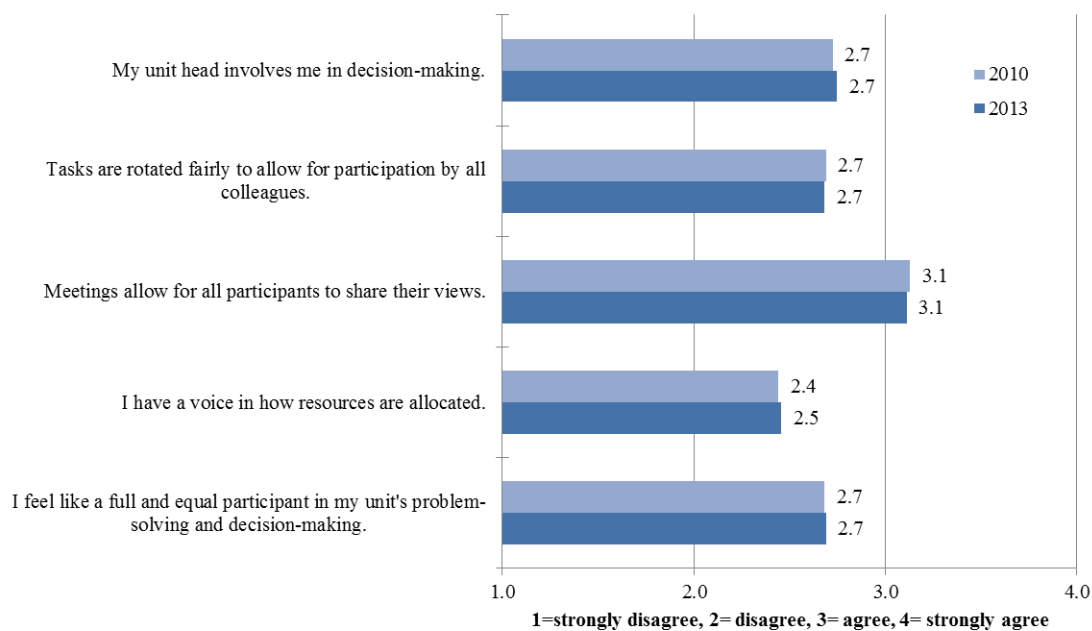
### 8.3. Influence in the Workplace

We asked members to report their level of influence in their workplace. In the aggregate, members were generally neutral on their level of influence in their workplace. They were more positive about their influence on one item: members generally agreed that meetings in their workplace allowed all participants to share their views. There were no differences in perceived levels of influence from 2010 to 2013.

However, there were several differences by career stage and career change status. Members in more advanced career stages (faculty and research) reported higher levels of influence than members in earlier stages of their careers (graduate students and postdocs). Members who reported securing a higher position (either at the same or different organization) perceived higher levels of influence in their workplace than did those who had no career change or had a lateral change (same or similar positions at a different organization).

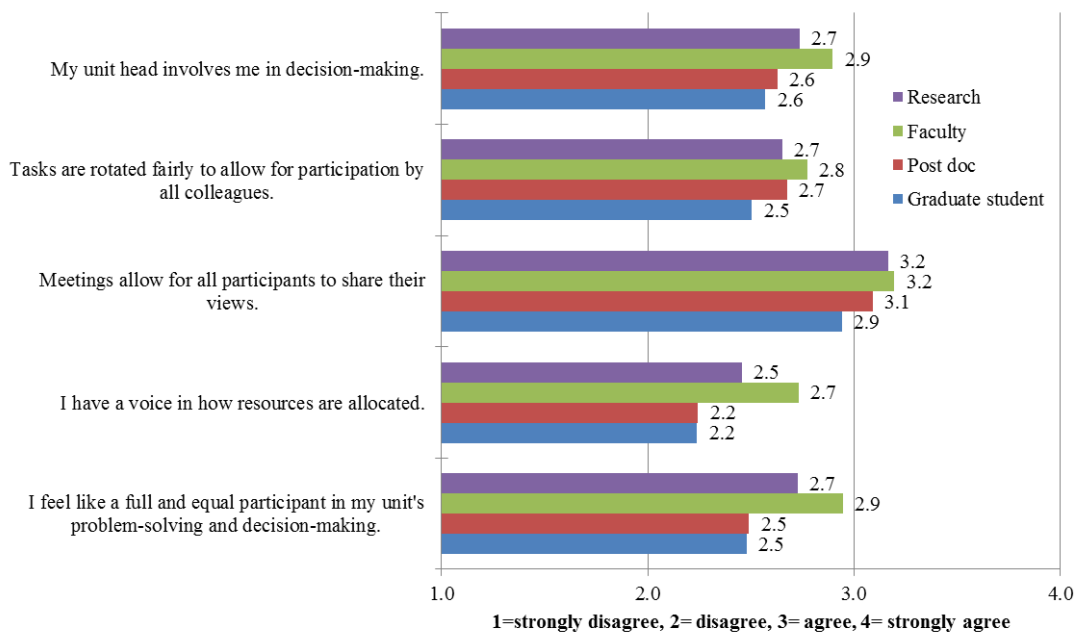
### 8.3.1. Influence by Survey Year

**Figure 8.9: Mean Workplace Influence by Survey Year**



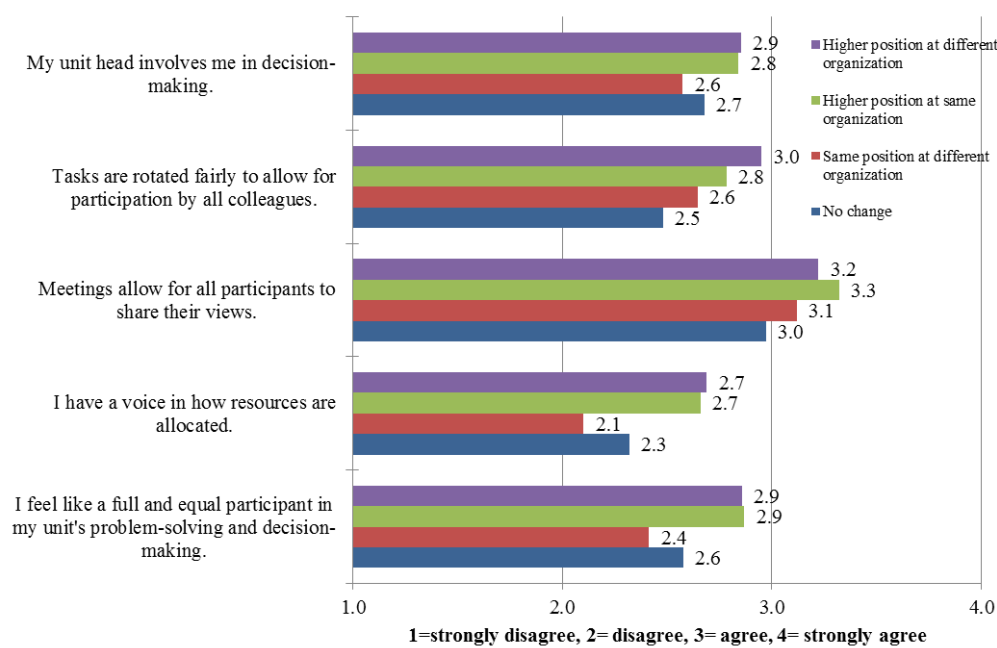
### 8.3.2. Influence by Career Stage

**Figure 8.10: Mean Workplace Influence by Career Stage**



### 8.3.3. Influence by Career Change Status

**Figure 8.11: Mean Workplace Influence by Career Change Status**



## 8.4. Workplace Interactions

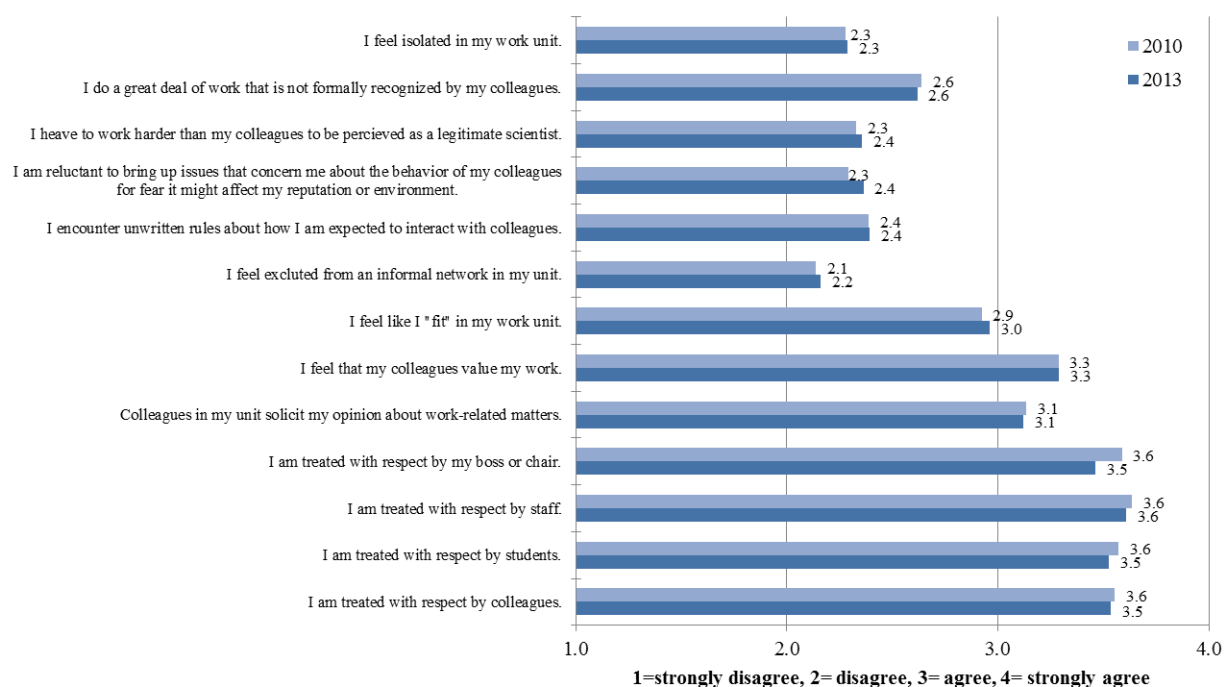
We asked members about their interactions in their work unit, which are reflective of respondents' perceptions of their workplace climate. In the aggregate, members had positive impressions of the workplace interactions that we measured. Interestingly, members' perceptions of interaction items that were negatively worded were generally neutral, while the positively worded items were reported more favorably. From 2010 to 2013 there were no significant differences in members' perceptions of their workplaces.

Perceptions of workplace interactions differed by career stage, however most differences were minimal. Members in faculty positions felt more isolated, and they reported doing more work that is not recognized and having to work harder than colleagues compared to members in other career stages. Postdocs reported most interactions more favorably than did members in other career stages. Interactions also differed by career change status. Generally, members who had made a career change to a higher position (both at same or different organizations) perceived their workplace interactions more favorably than those who made no career change or made a lateral change at a different organization.

Additionally, perceptions of workplace interactions differed by members' age. Older members perceived several workplace interactions less favorably than did younger members, including having to do work that is not formally recognized, working harder than colleagues, encountering unwritten rules, and fearing retribution for bringing up issues about colleagues.

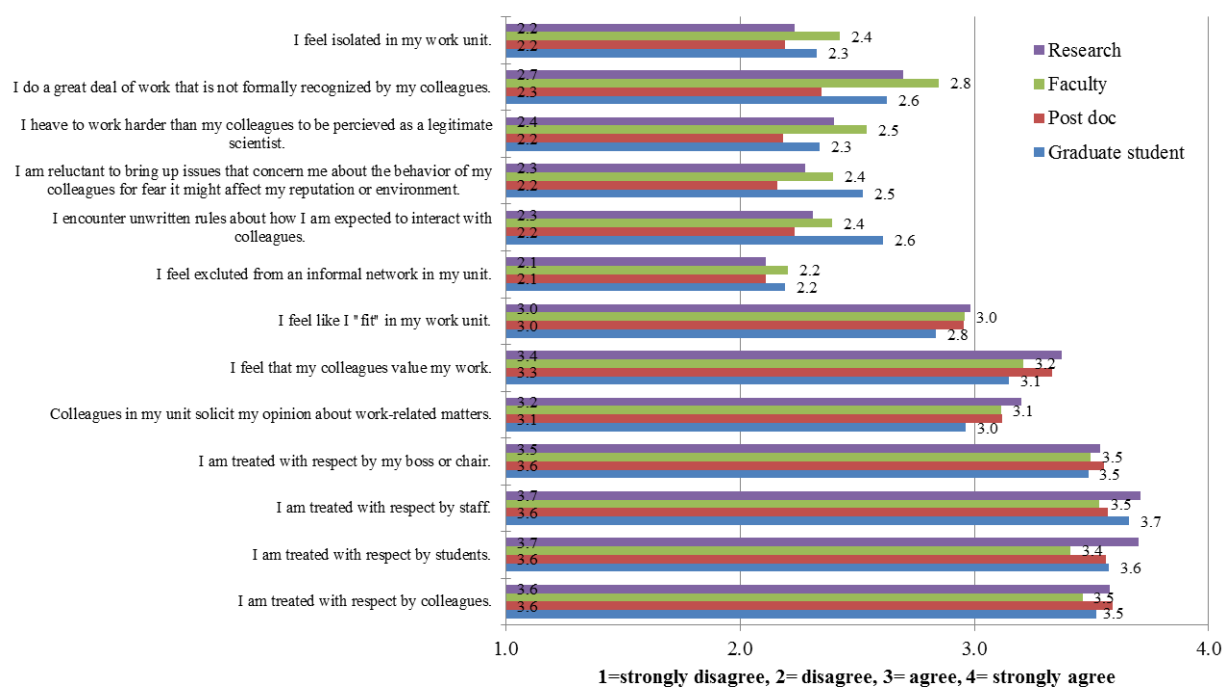
### 8.4.1. Interactions by Survey Year

**Figure 8.12: Mean Workplace Interactions by Survey Year**



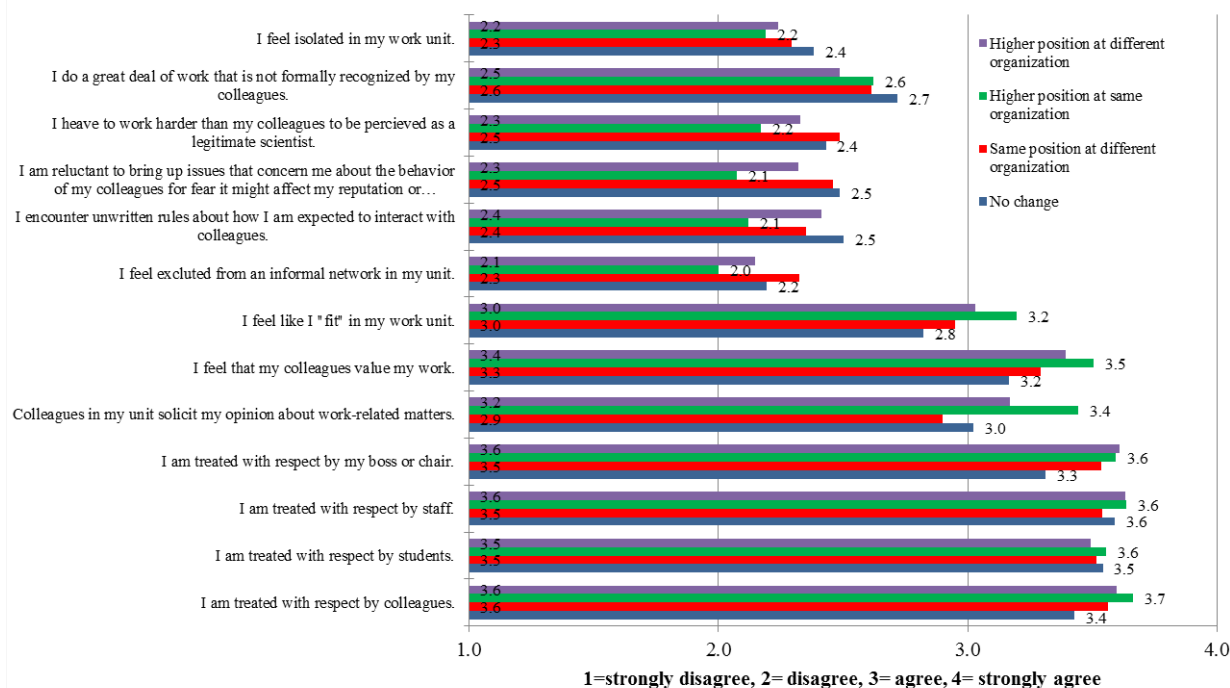
### 8.4.2. Interactions by Career Stage

**Figure 8.13: Mean Workplace Interactions by Career Stage**



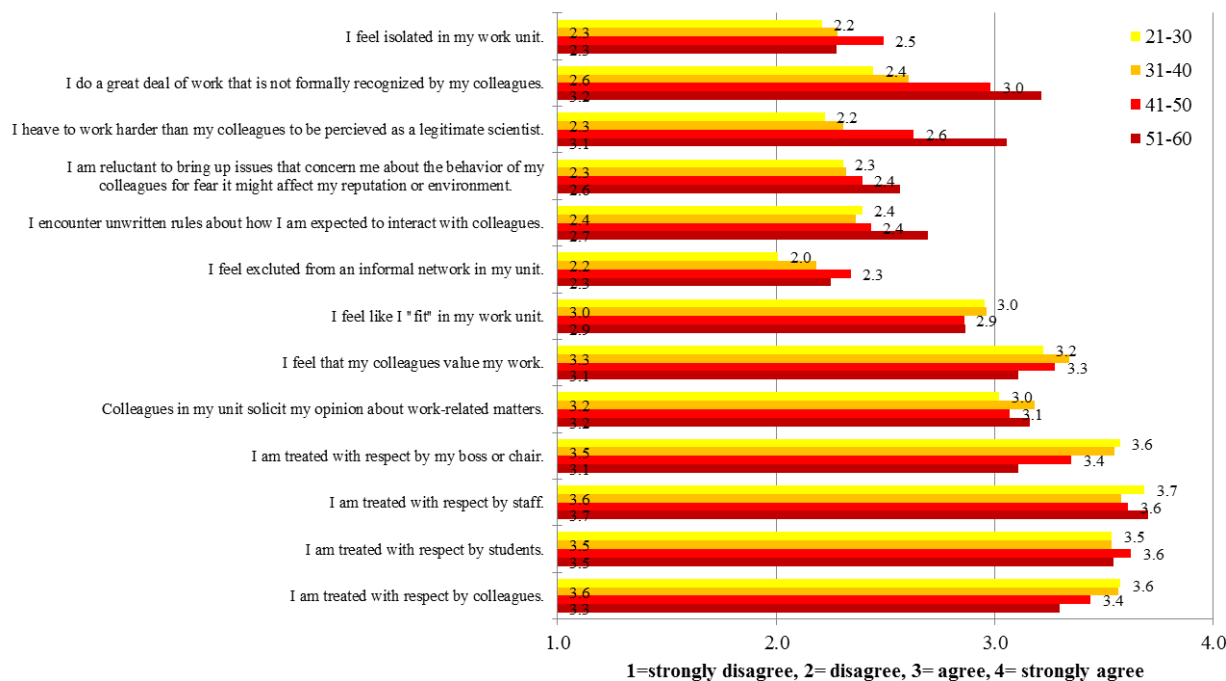
### 8.4.3. Interaction by Career Change Status

Figure 8.14: Mean Workplace Interactions by Career Change Status



### 8.4.4. Interaction by Age

Figure 8.15: Mean Workplace Interactions by Age



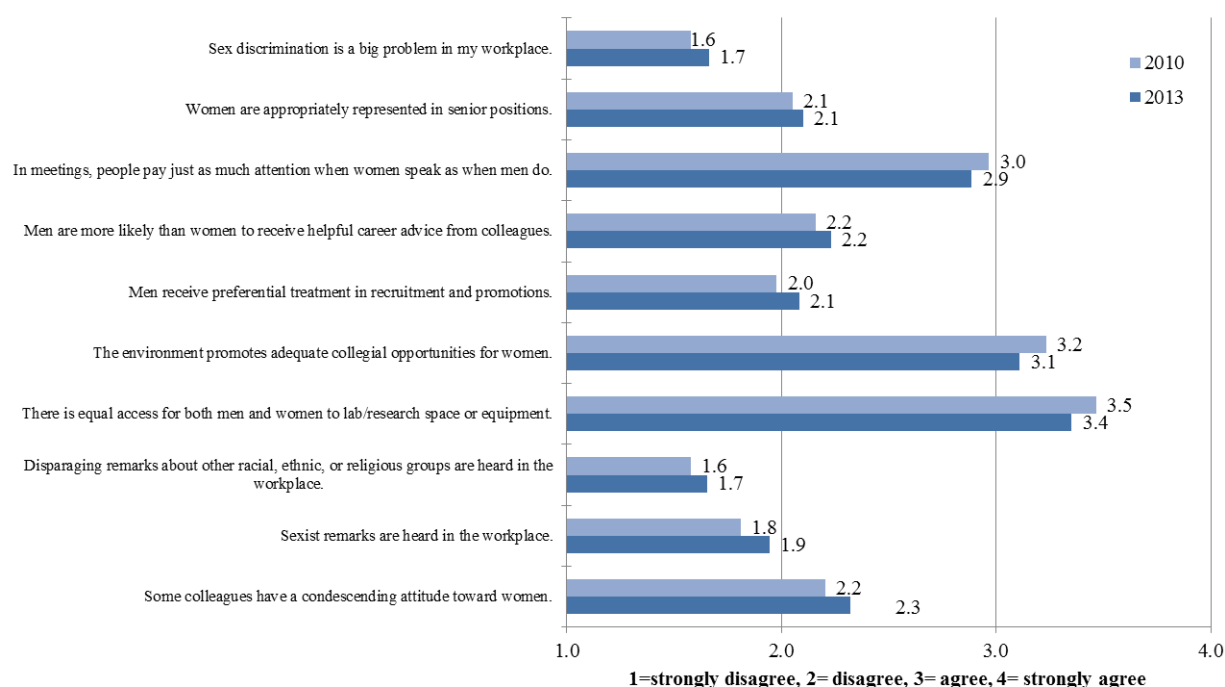
## 8.5. Gender Equality

Members were asked to report their perceptions of gender equality and discrimination in their workplace, considering both overt and more subtle biases. Generally, members reported favorable impressions of gender equality and a lack of sexual discrimination in their workplace. These perceptions were nearly identical from 2010 to 2013.

Perceptions of gender equality and discrimination differed minimally by career stage and child caretaking status, but differed substantially by members' age. Generally, younger members perceived their workplace more favorably, while older members reported less favorable workplace conditions in relation to gender equality and discrimination.

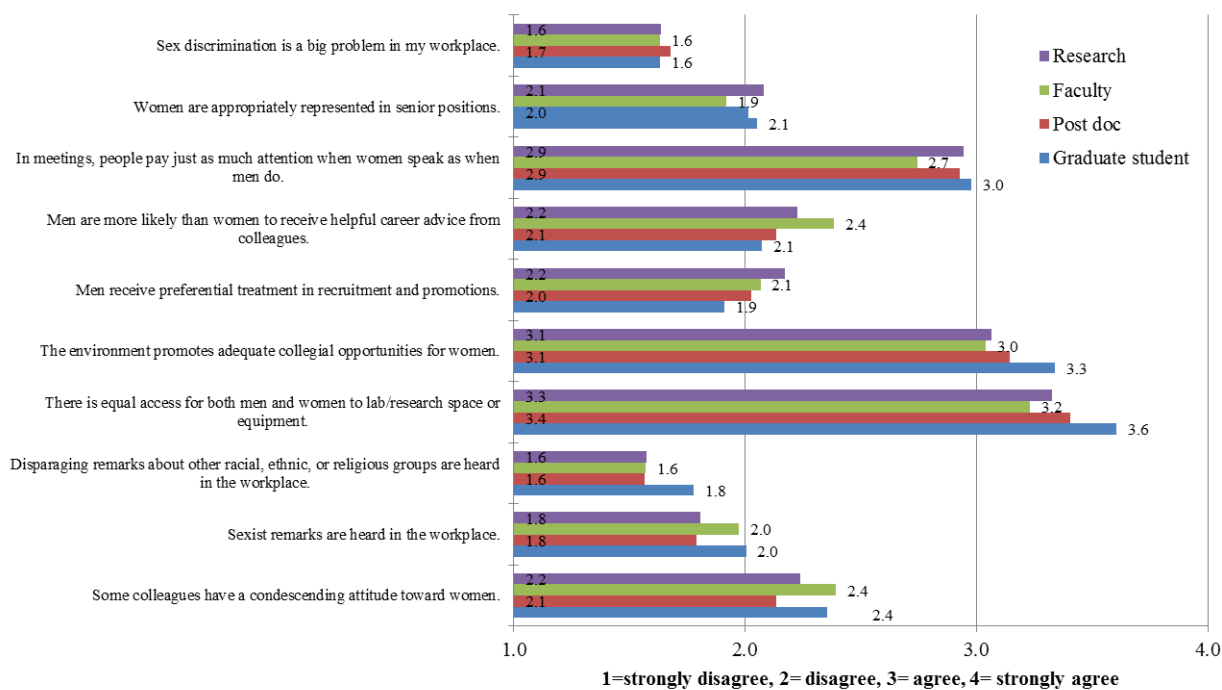
### 8.5.1. Gender Equality by Survey Year

**Figure 8.16: Mean Gender Equality Ratings by Survey Year**



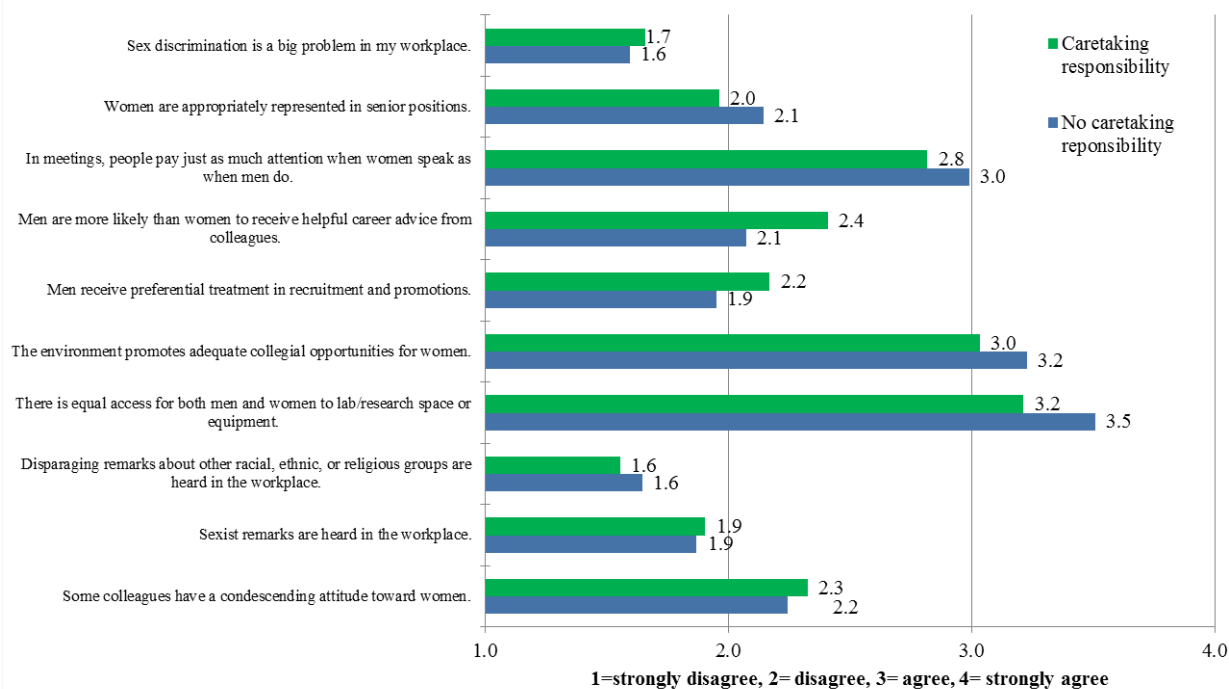
### 8.5.2. Gender Equality by Career Stage

Figure 8.17: Mean Gender Equality Ratings by Career Stage



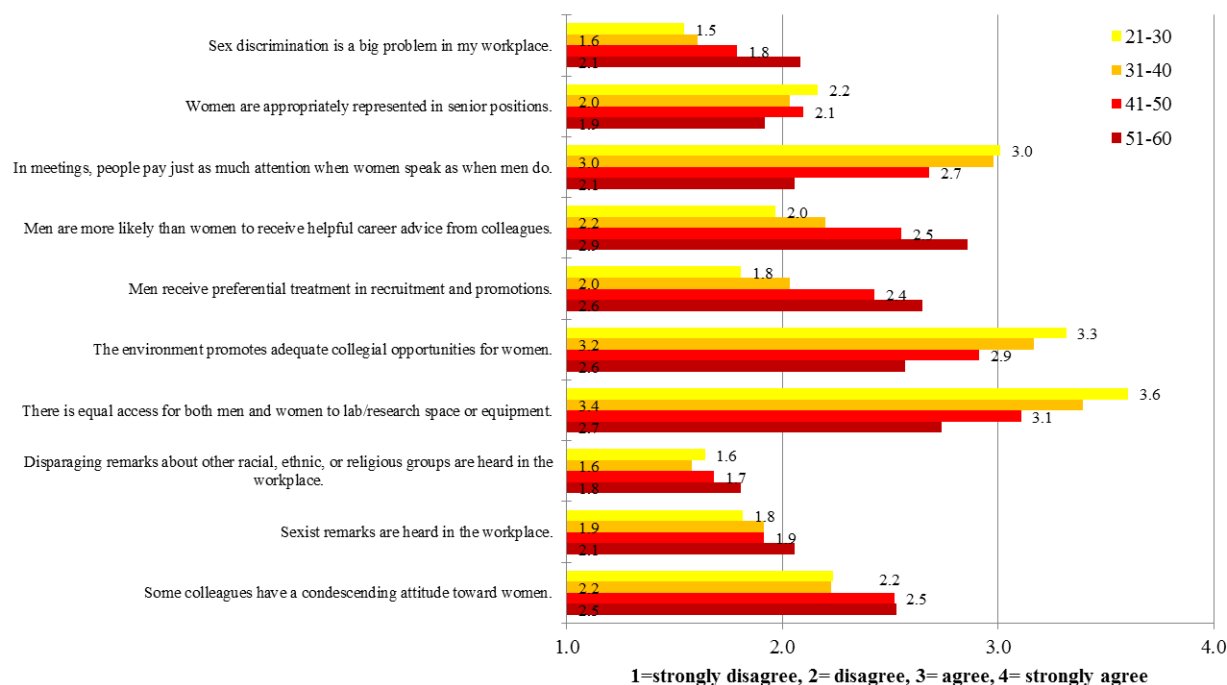
### 8.5.3. Gender Equality by Caretaking Status

Figure 8.18: Mean Gender Equality Ratings by Caretaking Status



### 8.5.4. Gender Equality by Age

Figure 8.19: Mean Gender Equality Ratings by Age



### 8.6. Unwanted Sexual Attention

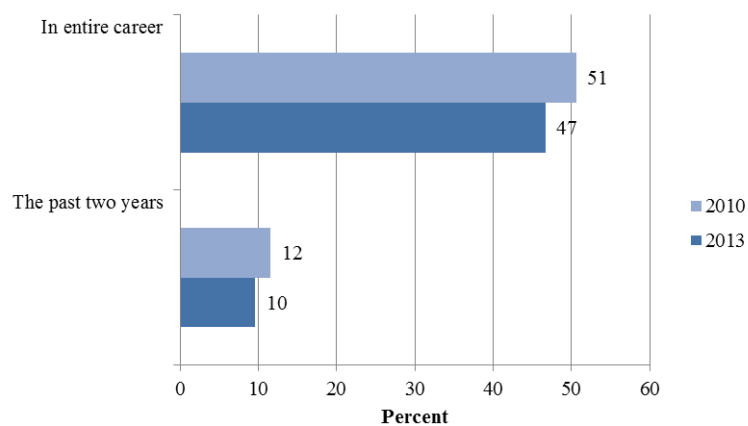
Sexual harassment is a barrier to career success that can impede women's workplace productivity and satisfaction. As a measure of harassment, we asked members to report whether they had experienced unwanted sexual attention in their entire career and in the last two years. Separate items probed harassment in their current workplace and are presented in Section 8.7.

Overall, a sizable fraction of women reported experiencing unwanted sexual attention: 10% in the past two years, and nearly half over the length of their career. From 2010 to 2013 a slightly smaller percentage of respondents reported unwanted sexual attention in the last two years and in their careers. We found that reports of unwanted sexual attention differed by career stage and age, which are highly correlated. Generally, members who are younger and earlier in their careers reported more instances of unwanted sexual attention within the last two years, but less unwanted sexual attention in their entire careers, than did members who are older and further along in their careers. These results indicate that unwanted sexual attention occurs more often earlier in members' careers than later. However, the career-long data show that this is a persistent problem for women in the geosciences.



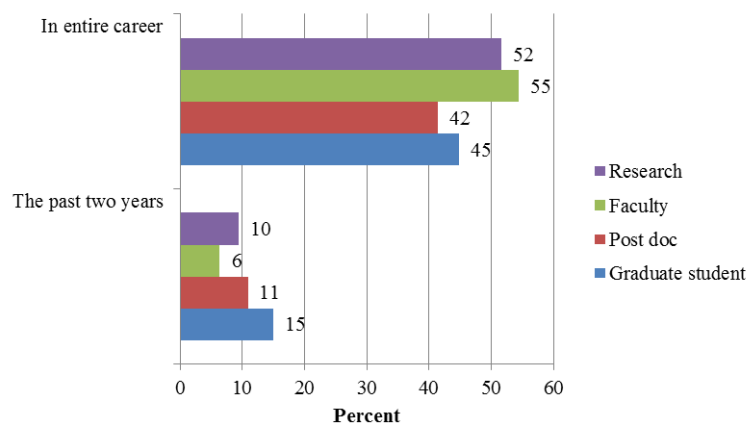
### 8.6.1. Unwanted Sexual Attention by Survey Year

**Figure 8.20: Unwanted Sexual Attention by Survey Year**



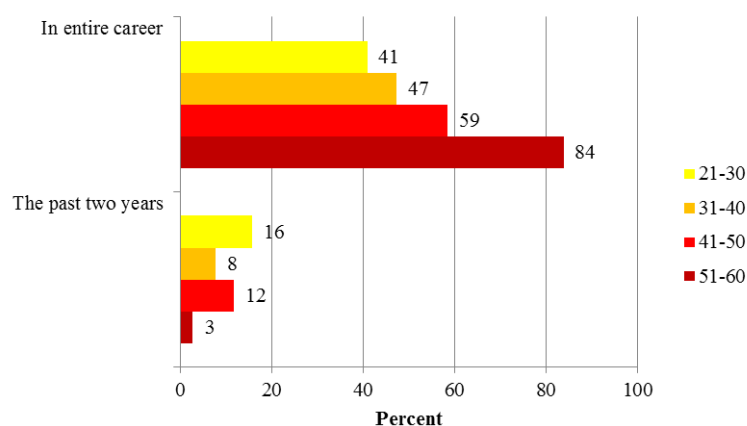
### 8.6.2. Unwanted Sexual Attention by Career Stage

**Figure 8.21: Unwanted Sexual Attention by Career Stage**



### 8.6.3. Unwanted Sexual Attention by Age

**Figure 8.22: Unwanted Sexual Attention by Age**



### 8.7. Unwanted Sexual Attention in Workplace

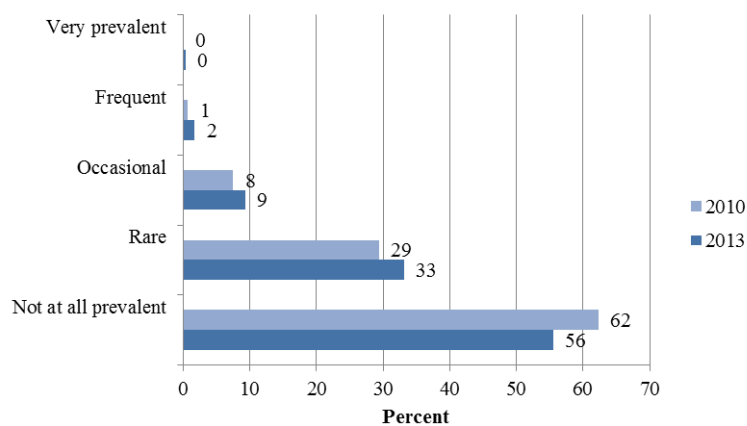
We asked members to report the prevalence of unwanted sexual attention in their current workplace. In the aggregate, approximately 90% of members reported instances of unwanted sexual attention to be rare or not all prevalent, while roughly 10% reported occasional to frequent unwanted sexual attention. The prevalence of unwanted sexual attention was slightly higher from 2010 to 2013.

Unwanted sexual attention differed by career stage, although the differences were minimal. Postdocs reported less unwanted sexual attention than other career stages. The frequency of unwanted sexual attention differed by discipline. Members in geologic science and hydrology most often reported very prevalent and frequent unwanted sexual attention. These results may not be generalizable to these disciplines as a whole because of the relatively small number of members from each discipline in our sample.

Unwanted sexual attention also differed by members' age. Members aged 51-60 reported the highest proportions of unwanted sexual attention; this may be related to older women's reports of greater career-long incidence of sexual harassment, as these women may have worked in the same workplace for longer times than have younger women.

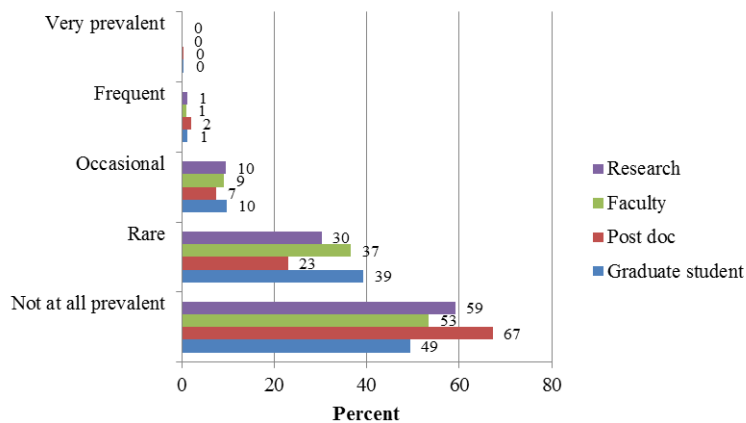
### 8.7.1. Unwanted Sexual Attention in Workplace by Survey Year

Figure 8.23: Prevalence of Unwanted Sexual Attention in Workplace by Survey Year



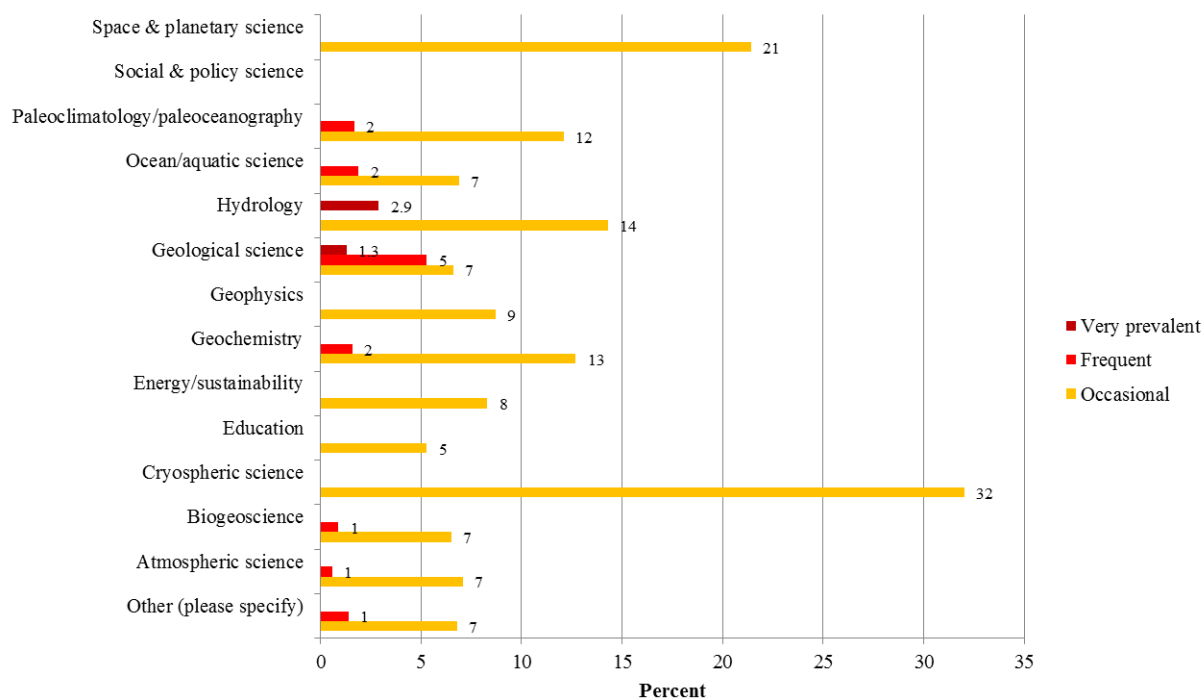
### 8.7.2. Unwanted Sexual Attention in Workplace by Career Stage

Figure 8.24: Prevalence of Unwanted Sexual Attention in Workplace by Career Stage



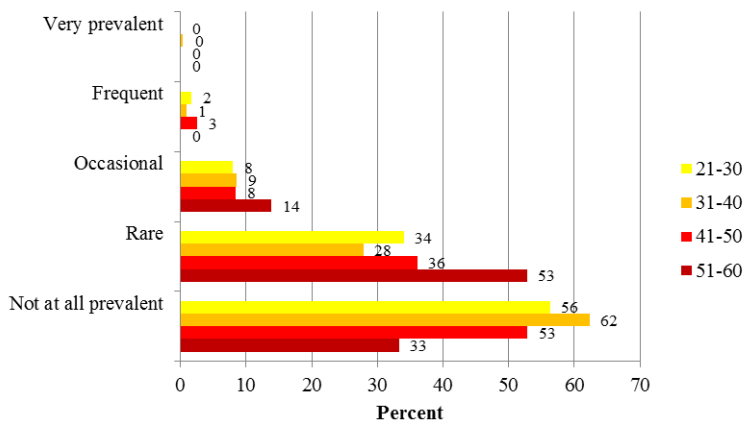
### 8.7.3. Unwanted Sexual Attention in Workplace by Discipline

Figure 8.25: Prevalence of Unwanted Sexual Attention in Workplace by Discipline



### 8.7.4. Unwanted Sexual Attention in Workplace by Age

Figure 8.26: Prevalence of Unwanted Sexual Attention in Workplace by Age



## 8.8. Gender Differences

The previous sections have detailed a number of workplace concerns that face women in the geosciences, and the results show the stability of these concerns over time. We also have data on how these concerns are gendered. In the 2010 members survey we asked both ESWN members and non-member participants in the ES\_JOBS list questions about their workplace climate, interactions with colleagues, and work/life balance. These results offer some evidence that members' concerns are gendered; that is, members face some career issues that are more salient

or severe than reported by male peers. For example, ESWN members reported lower levels of work/life satisfaction and productivity than did non-member men.

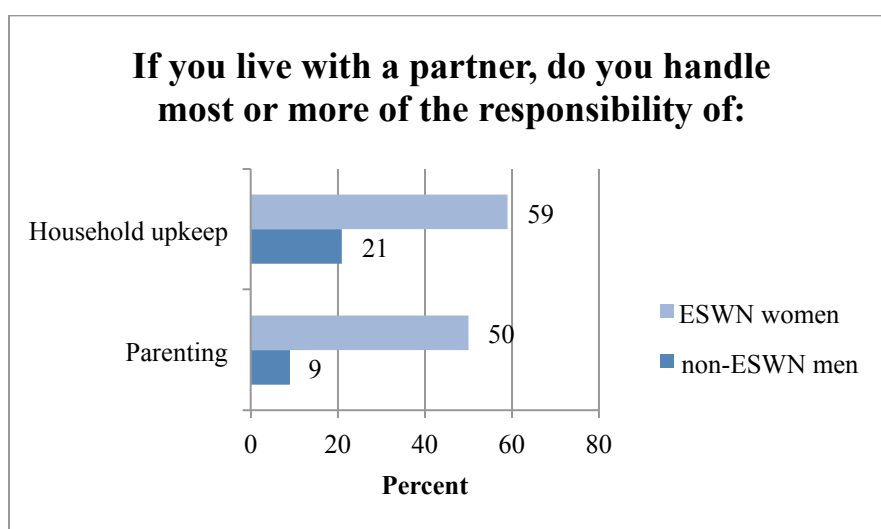
### 8.8.1. *Work/life Situation*

Compared with non-member men, members reported less accommodating family arrangements that may complicate work/life balance. Family issues may impact the success of women in demanding science careers, for example by limiting travel to professional meetings and field work. Most respondents from among both non-ESWN men and ESWN women worked full time, but in comparison to the non-member men,

- More ESWN women preferred to work part time: 12% vs. 6%
- More ESWN women had partners who work full time: 83% vs. 57%
- More ESWN women had partners who prefer to work full time: 91% vs. 59%
- More ESWN women had partners working in STEM: 66% vs. 47%

Figure 8.27 shows that, on average, ESWN women in partnered relationships reported holding greater responsibility than their partners for parenting and household duties, while non-member men reported lower responsibility for these tasks than their partners.

**Figure 8.27: Parenting and Household Responsibilities, by Gender**



### 8.8.2. *Role Models*

Members mostly disagreed with a statement that women are adequately represented in senior roles in their workplace, pointing to a lack of role models for women geoscientists.

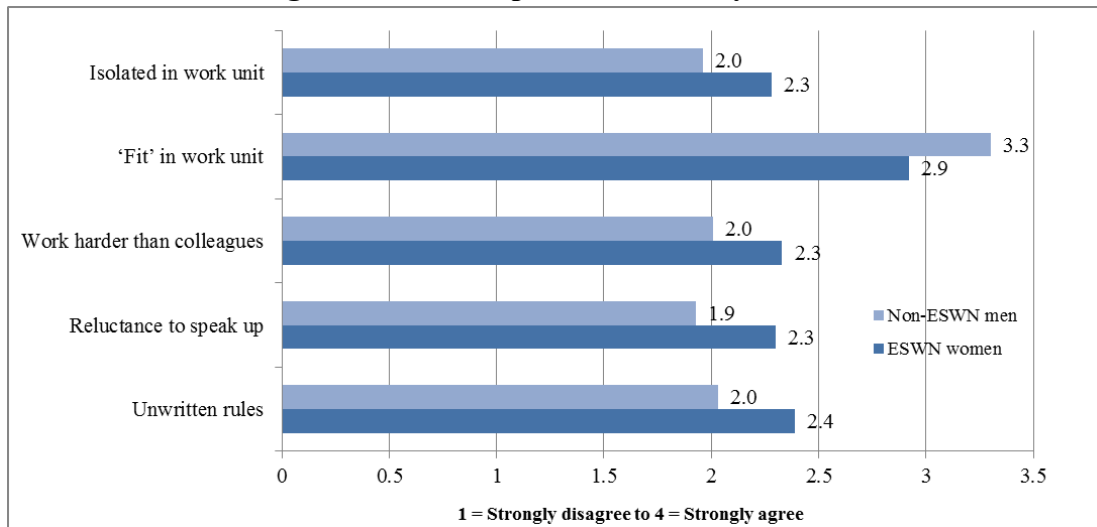
- Lack of mentors and role models remains an important barrier to retention of women in science: 22% of members marked this as an important obstacle.
- Members agreed less than non-ESWN men that women were represented in senior roles: 31% of members but 72% of non-ESWN men agreed.

### 8.8.3. *Workplace Climate*

On a variety of indicators, members rated the atmosphere in their unit and their interactions with colleagues less positively than did non-member men. Unconscious bias and workplace norms

and cultures based on traditionally male career patterns continue to influence women's experiences, perceptions and self-protective behaviors in their workplace.

**Figure 8.28: Workplace Climate, by Gender**

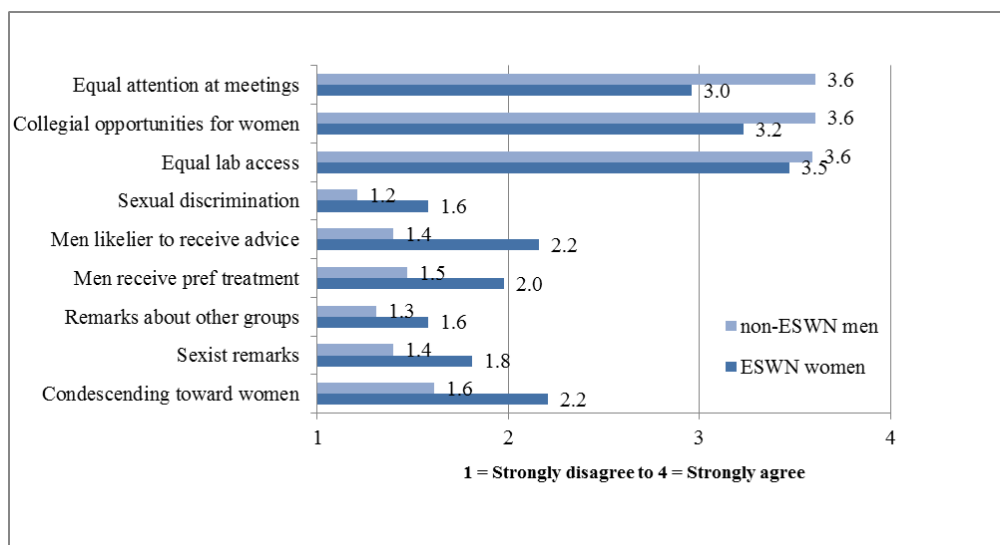


#### ***8.8.4. Sexual Harassment and Discrimination***

While most of the workplace issues that women reported were subtle, overt harassment and discrimination were also reported more often by women than by non-member men.

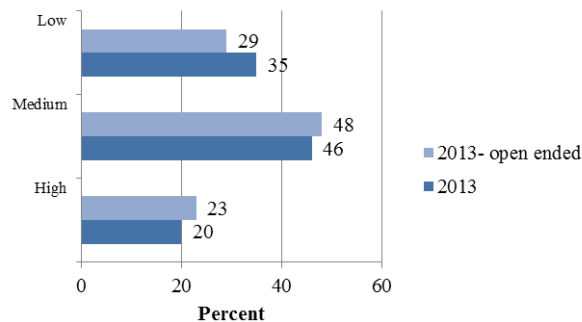
- **12%** of ESWN women vs. **1%** of men had experienced sexual harassment in the last two years.
- **51%** of ESWN women vs. **6%** of men had experienced sexual harassment in their entire career.

Figure 8.29 shows additional differences in women's perceptions of formal and informal opportunities in their workplace, and in their observations of sexist or dismissive behaviors by coworkers.

**Figure 8.29: Sexual Harassment and Discrimination, by Gender**

## 9. The Nature and Development of Gains: Findings from Qualitative Data

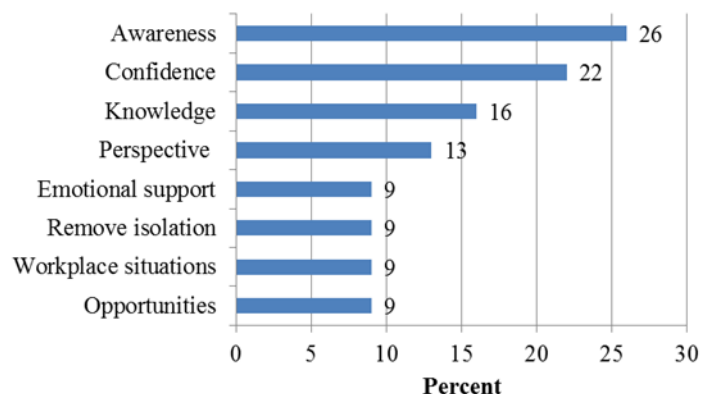
In the 2013 member survey, we asked several open-ended questions of ESWN members regarding how their involvement in the network has influenced their career change or career decision-making (if any), how their participation in ESWN has positively or negatively influenced their career, and how ESWN has facilitated collaborations. Approximately 28% (n=213) of respondents of the 2013 members survey provided at least one text response. These respondents were fairly representative of the entire 2013 sample in terms of their level of participation in the online network. Slightly fewer low-participating respondents provided answers, while a greater percentage of medium and high-participating respondents provided answers. A detailed description of the qualitative methods is in the Appendix of this report.

**Figure 9.1: Participation Level of Respondents who Provided Qualitative Data (2013 only)**

We classified qualitative responses under several major themes shown in Figure 9.2 below. The emergent themes for all three open-ended questions were largely the same and did not differ much for different prompts: respondents described the influence of the network on their career overall and gave details on how their participation in the network has affected career changes or collaborations. These qualitative responses largely corroborate the quantitative results indicating

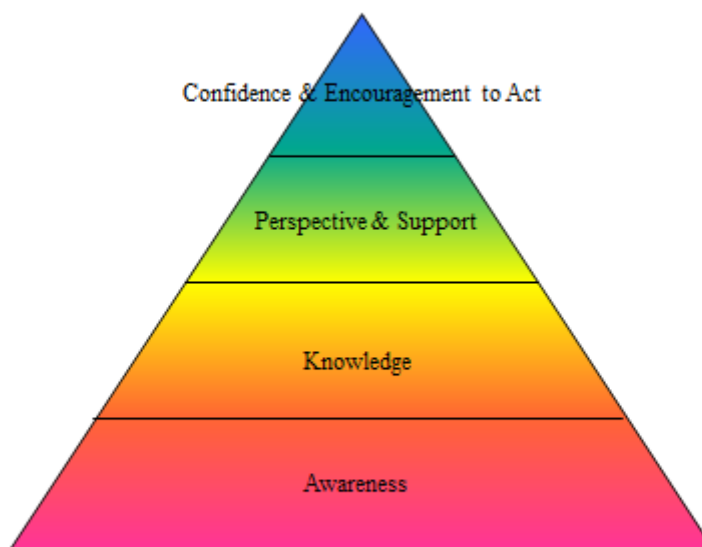
members' gains from network participation and also describe how these gains come about. Responses could include multiple themes, thus the percentages do not total 100%.

**Figure 9.2: Percentage of Qualitative Themes in Open-ended Responses**



Awareness, confidence, knowledge, and perspective were the most common themes that respondents used to describe the networks' positive influence on their careers. These themes from spontaneously offered comments correspond well to the gains items we measured quantitatively in the survey. They also help to describe how these gains relate to each other, and why gains differed by factors such as level of online network participation, face-to-face participation (including workshops), career stage, and membership duration. In particular, these themes suggest a process or series of processes by which gains attributed to network participation may come about. Figure 9.3 portrays these processes in sequence as a framework; below we describe this framework in greater detail using individual examples and quotations.

**Figure 9.3: Gains Framework**





This framework describes member processes both individually and collectively: Any one member may pass through these stages as she works through a particular issue raised in the discussion forums. At the same time, different network members contribute at different stages and may themselves represent varying stages of awareness, knowledge, and ability to offer informed perspectives with respect to different issues.

*Awareness:* Members become aware of issues that influence or have the potential to influence their career. (e.g., Member had not considered that she could be getting paid less than males in the same position). Most respondents did not explicitly address this step in making gains, perhaps because they already had awareness about a particular issue through their own experience. For other respondents, the network helped them to become aware of issues they may be experiencing without knowing it, as this member described:

ESWN has been a very positive influence. It has brought to light some issues that I have encountered (imposter syndrome, benevolent sexism, subtle biases, etc.) but did not always recognize. Reading about these issues and following or participating in discussion of these issues with ESWNers has been extremely helpful to me.

*Knowledge:* The network supplies information about the issue. (e.g., Found out what others were making in similar positions). Knowledge gains are wide-ranging, as members reported gains in knowledge in a range of topics including but not limited to: career paths, job opportunities, interviewing, negotiation, maternity leave, and others. Several respondents described how knowledge is a precursor to other gains.

The tools I have learned here are giving me the tools to try for a tenure-track trajectory. Without these tools I would not consider this possible while maintaining sanity which I value.

The ESWN and the announcements sent out over the network have really kept me informed on opportunities to collaborate with others. An announcement advertised there led to the development of a successful collaborative relationship with someone outside my organization.

Alternatively, some members were able to share knowledge in their areas of expertise, rather than receiving knowledge:

I've participated in discussion about field work and exchanged 'pro-tips' with some of the members of ESWN regarding field work, safety, training, and bringing new people into the field.

*Perspective and support:* The network provides a variety of perspectives on the issue. The perspectives offered may differ, but collectively they help to remove a sense of isolation and provide emotional support. This is often in the form of a discussion where members describe their own reactions, ideas, or experiences of what has and has not worked for them. (e.g., Found out how others approached their superior about a raise). This member speaks of how hearing multiple perspectives also provided support to take action:

Positively influenced my willingness to negotiate for the same pay bump others routinely got after completing their doctorates. I was more willing to do it, and had at least some belief that that good things might result from my effort after hearing about many others in ESWN.

*Confidence and encouragement to act:* With newfound awareness, knowledge, and exposure to a variety of perspectives, members feel encouraged and confident to act upon the issue. (e.g., Met with supervisor and asked for a raise). Numerous respondents reported a range of behaviors resulting from the gains in confidence and encouragement that they derived from the network. Some of the most commonly reported actions taken were negotiating salary increases, negotiating maternity leave, and developing confidence and courage to change jobs. For example, this respondent described how the network helped her gain confidence as she undertook a change in career field:

Participation in ESWN has given me more confidence that I am not alone in my difficulties and struggles, and given me motivation to begin anew in a new scientific field through seeking new collaborations.

In the case of one respondent, this confidence manifested in a change in her attitude:

The discussions held on the email forum have been supportive in fostering a ‘go get it’ attitude - so I applied for a similar level job in a better institution because I had the confidence to think longer term about my career and what would be best for me. The network is extremely supportive in encouraging ambition without ruthlessness.

Respondents explicitly and implicitly identified several factors that influenced what they gained from the network. Factors such as participation, career stage, and membership duration shaped where an individual might enter the cycle and the role she assumed, whether helping others to make gains or herself making gains. Individuals might enter and leave this process at different points depending on the nature of the particular issue or problem, the degree to which they participate in the network, their career stage, and how long they have been a member of the network.

For example, members who indicated a low level of participation did not report strong gains, nor did they expect to:

I have not participated in ESWN very much. So can't really address these issues.

I am passive member and therefore I have not been in a situation to really personally meet people or establish collaborations over this network. However, I would imagine that this is pretty possible to do if one is an active member.

While participation seems to be necessary to making gains, the nature of participation may vary. For example, one respondent reported using the network in a passive manner—not sharing her particular situation with others in the network, yet still using it to help solve a problem:

I have joined ESWN after a friend has recommended it for me. I was going through hard times in my thesis, bullied by my supervisor, living in a foreign country, having many issues in advancing in my thesis etc. So through reading the emails, I have found people who were living/have lived the same situation, so it made me feel that I am not alone in this problem, and that the problem isn't ME [emphasis in original] like my supervisor has spent two years trying to make me feel that it ‘was all my fault.’ I have never posted my story though, not even anonymously (although I wanted to), but just reading through stories and replies, made me get back a bit of self-confidence and decide to fight for what I want and stand for my opinions.

Our quantitative results showed that members who participated in face-to-face activities made higher gains than those who did not participate in these activities. The qualitative findings show how face-to-face participation helps to facilitate gains. While most responses identified the online network as the principal medium through which gains accrued, a similar process is apparent among gains attributed to face-to-face participation, as members gain increased awareness, knowledge, new perspective, support and encouragement.

I met a person at an informal meal at a recent AMS conference who had the same position that I am applying to. She gave me insider tips about good advisors and what it is really like to work there. She told me honestly some of the pros and cons of the position, which was very useful.

The workshops have also been extremely helpful and gave me ideas on how to network in a way that I can feel good about.

Connected with another ESWN member at a ESWN networking event at AGU Fall Meeting 2012, which prompted collaboration [we work near to one another, so we invited each other to give seminars at our institutions, and have talked about proposal/research ideas].

The ESWN lunches/dinners at Goldschmidt and the event at AGU have led to many connections with fellow ESWN members on both a social and collaborative research level, including writing grants together.

There are no ESWN members in the city where I live, but meeting them at conferences has led to closer interaction (not yet collaboration) with a very good research group. Again - due to one of the workshops, I realized I should negotiate a salary increase. Several ESWN members helped me and offered suggestions. I came back empowered.... I did some research, learned I was grossly underpaid compared to my colleagues, I asked for a salary increase during a time when academic budgets were being cut and I got it - no problem! Really made me feel valued.

My current position in administration has totally been impacted by the ESWN and the workshop I attended. Through the workshop I realized I should negotiate a salary increase when I was offered the administrative position.

Both the qualitative and quantitative results link membership duration to gains and participation. Members who have just joined ESWN participated and gained less than more established members:

I have only just joined and have mostly just been observing....

I just joined ESWN, so I haven't had the opportunity to participate in events yet.

I am a relatively new and less involved member.

The quantitative results showed no differences in gains by career stage. Our qualitative findings confirmed this finding, as several respondents discussed gains made throughout several career stages:

I was a graduate student when I joined ESWN and am now a tenure-track faculty member at a respected Ph.D.-granting institution. ESWN has been a resource for me in a number of ways: (1) Reading the discussion posted to the listserv about others going through the

interview process or from the perspective of the search committee was very helpful during the job search/interview process. I was prepared for the questions asked and the long multiple day interviews. (2) The post to ESWN informed my requests during the negotiation process, I was happy with the end result. (3) I found out I was pregnant after negotiating for my new position but before I officially started work. I gave birth 9 days after starting my job and unfortunately, because I was such a new employee I was not covered by FMLA law. I used posts to ESWN to create an argument and negotiated 8 weeks of paid maternity leave. ESWN was definitely my main resource during that period.

I will soon move from Ph.D. to postdoc, and without ESWN I would feel very lost in this process. ESWN has made me aware of all of the creative solutions that women have for each other's life challenges and has given me confidence that I will be able to face whatever hardships are down the line in a tenure-track faculty position, especially considering work/life balance. ESWN has also made me feel like I am not alone in my concerns about being a woman in science (for example, our discussion on conference fashion was perhaps controversial, but I loved knowing that other people at least thought about these things).

The open-ended survey responses also shed particular light on the low gains reported for collaboration. In our quantitative results we found collaboration to be one of the lowest-rated gains among those we probed. Respondents' open-ended responses seemed to confirm this finding. Forming their own collaborations may not be an appropriate activity for individuals in all career stages or situations:

As a first year Ph.D. student, it is too early for me to be collaborating with people from outside of my research area. I have been using conferences and Twitter (primarily) to get to know the experts in my field from outside of my department, both in the U.S. and internationally. However, I can definitely see the potential for using ESWN for future collaborations as my Ph.D. progresses and I gain more expertise in my area.

I am pretty well established in my career at this point and have other mechanisms for building collaborations.

Some respondents reported that they had not established collaborations because they had no present need to do so, but nonetheless suggested that the network has or will help them accomplish this later in their career

I feel much more confident that 'when I need' to find someone to collaborate with - ESWN is a resource I would feel very comfortable using.

I have not yet actively looked for collaborations, but if I was to do so, I would use ESWN and am positive that ESWN would be a great source.

Other respondents reported that initiating collaborations may take more time to occur than other gains, and they saw more potential for collaborative work to develop after they had gotten to know other members and established themselves within the network:

While my participation in ESWN has not yet led to formal collaborations, it has been an excellent tool for networking and has helped me meet many more women scientists, many with common scientific interests, some of whom I expect may one day become formal collaborators.

I mostly just lurk on the list... but admire that others collaborate via ESWN! And I have been to a happy hour with other ESWN-ers in my city - however, I already knew all but one of the attendees. Slowly but surely!

I have not had direct collaborations, but support the development of local ESWN chapters, I like knowing that I have the opportunity to collaborate, even though I haven't had a chance to through this forum, yet.

Other respondents suggested that the nature of interactions in the ESWN virtual community may not be effective in establishing formal, professional collaborations, but instead viewed the network as producing informal collaborative activities that members found supportive:

Most of the information I get from ESWN involves lifestyle questions (how do I handle a sexist situation, etc.). These are all very necessary discussions, of course - and I am thrilled that ESWN provides this forum, but it's not really the best format for establishing collaborations.

ESWN has facilitated discussions, but not collaborations for me. I see it as primarily a social and work/life balance forum, not a professional vehicle.

ESWN has facilitated personal collaborations, such as connections with women who have taken time off from work because of family (something I am strongly considering), but I have not contacted members strictly because of work-related collaborations.

Another respondent suggested that forming collaborations may be less important than other types of gains made through network participation:

I am slowly getting to know people and this community is really important. Sometimes just knowing that there is supportive community helps me get through the isolation I sometimes feel. Maybe we don't produce a research article, but the list keeps my spirits going.

A small percentage (3%) of the respondents who provided a qualitative response indicated that their participation in the network had negatively influenced their career.

Hearing so many complaints about being a women in the workplace has left me feeling hopeless. I sometimes wish I hadn't joined the network, and I now wish I would have stopped at a Master's degree.

It really hasn't influenced me that much. I also am afraid to participate too much in the fear that people will think I'm not doing my 'real' work.

I will say that reading all the articles about the challenges women face has made me more nervous about my career prospects, and the potentially difficult act of balancing to come.

It has shown me there is still discrimination against women in science and that I should not allow it. But trying to do something about it, I found myself even more lonely and separated from my group than ever. So I am actually leaving my workplace.

Such comments suggest that participants have gained awareness but have not moved past this stage to draw upon the network for deeper knowledge and feelings of support from other members. While they are relatively rare responses, they seem to come from young women who have not previously viewed workplace issues through the lens of gender and thus are dismayed to discover that the playing field may not be level in every respect. Overall, we observe that

network discussions generate greater feminist consciousness among members; however, efforts to directly probe this using a well-validated scale first developed in the 1980s (Fischer et al., 2000) were not fruitful with this relatively sophisticated and well-educated audience.

In sum, qualitative comments offered by a large subset of respondents offer corroboration of gains reported on numerical items and describe the processes by which members extract benefit from the online network and the informal face-to-face activities that members arrange. Benefits appear to arise in a progression from less to more powerful and from awareness and knowledge, through exploration of multiple perspectives, to affective benefits including confidence and motivation to take personal action.

## **10. Nature of Online Activity**

As Section 9 shows, the online interactions made possible by the listserv and now the web center are important activities. The virtual space is the main source of information and new perspectives, the connective tissue of the network. Moreover, taking part in face-to-face activities often spurs greater participation in the electronic community. A noteworthy example was the surge of activity in June 2012 after participants in the face-to-face workshop on networking admitted that they had lurked on the list for years, and in subsequent days introduced themselves and initiated topics on the list. In turn the online tools are used to organize informal face-to-face activities such as get-togethers at conferences. Therefore we analyzed listserv and web center traffic for some key indicators.

First we analyzed the ESWN listserv archives for the PAID grant period (2009-13) to determine the topics raised. We identified the single thread topic (with at least 3 posts) that generated the most discussion during each month and classified these threads into four categories:

- General career topic: these topics were related to career development, but were not gender specific; e.g. funding opportunities, job opportunities, books and resource advice.
- Woman-specific career topics: career topics specific to women such as discrimination, underrepresentation of women, name changing as a result of marriage.
- Maternity or childcare topics: breast feeding, maternity leave, childcare, etc.
- No major topic: some months did not have any thread that generated over two responses.

As Figure 10.1 shows, over the grant period, woman-specific career thread topics dominated more months (32.5%) than any other category.

**Figure 10.1: Listserv & Website Topics, by Monthly Predominant Topics during Grant Period**

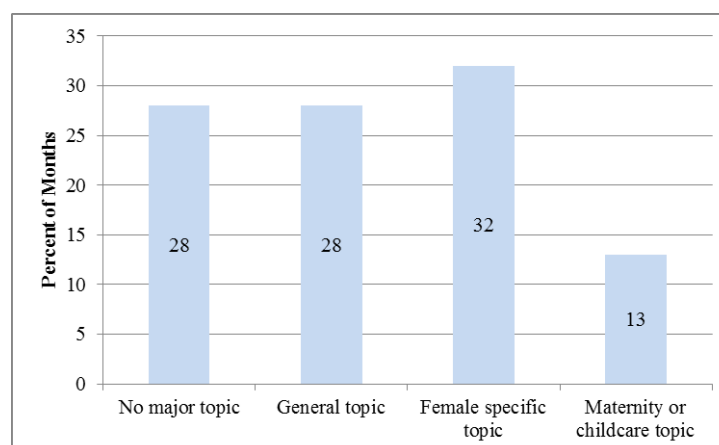
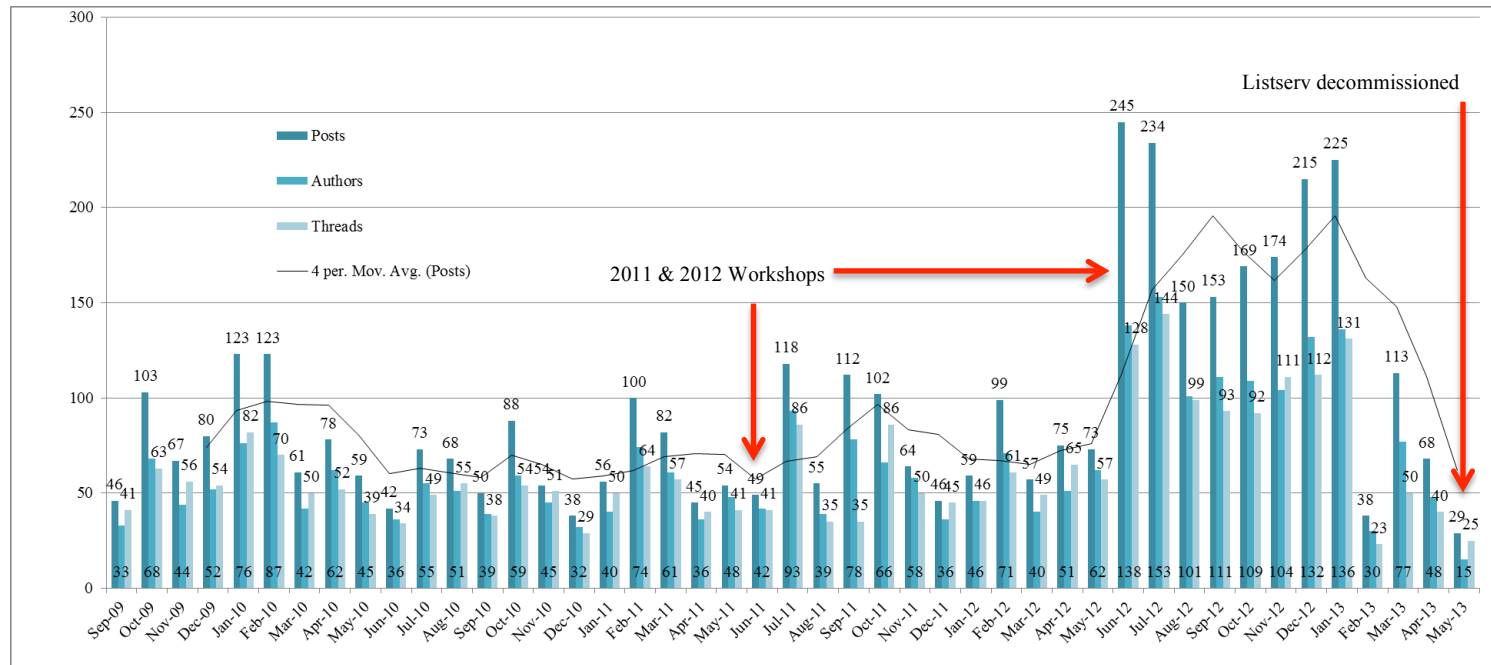


Figure 10.1 also suggests that overall online traffic is roughly evenly split between general professional topics and gendered topics. While topics related to having and raising children are not uncommon, the perception by some members that these topics dominate the list did not appear to be supported by the data. However, when combined with posts related to marriage (e.g. changing surname, dual-career decisions), the proportion that are family-oriented and often heteronormative is more significant. The new web center gives members the option to opt out of some of these family-related topics, by moving many such discussions into groups such as the moms' group. We do not yet know if this will be perceived as beneficial or will reduce members' exposure to unfamiliar issues.

We also analyzed the number of listserv posts, authors, and original threads per month during the current grant period (9/09-05/13). We calculated a 4-month moving average of monthly posts to better portray and interpret the overall activity trend. Figure 10.2 shows the trends in listserv traffic. Generally, the listserv experienced increases in posts, authors, and original threads over this period. There were noticeable increases in activity measures in the months following ESWN workshops in June 2011 and June 2012. Most notably, list activity increased roughly 50% in June 2012, and traffic has remained at this higher level in all months since then. It was not possible to detect such a response to the June 2013 workshop, which occurred right as the list was retired and members were moving to the web center.

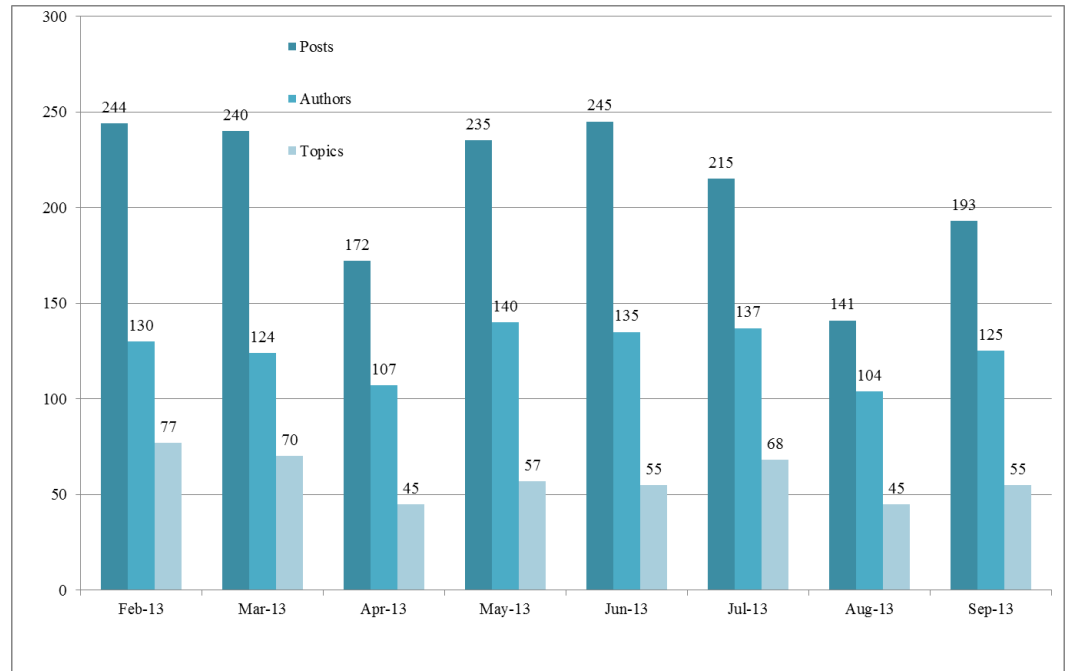
These data provide a baseline that will eventually be useful for comparing with data on use of the ESWN web center launched in 2013. The new center offers substantially enhanced functionality in many respects, but has required some effort to move members to this new platform and trends cannot yet be discerned. At this time, we offer a baseline analysis of web center traffic that can be used by the network to monitor its future growth (Figure 10.3).

**Figure 10.2: Monthly Activity on the ESWN Listserv (2009-13), by Post, Author and Thread**





**Figure 10.3: Monthly Activity on the ESWN Website (2013), by Post, Author and Th**



## 11. Governance and Operations

Here we offer some observations of how the board works, its decision-making processes, and member involvement.

### 11.1. Governance

The board has a participatory, consensus-based governance structure that appears to be well suited to ESWN's current, flat organization. Most business is handled by e-mail; the additional monthly conference calls since January 2012 were productive in increasing awareness of actions and timelines and therefore accountability for grant deliverables. Some board members have standing responsibility for certain tasks, while new tasks are assigned with flexibility around different board members' schedules and capacities. Consensus-based decision-making can be cumbersome at times but yields a sense of joint mission and high willingness to contribute when new tasks arise. The board may wish to consider more frequent use of either standing committees or project-based task forces to lay groundwork for decision-making, e.g. by researching ideas and bringing options or proposals to the full board.

The most difficult area of governance was managing priorities for the grant-funded staff positions. Some lack of clarity about the "chain of command" led to frustration on both board and staff sides. We view this as less a matter of interpersonal dynamics than a general, structural issue arising from a lack of clarity about how priorities are set and how time is used: How is responsibility for setting priorities and managing time and tasks partitioned among the individual, her direct supervisor, and the board as a whole? If future funding supports a staff position, a clear job description and working practices will need to make clear these processes, e.g. how new work will be assigned and with what priority.

The addition of Adams (2010) and Glessmer (2012) to the board, followed by the definition of a nomination process that culminated in election of three new board members (Barnes, Fischer, Rodriguez) in December 2012, represent first steps toward a governance model that extends beyond the original founding members. Issues for the future include when and how board positions should turn over and whether internal board structures (such as board officers or committees) will be needed to differentiate roles, divide work or streamline decision-making, particularly as the board grows. Deliberate attention will be needed to bring new board members up to speed and help them to feel fully included as they join the board.

### ***11.2. Member Engagement***

ESWN members are a vast resource of enthusiasm and ideas. The new web center offers significant opportunities for members to initiate topics and share career-related resources in a manner that is less ephemeral than listserv threads. The general all-member discussion forum functions most like the old listserv, where new threads can be introduced and discussed. Members have the option to receive an e-mail notification when a new thread is posted, a digest once a week, or no notifications. So far, we observe that forum traffic is more spasmodic than it was on the listserv: on the listserv a hot topic might garner dozens of comments within a few hours, whereas on the web center members tend to sign on and respond to several threads in one or more forums during their visit, and responses to any single thread may come in over a period of multiple days.

In addition to the general discussion forum, public and private groups can be initiated that have more limited, interest-based membership and their own discussion forums. As of September 2013, 45 groups have been started, including groups focused on regions (e.g., Greater Boston, Texas, India), disciplines or topics (watersheds, soils), career interests (job-seekers, new tenure-track faculty), and personal interests (travel, runners, moms). While some groups have taken off, others have infrequent activity. Region-based groups may be quite small, with fewer than 10 members so far, while some groups (moms, job postings, nonacademic careers) number in the several hundreds.

Board members can continue to model participation and encourage members to move forward on ideas; additional leaders may need to be recruited to take on these community-monitoring roles. For example, when a forum thread prompts a member to propose a likely topic for a group, they might be personally invited to initiate that group. Many members, especially younger ones, express some trepidation about making a public post, and it's unclear yet whether the web site is more or less user-friendly and safe in this respect; there may be generational differences in who is comfortable with the social media style of the new site vs. the old e-mail list. Both explicit messaging and modeling by active contributors will continue to be important in encouraging participation and setting norms for respectful communication that recognizes the diverse perspectives represented by members. This may be more challenging to monitor simultaneously in multiple web forums, but it is also possible to imagine asking other individuals besides the board members to play this role in particular forums.

Members are already involved in organizing informal, local or conference-based, face-to-face activities; this type of activity has the potential to further expand. We don't know yet whether and how members are using searchable profiles on the new web site, e.g. to find colleagues in their local area or who may attend the same conferences. During the listserv era, such connections relied on members being courageous enough to post a query to the full list, and this

practice seems to be continued in the general discussion forum, but searching profiles is essentially anonymous.

We see additional potential for members to assist with network-level activities such as organizing elements of workshops and producing the newsletter. Because members attend a wide variety of professional meetings, they might organize formal events (e.g. mini-workshops) in addition to informal gatherings at those conferences. To date, nearly all of these more formal activities have been led by board members. A recent example suggests the potential of special projects: Raluca Ellis produced a video about ESWN scientists based on interviews conducted at the 2012 AGU meeting. Member-led activities offer potential for mutual benefit for individuals and the network, if members were to lead specific projects that serve or publicize the network. Members see taking a leadership role in ESWN as professionally beneficial, both for learning new skills and in holding a visible, professional leadership role.

## **12. Sustainability: Opportunities and Challenges for the Future**

As the ESWN leadership group considers its future, several questions arise. Some were raised by board or network members in the 2009-10 interviews and focus groups, and they remain pertinent today. These issues and the decisions made about them will continue to shape the organization's path as it moves forward.

Questions about identity and audience:

- 12.1.** The network originated as a resource for early-career women. Should the network continue to serve members as they advance into mid-career and beyond? If so, how? What are the consequences of this choice for the description, mission, and activities of the network; for the resources it can tap; and for how it is perceived both by members and from outside?
- 12.2.** The network originated as a women-only organization. What are the plusses and minuses of being a women's organization? In what circumstances, or for which activities, is a woman-only designation relevant? Will women-only activities become obsolete at some future time? How will ESWN leaders recognize that time?
- 12.3.** The PAID grant has necessitated a focus on women's advancement in academic careers, and some members perceive a bias toward this career path in (for example) the topics of list discussions and face-to-face activities. While it is clear that to date ESWN's peer networking structures support individuals who pursue many career paths, what is the role and expertise of ESWN *as an organization* in supporting non-academic career paths? If there is an organizational role, how will that be accomplished?
- 12.4.** A goal in the PAID grant was to increase the ethnic and racial diversity of ESWN members. What progress has been made? What strategies have worked or not? What further efforts can or should be made, by whom?

Questions about activities:

- 12.5.** An important deliverable for the PAID grant was a robust web presence to provide enriched career resources. That web center has launched, with initial emphasis on spaces for members to interact, while work remains to be done to build a rich library of career information resources.

- 12.5.1. How will the board and members populate the web center with information and keep it fresh? What is the appropriate balance between member-only resources and those available to the public?
- 12.5.2. How will leaders encourage member participation and ensure that the web site continues to provide a safe and intimate space for members? What is the mechanism by which the board will make policy decisions about the web community? Interesting issues continue to surface, such as designation of private vs. public resources, anonymity, civility, vetting or endorsement of information posted by members..
- 12.6.** In 2010, one board member observed, “My concern would be if we promise too much and then are not able to deliver on it. I wouldn’t want to compromise the trust of the members.” What activities can ESWN sustain in the post-PAID era with a minimal level of funding? What messages will be communicated to members about the future of the organization? How will decisions be made about what activities will be prioritized if and when future funding is pursued—or in periods without external funding?
- 12.7.** Some people feel that ESWN should take positions on issues that affect women in geoscience. What is the policy or advocacy role of ESWN, if any? Examples of issues where ESWN might engage as an advocate include accommodations for mothers at professional meetings, and nomination of women for awards and award selection committees.
- 12.8.** Is there an ESWN brand? If so, what is it? That is, what are the core characteristics of an activity that carries the ESWN label? By what process, if any, will new ideas or initiatives be branded or endorsed as organizational or sponsored initiatives (vs. initiatives by individual members)?

Questions about governance and organization:

- 12.9.** A leader from AWIS noted that members can be a great resource for an organization, but the organization may have little control over the quality of member-led work. How can ESWN encourage participation and make good use of members’ interests and talents to foster sustained and high-quality activity in the network? What oversight of member initiatives is appropriate, under what structures? How will ESWN learn about and remain responsive to members’ needs and desires?
- 12.10.** The January 2013 board meeting and work with an external facilitator clarified some challenges for the board of working effectively as a group while acknowledging differences in individuals’ communication needs and preferences. These challenges can be exacerbated under consensus-based decision-making, and details of work become harder to track as the organization’s activities diversify. What structures (e.g. committees or task forces), processes (e.g. agreement about the nature, timing, rules and outcomes of online discussions), or professional development may be needed for the board to function and self-assess effectively?
- 12.11.** Succession planning is an issue for any organization. What balance of continuity and new ideas, fresh and historical perspectives, is needed on the board? How will that be achieved? What (if any) kinds of member sub-groups could or should be represented

on the board, and how will new or growing member groups come to be represented?  
How can the board's learning and norms be passed on when new members join?

### **13. Strengths and Limitations**

In this section we note the strengths and weaknesses of our data collection and analysis for both the member surveys and workshop surveys. The two main measures of quality for survey methods are validity and reliability. Validity addresses accuracy, or whether the survey measures what it purports to measure. This is a matter of both the quality of items—does the respondent answer about the same issue that the researcher had in mind?—and the sampling: is the sample representative of the full population, and can the results be extrapolated to the full population? Reliability addresses the consistency of the measurement: do the questions elicit the same type of information each time they are used? It also refers to internal consistency, the degree to which different questions or statements measure the same characteristic. Similar items may be combined into scales, or sets of related items, if they measure a common concept.

#### **13.1. Strengths: Member surveys**

Most items used in our 2010 and 2013 surveys were borrowed or adapted from existing, valid and reliable institutional climate surveys. Our survey was administered to women at hundreds of institutions rather than a single institution, but despite the differing context, all item scales showed acceptable reliability with no single scale having a reliability (Chronbach's alpha) less than 0.80 (values less than 0.60 are considered unreliable; values of 1.0 are perfectly reliable). Items were created to measure specific aspects of the network that were identified as goals of the network. A detailed description of the scales and variables measured and their sources is provided in the Appendix.

Our data was self-reported by respondents and primarily measured respondents' perceptions of the network, their careers, their workplace and their home life. Self-report is an appropriate method for measuring affective domains; for example, an individual's confidence cannot be measured objectively, thus their self-reported perception of their confidence is the most suitable measure.

Our findings indicated that the survey items were stable from year to year. This indicates that the survey items were very reliable, giving us confidence that the results have meaning. For example, if we did find large differences in survey items between years without a reasonable explanation, this would be indicative that the survey items may sometimes produce different results, thus making the results less trustworthy. Because of the high reliability of our findings we were able to evaluate the validity of our findings. Across a variety of variables or scales (sets of variables) we found some differences to be consistent from year to year. This suggests that respondents' perceptions are meaningful and differences did not occur by chance alone.

The member surveys also used a combination of quantitative and qualitative items to ask similar questions in different ways. This triangulation technique is important because quantitative data can easily be misrepresented and do not always provide context for respondents' views. Qualitative data was used to help guide the analysis, verify the quantitative relationships, and provide context to the quantitative findings. For example, both our quantitative and qualitative data both indicated that network participation had a strong relationship with gains attributed to the network. Additional triangulation was provided through interviews, informal conversations, and listserv/web center participation.

### **13.2. Limitations: Member surveys**

The biggest limitation of the member surveys was the uncertainty about whether the samples were representative of the member populations. This limitation is not attributed to the survey samples, which were fairly large, but to our lack of knowledge about the member population. The member surveys were attempts to gain information about the population, but we cannot determine the degree to which this attempt succeeded as we have no independent data about the membership composition.

A higher response rate would have helped to alleviate some of the uncertainty in representativeness of the sample: the fewer non-respondents, the less likely that they differ in substantial ways from the respondents, whose characteristics are known. But even knowing the size of the membership population was a problem for this study. At the time of both 2010 and 2013 surveys, membership population numbers were determined from a count of email addresses subscribed to the listserv, rather than a member registration. This method of counting members had several problems. First, we do not know the proportion of individuals who joined the listserv and consider themselves to be a member of the network and those who joined the listserv without considering themselves a member of the network. For example, it is uncertain that some listserv subscribers equated their subscription to the listserv as membership in the organization. The website requires members to “join” ESWN, but the listserv just required an email address. Second, some email addresses may have been outdated, thus some members who did not actually participate may have been counted, and others may have had multiple email addresses subscribed, so that they were counted twice. In each case this means the email address count is an overestimate.

Another limitation was in our ability to make year-to-year comparisons of individual members. We were only able to match approximately 100 respondents who completed both the 2010 and 2013 surveys and provided matching survey identifier information on both surveys. We do not know the degree to which these respondents are representative of the population of members.

We had originally proposed a series of three member surveys, early, midway and late in the grant. We canceled the midpoint survey due to members’ complaints about the time required to complete the first survey and our concerns about survey fatigue. As it turned out, the launch of the web center was delayed until the final year, so the midpoint survey was not likely to have differed notably from the first survey because the network had not yet notably increased its offerings to members.

### **13.3. Strengths: Workshop surveys**

We administered pre- and post-workshop surveys to participants in all three career workshops and used the same survey items across all three workshops. The results of all three workshop surveys demonstrated that survey items had high content validity, which provides confidence in the meaningfulness of survey results and interpretation of results. For example, gains items that were related to workshop content were rated more highly than gains items that were not emphasized; this relationship remained constant across all three workshops.

To a high degree, we were able to match respondents’ answers on pre- and post-surveys for each workshop. This allowed us to make comparisons of each individual’s self-reports, which is more valid than making group comparisons of pre- and post-workshop averages.

Each workshop was also observed by a member of our team. This assists with validity by informing us as to which survey items are most relevant to the workshop as delivered, and helps us to interpret participants' ratings and open-ended comments.

#### **13.4. *Limitations: Workshop surveys***

Workshop surveys were limited by several factors. First, post-workshop surveys were given at the conclusion of the workshop, thus the results of the workshop are indicative of respondents' perceptions at that time rather than when they have tried out their new knowledge, skills and abilities in the "real world." While we considered administering a follow-up survey, this would have overlapped substantially with the broader member surveys and risked confusion among surveys and survey fatigue. The long-term outcomes of workshops were different each time and somewhat difficult for the workshop planners to specify. Instead we took the approach of including gains items related to workshops on the broad member surveys and of analyzing outcomes for workshop participators separately from non-participants.

#### **14. Acknowledgments**

We thank our E&ER colleagues for their help with data gathering and analysis that contributed to this report. Marina Kogan helped to design the survey instruments and carried out analyses of data collected prior to summer 2012. Melissa Arreola Peña conducted qualitative coding of open-ended survey comments. Glenda Russell provided advice about inclusive language for work/life items.

From ESWN, Christine Wiedinmyer provided data and advice about the listserv archives and many helpful conversations. Rose Kontak, Manda Adams and Meredith Hastings provided helpful information about past activities. A comment from Tracey Holloway initiated the idea to survey ES\_JOBS members as a comparison group. We thank the board members for their input and advice. We are grateful to all the members who responded to the surveys, participated in focus groups, and contributed to lively discussions in ESWN's online forums.

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## APPENDIX: Study Methods

### A1. Methods

We used a variety of methods to analyze data for this report. We calculated descriptive statistics for all survey items. Frequencies and percentages were calculated for categorical variables, and means were calculated for continuous variables.

To quantify online network participation, we created a variable using a cluster analysis. A cluster analysis classifies individual observations made by survey respondents into mutually exclusive categories (in this case: high, medium, low). The cluster analysis was performed on an online participation variable, which was the average of 11 aspects related to the frequency of online network participation. Each item was coded on the following scale: (1= never, 2= rarely, 3=sometimes, 4= often) a list of the specific item related to network participation can be found in Section 5.4.1 of this report.

We then used two data analysis techniques to check for statistically significant differences, (analysis of variance ANOVA) in average scores of continuous (variables reported on a scale) and cross-tabulations for categorical variables. We checked for statistically significant differences on nearly every combination of independent and dependent variables (for example, gains as the dependent variable examined across independent variables such as members' career stage, participation level, and type of workplace). The results of this exhaustive analysis are shown in Table A1 below, with the analyses that show statistically significant differences highlighted in blue. The text of the report presents these statistically significant findings, as well as analyses that were meaningful because of a lack of statistical differences.

Our qualitative analysis was based on responses from three questions that were only included in the 2013 member survey. Below are the questions we asked and the number of responses we had for each item out of 765 possible responses:

- Please give examples of how your participation in ESWN has facilitated any of these collaborative activities—47 responses.
- Please tell us how your participation in ESWN has positively or negatively influenced your career—169 responses.
- Please describe how your involvement in ESWN has influenced your career change or career decision-making (if any)—213 responses.

The responses to the two questions regarding the influence of ESWN on members' career and career change contained the same major themes. Therefore, we collapsed our analysis of these two items and present the data from both questions for a single analysis presented in Section 9 and shown in Figure 9.2.

For the listserv and website content/traffic analysis, we collected frequency statistics for three metrics (number of posts, number of authors, and numbers of threads/discussions) of listserv traffic and website usage for each month of the grant period. These counts were generated by generating reports through the listserv archives for the listserv statistics, and using Google analytics for the web center use statistics.





## **A2. Measures Used in the Member Surveys**

In this section, we describe the measures used in the member surveys and the source of these items where applicable.

### ***A2.1. Demographics and Other Respondent Characteristics***

These items measured respondents' personal characteristics and perspectives on the issues for women geoscientists.

*Personal demographics:* We asked respondents to report personal demographics including: age, race/ethnicity, U.S. citizenship status, and their parents' education level. For the 2013 survey, we used survey logic to ask race/ethnicity only of U.S. residents.

*Membership and participation:* We asked several items related to respondents' membership history and involvement with ESWN. These items measured respondents' level of activity on the listserv, participation in in-person activities and length of membership. These items were developed by the evaluation team with advice from ESWN board members and from focus group interviews on relevant parameters.

*Professional growth:* This variable was measured by one item that asked respondents to select the five types of professional growth they will need most to advance their careers in the next one to two years. This item was developed to examine ESWN members' needs and thus generate ideas for ESWN activities.

*Challenges:* Challenges to career development were measured by two items. One item asked respondents to report the top three obstacles (out of 9 choices) to career development as a female scientist. Another item was an open-ended question which asked respondents to elaborate on the barriers they face as a woman in science. These items were adapted from Thiry (2009).

### ***A2.2. Outcomes Attributed to Network Participation***

These items were used in reporting outcomes of network participation.

*Gains:* Gains from participation in ESWN were measured by two items. One item asked respondents to report their perception of gains they made in 15 areas related to career advancement. For this item each aspect of career development was coded on a 5 point scale from 1= (no gain) to 5=(great gain). A second item measured the degree to which five aspects of the network helped in securing gains. This item was coded on a 5-point scale from 1= (no help) to 5= (great help). Items were adapted from a small survey of women geoscientists by Thiry (2009) and additional items developed by the evaluation team to align with goals stated in ESWN's collaborative research proposal for the PAID grant.

*Networking and collaboration:* Collaborations were measured by three items adapted from the Study of Worklife at the University of Wisconsin-Madison (2006). One item asked respondents to report frequencies of collaboration with colleagues in their primary work unit, outside of their primary unit but at the same institution, and outside of their institution. This categorical item was coded 1= (yes, currently), 2= (yes, not currently but in the past 2 years), or 3= (no, not currently nor in the past 2 years).

*Sense of community:* This variable was measured by an adapted version of the eight-item brief sense of community index developed by Long and Perkins (2003). Items are coded on a 5-point scale: 1= (strongly disagree) to 5= (strongly agree).

### ***A2.3. Indicators of Professional Status***

These items were used as indicators of women's status in their discipline and workplace.

*Job Satisfaction:* Satisfaction was measured by 13 items adapted from the University of Michigan Faculty Work-Life Study (CSHPE & CEW, 1999) and the Study of Worklife at the University of Wisconsin-Madison (2006). Items were coded on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree).

*Influence:* Perceptions of respondents' level of influence within their workplace were measured by five items adapted from the Study of Worklife at the University of Wisconsin-Madison (2006). Items were coded on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree).

*Productivity:* Productivity was measured by three items adapted from the University of Michigan Faculty Work-Life Study (CSHPE & CEW, 1999). One item asked respondents to report the five top indicators of productivity in their field. Respondents were then asked how their level of productivity compares with others in similar ranks and fields nationwide and how they think their work unit views their productivity compared to their unit average.

A second item asked respondents about their level of engagement with colleagues in 15 collaborative activities in the past 12 months. This item was a categorical item coded 1= (have not done this with any colleague), 2= (have done this with one colleague), or 3= ( have done this with more than one colleague). The last item asked respondents to report how their involvement with ESWN has facilitated seven types of collaborative activities. This item was coded on a 4-point scale: 1= (strongly disagree) to 4= (strongly agree).

*Balancing personal and professional life:* We asked respondents ten items about their personal situation and how it interacts with their professional life. We asked respondents about their sexual orientation (Badgett, 2009), marital or cohabitation status, their current employment status, their partner's current employment, partner's career field, geographic mobility of their and their partner's career, current caretaking responsibilities, distribution of household responsibilities, and perceptions of balance between personal and professional life, adapted from University of Michigan Faculty Work-Life Study (CSHPE & CEW, 1999).

*Climate and atmosphere:* Respondents' perceptions of four dimensions of workplace climate were measured: interactions, sexist climate, and sexual harassment. Thirteen items were adapted from the University of Michigan Faculty Work-Life Study (CSHPE & CEW, 1999) and the Study of Worklife at the University of Wisconsin-Madison (2006). These items asked respondents to report on their interactions with colleagues and others in their work unit and were coded on 5-point scale: 1= (strongly disagree) to 5= (strongly agree). Respondents' perceptions of a sexist workplace climate were measured by ten items, also adapted from the University of Michigan Faculty Work-Life Study (CSHPE & CEW, 1999) and the Study of Worklife at the University of Wisconsin-Madison (2006). These items were measured on a 4-point scale from 1=(strongly disagree) to 4= (strongly agree).

*Gender-related attitudes:* Gender-related attitudes were measured using 16 items adapted from a feminist consciousness scale. These validated and reliable items addressed feminist identity and its development (Fischer et al., 2000).

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# ESWN survey 2013

## 1. Welcome!

Please Note:

A couple of people have reported trouble resuming the survey after a break - especially after a crash. Just FYI , you can do this (if you are using the same browser and computer) if cookies are enabled. The software places a cookie that tracks the page (not the item) where you exited. However, if your browser is set to dump cookies each time it is closed, the cookie will be refreshed, and a new or blank survey will open.

Dear ESWN members,  
in 2009 the Earth Science Women's Network (ESWN) received an ADVANCE grant from the US National Science Foundation to foster connections and support the professional development of early-career women in geoscience.

As we come to the end of that grant-funded project, we'd like to gather some information about you and your career, your use of the network's resources, and your perceptions of the issues for women in geoscience. Data from this survey will be used (1) to evaluate the network's effectiveness, (2) to advise the leadership group on members' needs and interests as they plan for ESWN's future growth and sustainability, and (3) to learn lessons that can be used by others who seek to support women scientists.

This survey asks about your professional and personal background, your participation in ESWN's activities to date, and your career needs and interests. Please mark the answer that best matches your response to each question. If a question does not apply to your situation, please mark "not applicable" (N/A). Some pages have special instructions - please read them!

In order to explore many issues of relevance to ESWN members, the survey is detailed. Please allow about 20 minutes to complete it, depending on how much you have to say. Surveys, by design, must categorize responses from diverse individuals - so please choose the answer that best fits your situation. For example, some questions are framed in terms of variables of interest to our U.S. funding agency.

Your participation is voluntary. You may skip questions you do not wish to answer, or choose not to participate. Your answers are anonymous and will not be reported in any way that may identify you individually; they will be aggregated with responses by others.

By completing this survey, in part or in whole, you agree that we may use this data to understand and improve career support for women scientists. The data will also be used to report to our funding agency on the impact of the network. Completing this survey now does not obligate you to participate in any studies in the future.

Thank you for your candid responses! We very much appreciate your assistance. Please contact us with any questions.

Sandra Laursen, study director  
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[tim.archie@colorado.edu](mailto:tim.archie@colorado.edu)

## 2. Current Career Information

First, we'll ask you about your professional background and career situation.

### 1. Your highest completed degree:

- High school or secondary school
- Associate's degree or technical certificate or other post-secondary training
- Bachelor's degree or equivalent undergraduate degree
- Master's degree or equivalent graduate degree
- Doctoral degree or equivalent graduate degree
- Professional degree (e.g. medicine, law)
- Other (please specify)

### 2. In which country do you currently work?

## 3. Current Career Information

The U.S. National Science Foundation, funder of this study, requires us to gather data in a form that can be analyzed for differences by U.S. citizenship, gender, race, and ethnicity.

### 1. Your U.S. citizenship status

- U.S. citizen
- U.S. permanent resident
- Other non-U.S. citizen

(please specify country)

### 2. Primary nature of your current employment (please choose one that best fits your situation):

- Undergraduate studies
- Graduate studies
- Postdoctoral research fellow or other temporary position
- Higher education faculty
- Other (please specify)
- Administration
- Research
- Not employed; would like to work
- Not employed; by choice

**4. Current Career Information**

**1. What type of higher education faculty position do you currently hold?**



## 5. Current Career Information

The U.S. National Science Foundation, funder of this study, requires us to gather data in a form that can be analyzed for differences by U.S. citizenship, gender, race, and ethnicity.

### 1. Your U.S. citizenship status

- U.S. citizen
- U.S. permanent resident
- Other non-U.S. citizen

(please specify country)

## 6. Current Career Information

### 1. Your race/ethnicity (check all that apply):

- Asian/Pacific Islander
- Black/African American
- Hispanic
- Native American (American Indian or Alaskan Native)
- White
- Other, please explain

## 7. Current Career Information

### 1. Primary nature of your current employment (please choose one that best fits your situation):

- Undergraduate studies
- Graduate studies
- Postdoctoral research fellow or other temporary position
- Higher education faculty
- Other (please specify)
- Administration
- Research
- Not employed; would like to work
- Not employed; by choice

## 8. Current Career Information

### 1. What type of faculty position do you hold?

- tenure-track faculty
- tenured faculty
- non-tenure-track faculty, primarily teaching
- non-tenure-track faculty, primarily research

Other (please specify)

## 9. Current Career Information

### 1. Discipline most closely related to your current work (please choose one that fits best):

- |  |   |
|--|---|
| <input type="radio"/> Atmospheric science    | <input type="radio"/> Geological science                |
| <input type="radio"/> Biogeoscience          | <input type="radio"/> Hydrology                         |
| <input type="radio"/> Cryospheric science    | <input type="radio"/> Ocean/aquatic science             |
| <input type="radio"/> Education              | <input type="radio"/> Paleoclimatology/paleoceanography |
| <input type="radio"/> Energy/sustainability  | <input type="radio"/> Social & policy science           |
| <input type="radio"/> Geochemistry           | <input type="radio"/> Space & planetary science         |
| <input type="radio"/> Geophysics             |   |
| <input type="radio"/> Other (please specify) |   |

### 2. Type of organization where you are currently employed (please choose one that fits best):

- |   |   |
|---|---|
| <input type="radio"/> 2-year college; awards two-year, technical or transfer degrees  | <input type="radio"/> For-profit industry or business           |
| <input type="radio"/> 4-year college; awards undergraduate or bachelors degrees   | <input type="radio"/> Not-for-profit organization or NGO        |
| <input type="radio"/> Masters-granting or comprehensive university; awards graduate or professional degrees below the doctorate such as the masters | <input type="radio"/> Consulting, freelancing, or home business |
| <input type="radio"/> PhD-granting or research university; awards doctoral degrees  | <input type="radio"/> Not employed                              |
| <input type="radio"/> Government or national lab/agency   |   |
| <input type="radio"/> Other (please specify)  |   |

## 10. Job Satisfaction and Influence

Now we'll ask about your job satisfaction and what contributes to it. If you are a student, treat your program as your "job." We use the word "unit" to refer to your local department or work group, and "organization" to refer to the broader organization-- the entire campus, company, or institute in which you work.

### 1. How satisfied are you, in general, with your...

	Very dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied
current job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
overall career progress so far?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. If a candidate for a position like yours asked you about your unit as a place to work, would you...

- Strongly recommend your unit as a place to work?
- Recommend your unit with some reservations?
- Not recommend your unit as a place to work?

### 3. How satisfied are you with the following dimensions of your professional development? Check the rating that best expresses your level of satisfaction (choose N/A if not applicable).

	Very dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied	N/A
opportunity to collaborate with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
amount of social interaction with members of my unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
level of funding for my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
current salary in comparison to the salaries of my colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ability to attract students or employees to work with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sense of being valued as a teacher/mentor/advisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sense of being valued for my research, scholarship, or creativity by members of my unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
level of intellectual stimulation in my day-to-day contacts with colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sense of contributing to developments in my discipline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
balance between professional and personal life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 11. Job Satisfaction and Influence

**1. How much do you participate in decision-making processes in your unit? Check the rating that best expresses your level of agreement with these statements (choose N/A if not applicable).**

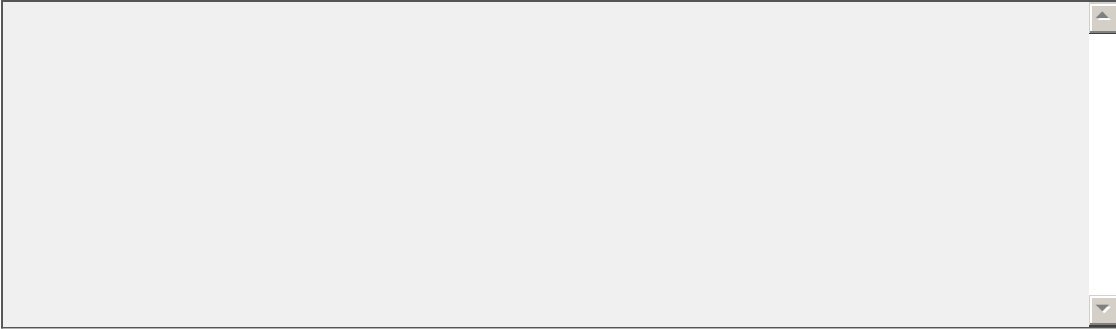
	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	N/A
I feel like a full and equal participant in my unit's problem-solving and decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a voice in how resources are allocated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meetings allow for all participants to share their views.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tasks are rotated fairly to allow for participation by all colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My unit head involves me in decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2. In the next 1-2 years, what types of professional growth will you need MOST to advance in your career? Please choose up to 5.**

- |  |   |
|--|---|
| <input type="checkbox"/> Develop deeper knowledge of my discipline                       | <input type="checkbox"/> Learn to better manage conflict and resolve disputes         |
| <input type="checkbox"/> Learn specific research techniques                              | <input type="checkbox"/> Improve my ability to communicate my work to non-specialists |
| <input type="checkbox"/> Build more extensive networks with others in my field           | <input type="checkbox"/> Improve my teaching skills                                   |
| <input type="checkbox"/> Strengthen my skills in scientific writing                      | <input type="checkbox"/> Become more independent as a researcher                      |
| <input type="checkbox"/> Strengthen my skills in presenting and defending my work orally | <input type="checkbox"/> Learn how to craft an effective job application              |
| <input type="checkbox"/> Improve my ability to design and carry out independent research | <input type="checkbox"/> Improve my ability to negotiate effectively for resources    |
| <input type="checkbox"/> Improve my interpersonal skills                                 | <input type="checkbox"/> Strengthen my leadership skills                              |
| <input type="checkbox"/> Improve my time management skills and practices                 | <input type="checkbox"/> Explore a variety of career options in my field              |
| <input type="checkbox"/> Improve my ability to manage people and budgets                 | <input type="checkbox"/> Develop a longer-term career plan or career goals            |

Please elaborate:

**3. What resources could be provided on the ESWN website to help you achieve these types of growth?**

A large, empty text input field with a vertical scrollbar on the right side. The field is rectangular and occupies most of the width of the page below the question. The scrollbar is located on the right edge of the text area.



## 12. Productivity

In this section, we ask about how you perceive your productivity as a scientist. If you are a student, assess your productivity in relation to other students at your level.

**1. If you work in research: What are the most reliable and informative indicators of productivity in your area of research? Please check up to 5 items.**

**If you do not work in research: Please check N/A and continue to the next question.**

- |   |  |
|---|--|
| <input type="checkbox"/> Not applicable (N/A)                                 | <input type="checkbox"/> Number of books edited  |
| <input type="checkbox"/> Number of external grant proposals (PI or co-PI)     | <input type="checkbox"/> Number of book chapters   |
| <input type="checkbox"/> Total dollar amount of external grants (PI or co-PI) | <input type="checkbox"/> Number of dissertations or theses supervised                        |
| <input type="checkbox"/> Number of external fellowships                       | <input type="checkbox"/> Number of presentations at disciplinary or professional conferences |
| <input type="checkbox"/> Number of articles published in refereed journals    | <input type="checkbox"/> Number of patents   |
| <input type="checkbox"/> Number of monographs written                         |  |
| <input type="checkbox"/> Other (please specify)                               |  |

**2. If you do not work in research and checked N/A above, please describe the indicators of productivity in your line of work:**

**3. Based on the indicators you selected above, how would you rate your overall level of productivity compared to others in your area and at your rank nationwide? Please check the number (on a 1-10 scale) that best corresponds to your rating.**

- 1     2     3     4     5     6     7     8     9     10
- Much less productive Much more productive

**4. Using the same criteria, how do you think your work unit views your productivity, compared to the unit average? Please check the number (on a 1-10 scale) that best corresponds to your rating.**

- 1     2     3     4     5     6     7     8     9     10
- Much less productive Much more productive

## 13. Networking and collaboration

In this section, we ask whether and how you collaborate with others in your field. For these questions, if you do not collaborate, check "no".

### 1. Do you currently collaborate, or have you collaborated in the past two years, on research with colleagues...

	Yes, currently	Yes, not currently but in the past 2 years	NO, neither currently nor in the past 2 years
In your primary unit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outside your primary unit, but within your own institution?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outside your institution?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. For each type of collaborative activity, indicate your level of engagement with colleagues in the past 12 months. Please check all that apply.

	Have NOT done this with any colleague	Have done this with 1 colleague	Have done this with more than one colleague
Informal discussion of research ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing drafts and exchanging feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing expertise, techniques, and methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing equipment or tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing teaching materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inviting each other as guest speakers to your institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organizing panels at conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organizing a local networking event or get-together	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preparing a conference poster	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collaborating on a presentation or a seminar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planning collaborative research proposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Submitting collaborative research proposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving and sharing collaborative grant resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Co-authoring a manuscript	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

## 14. Networking and collaboration

In this section we ask about how ESWN has or has not influenced your collaborative activity.

### 1. Through my involvement with ESWN I have...

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
found someone with mutual scientific interests who is outside my field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learned something about a scientific topic outside my field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
established successful collaborations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
established international collaborations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
established interdisciplinary collaborations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
established collaborations with women.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
established collaborations with ESWN members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. As a result of your participation in ESWN have you:

- Been nominated for any awards?
- Had more confidence to self-nominate for awards?
- Nominated someone else for awards?

### 3. Please give examples of how your participation in ESWN has facilitated any of these collaborative activities.

## 15. ESWN membership and participation

In this section, we ask you to describe your involvement in ESWN.

### 1. How long (approximately) have you been an ESWN member?

- Less than 1 year       1 to 3 years       3 to 6 years       More than 6 years

### 2. How has your career situation changed while a member of ESWN?

- No change in job or organization       Higher position or rank at the same organization  
 Same or similar level position at a different organization       Higher position or rank at a different organization  
 Other (please specify)

### 3. Please describe how your involvement in ESWN has influenced your career change or career decision-making (if any).

### 4. Do you currently list ESWN membership on your resume or vita?

- Yes       No

### 5. To what other professional societies do you belong? Check all that apply.

- AGU, American Geophysical Union       EGU, European Geophysical Union  
 ASLO, American Society of Limnology & Oceanography       ESA, Ecological Society of America  
 AWG, Association for Women Geoscientists       GSA, Geological Society of America  
 AWIS, Association for Women in Science

Other (please specify - not just initials, please!)

## 6. How did you hear about ESWN?

- Word of mouth
- Internet search
- Conference
- Professional society

Other (please specify)

## 7. To what degree have you used the ESWN website?

- I have not used the website.
- I have visited the website, but **not** registered as a user.
- I have visited the website and have registered as a user.
- I have visited the website, registered as a user, and contributed to a post or comment.

## 8. What career resources do you suggest for the ESWN website? (specific titles or URLs welcome)

## 16. ESWN membership and participation

### 1. Have you participated in the following ESWN in-person activities?

	No	Yes, once	Yes, more than once
Intensive career workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short workshop or info session at a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reception at a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal meal or get-together	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. ESWN runs two e-mail lists, a general list for ESWN members and the Earth Science Jobs Network, a co-ed list. Are you currently subscribed to these lists?

	Yes, currently	Yes, in the past, but not currently	No, but I am aware of this list	No, was not previously aware of this list
ESWN general e-mail list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earth Science Jobs Network list (ES_JOBS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 3. Here are some activities related to the ESWN general e-mail list. For each activity, please indicate your typical level of participation in the past 12 months.

	Never	Rarely	Sometimes	Often
Read e-mail messages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post e-mail messages or responses to the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reply to a posting personally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forward a (non-private) posting to someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussed a topic from a posting with someone else offline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read an article or news item shared on the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply for a conference, workshop, fellowship, or grant advertised on the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take other action in response to something on the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invite someone else to join	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read the annual newsletter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volunteer for a task or committee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 17. ESWN membership and participation

### 1. Have you learned anything new from the e-mail list...

	No	Yes, once in a while	Yes, often
about science?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
about science and society issues?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
about women in science?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
about other people's solutions to personal or professional challenges?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. What discussion topics interest you most? What kinds of posts are you most likely to read? Please comment.

### 3. Now consider the Earth Science Jobs Network (ES\_JOBS). For each job list activity, please indicate your level of participation (if you are not part of the jobs network, just check N/A):

	Never	Rarely	Sometimes	Often	N/A
Post a job to the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply to a job seen on the list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scan the list for someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forward job notices to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 4. What is the best aspect of the network for you?

### 5. What is the worst aspect of the network for you?

**6. Please offer any suggestions, advice, or concerns about ESWN.**



## 18. Gains

In this section, we ask how your involvement in ESWN has or has not benefited you so far.

### 1. As a result of your involvement in ESWN, what GAINS have you made in the following areas?

	No gain	A little gain	Moderate gain	Good gain	Great gain	N/A
Expansion of your professional network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to identify networking opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to act upon networking opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfort in drawing upon my professional networks to advance my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skill in drawing upon my professional networks to advance my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New knowledge that will benefit you in your career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New knowledge about resources to support you in your career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration with a colleague whom you found through ESWN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparedness to navigate your career path	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotional support in facing challenges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New understanding of obstacles faced by women in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognition that you are not alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New resources to help you navigate obstacles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence about your future in your career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence in building your professional relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to role models and/or mentors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improved communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improved negotiation skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased skill at mentoring others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A change in my opinion or perspective about an issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence in voicing my opinion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 2. HOW MUCH did the following aspects of the network HELP in securing your gains?

	No help	A little help	Moderate help	Much help	Great help	N/A
Electronic network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intensive career workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short workshop or info session at a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reception at a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal meal or get-together	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

## 3. Please tell us how your participation in ESWN has positively or negatively influenced your career. For example, tell us how ESWN influenced your job search or success, handling of a workplace situation or concern, or any other significant outcome.

## 19. Challenges

Earlier we asked you to describe your overall career situation and needs. Now please describe any particular challenges you face as a woman in science.

### 1. Please indicate the chief obstacles that threaten to impede your career development as a female scientist. Mark up to 3.

- Work-life balance and family issues
- Isolation
- Not being taken seriously
- Lack of institutional support, institutional bias
- Communication issues
- Lack of role models
- Male-oriented culture of science
- Harassment
- I do not perceive any obstacles to my career development.
- Other (please specify)

### 2. Please elaborate on the barriers you face as a woman in science.

### 3. Please elaborate on any assets or advantages you have as a woman in science.

## 20. Climate and atmosphere

In this section, we ask about the atmosphere in your workplace, both in general and with respect to gender. Please answer with respect to the work unit that you view as your primary workplace or workgroup-- for example, your department or lab group. We use the word "unit" to refer to your department or work group, and "organization" for the broader organization-- the entire campus, company, or institute in which you work.

### 1. How would you describe your interactions with colleagues and others in your unit?

Check the rating that best expresses your level of agreement with these statements.

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	N/A
I am treated with respect by colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am treated with respect by students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am treated with respect by staff.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am treated with respect by my boss or chair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel excluded from an informal network in my unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I encounter unwritten rules about how I am expected to interact with colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am reluctant to bring up issues that concern me about the behavior of my colleagues for fear it might affect my reputation or advancement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colleagues in my unit solicit my opinion about work-related matters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that my colleagues value my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have to work harder than my colleagues to be perceived as a legitimate scientist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do a great deal of work that is not formally recognized by my colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I "fit" in my work unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel isolated in my work unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. How has your participation in ESWN changed your perceptions of your workplace climate?

- I view my workplace climate more negatively.
- No change in my perception of my workplace climate.
- I view my workplace climate more positively.
- N/A

## 21. Climate and atmosphere

**1. How would you describe the atmosphere in your work unit? Check the rating that best expresses your level of agreement with these statements.**

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	N/A
Some colleagues have a condescending attitude toward women.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexist remarks are heard in the workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disparaging remarks about other racial, ethnic, or religious groups are heard in the workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is equal access for both men and women to lab/research space or equipment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The environment promotes adequate collegial opportunities for women.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Men receive preferential treatment in recruitment and promotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Men are more likely than women to receive helpful career advice from colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In meetings, people pay just as much attention when women speak as when men do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Women are appropriately represented in senior positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sex discrimination is a big problem in my workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 22. Climate and atmosphere

In the following questions, "unwanted and uninvited sexual attention" is defined as including unwanted sexual teasing, jokes, remarks, or questions; unwanted pressure for dates; unwanted letters, phone calls, or e-mails; unwanted touching, leaning over, cornering, or pinching; unwanted pressure for sexual favors; stalking; rape or assault.

### 1. In your workplace, how prevalent are instances of unwanted and uninvited sexual attention?

- Not at all prevalent     Rare     Occasional     Frequent     Very prevalent

### 2. Have you personally experienced any unwanted and uninvited sexual attention in your workplace?

	Yes	No
Within the past two years	<input type="radio"/>	<input type="radio"/>
In my entire career	<input type="radio"/>	<input type="radio"/>

## 23. Balancing personal and professional life

In this section, we ask about your personal situation and how it interacts with your professional life. We use the term "partner" to refer to a spouse or domestic partner.

### 1. What is your current marital or cohabitation status?

- I am married or partnered and I live with my partner.
- I am married or partnered, but we reside in different locations.
- I am single (not married and not partnered).

### 2. Do you consider yourself to be...

- Heterosexual or straight?
- Gay or lesbian?
- Bisexual?

## 24. Balancing personal and professional life

Please tell us about your career mobility, and that of your partner if you have one.

### 1. What is the **CURRENT** employment status of...

	Full-time	Part-time	Not employed	N/A
yourself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
your partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. At this time, what is the **PREFERRED** employment status of...

	Full-time	Part-time	Not employed	N/A
yourself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
your partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 3. Have you ever considered leaving your current job to improve career opportunities for...

	Never	Once in a while	Often	N/A
yourself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
your partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 4. If you have a partner, what is your partner's employment or career field?

- Employed in science, engineering, or technology
- Employed outside of science, engineering, and technology
- N/A

### 5. If you have a partner, do you consider his/her career to be more or less geographically mobile than yours?

- More mobile
- About the same
- Less mobile
- N/A



## 25. Balancing personal and professional life

Please tell us about your household.

### 1. Your current responsibilities for taking care of others (if any):

	Living with me full time	Living with me part time	Not living with me	No household members in the age range
Preschool children (ages 0-5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
School-aged children (ages 6-18)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adult children (age 19 and older)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you checked "Other," please specify.

### 2. If you live with a partner, how would you describe, in general, the distribution of household responsibilities between you and your partner? (If you do not live with a partner, choose N/A.)

	I handle most	I handle more	Responsibilities are shared equally	My partner handles more	My partner handles most	N/A
household upkeep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
parenting & caretaking of dependents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 3. How would you describe your level of balance between personal and professional life? Check the rating that best expresses your level of agreement.

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	N/A
I am usually satisfied with the way in which I balance my professional and personal life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have seriously considered leaving my current job in order to achieve better balance between work and personal life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often have to forego professional activities (e.g. sabbaticals, conferences) because of personal responsibilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal responsibilities and commitments have slowed down my career progress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working long hours is an important sign of commitment in my workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 26. Sense of Community

In this section, we ask about your sense of community within ESWN

**1. How do you perceive ESWN as a community? Check the rating that best expresses your level of agreement with these statements.**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I feel connected to ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ESWN helps me fulfill my needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a good bond with others in ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I belong in ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in ESWN are good at influencing each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can get what I need from ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a say about what goes on in ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like a member of ESWN.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 27. Personal Demographics

In this section, we ask for a few final pieces of demographic information.

### 1. Your age:

- 20 and under
- 21-30
- 31-40
- 41-50
- 51-60
- 60 and over

### 2. What is the highest level of education reached by your parents?

	Less than high school	Some high school	High school diploma	Some college	College degree	Advanced degree	Don't know or N/A
Mother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Father	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 28. Survey identifier

We wish to be able to match survey answers over time, without knowing your name. Using the following identifiers, we will be able to label surveys uniquely. We will not use this information for any other purpose.

**\* 1. First TWO letters of YOUR first name:**

**\* 2. First TWO letters of your MOTHER's first name:**

**\* 3. Please enter the MONTH and DAY of your birthdate.**

birth month (1-12)

birth day (1-31)

## 29. Thanks!

Whew! We know you worked hard, so many thanks for completing this survey.

We very much appreciate your help. Please contact us with any questions.

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Ethnography & Evaluation Research

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