

Summative Findings of the NSF PAID ADVANCE Horizontal Mentoring Alliances Initiative External Evaluation: Final Report

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Introduction

This report provides final, summative results for the external evaluation of the NSF PAID-ADVANCE initiative, “Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Scientists at Liberal Arts Institutions” and presents comprehensive analyses of baseline and summative interviews exploring the major benefits and outcomes emerging from this innovative mentoring initiative.

This project was designed to provide Alliance members opportunities to: network with senior women science faculty in liberal arts institutions; participate in career development discussions and workshops aimed at enhancing leadership, visibility, and recognition on their campuses and in the broader academic community; and develop mentoring paradigms that can be used on their own campuses with students, junior female faculty colleagues, and other senior female faculty colleagues, among other benefits. In the first phase of the external evaluation, the goal was to gather baseline data from the participants regarding their: career, institutional context, motivations for participating in the initiative, and satisfaction with early stages of participation. It was also an objective of the baseline interviews to determine initial successes of the initiative, as well as to provide formative feedback for future program improvement. Summative interviews explored outcomes of participation and the processes by which these accrued, probed views of replicability and sustainability of this mentoring model, and gathered information about “what works” (or not). The summative interviews also investigated participants’ opinions about the overall value of this initiative.

Study Design

A mixed-methods research-with evaluation study was developed in collaboration with the initiative's Principal Investigators Drs. Kerry Karukstis (Harvey Mudd College) and Bridget Gourley (DePauw University), and the External Evaluator, Anne-Barrie Hunter (Co-director, Ethnography & Evaluation Research, University of Colorado-Boulder). All interview protocols and the study design overall, were submitted for review and approved by Harvey Mudd College's Institutional Review Board, to ensure that the study met high ethical, professional and legal standards for research involving human subjects. To begin, participants were asked to fill out a detailed survey, which gathered information about their academic history, experiences with mentoring, current context and the departmental "climate," and probed other issues relevant to senior women faculty in the sciences; results of this survey are reported elsewhere. At the end of the first year of the initiative, in-depth interviews with participants were also conducted. Interviews were conducted with seven Alliance members during the New Orleans American Chemical Society (ACS) meeting April-5th-7th, 2008. Four Alliance members subsequently submitted written responses to the interview questions. Across Alliances 1, 2 and 3, qualitative interview data was collected from 11 of the 15 members (73%). All baseline informants are in chemistry.

Baseline interviewees (and those providing written responses) were asked to describe their career objectives and experiences and to comment on their experiences and attitudes regarding their current position and context. Alliance members were then asked their views about their motivations for participating in the Horizontal Mentoring Alliance, to describe what they understood to be the objectives of the initiative, their experiences of participating, and any benefits and outcomes (or not) of participating. As well, participants were asked their initial views regarding the efficacy and relevancy of the structural model (i.e., horizontal vs. vertical mentoring) in practice, their thoughts about barriers and supports to using this model, its sustainability, and for whom it might be usefully replicated.

Two years later, toward the very end of the project, summative interviews were conducted with the original 15 participants, as well as five senior women physicists who began their engagement later in the project.¹ Final in-person interviews were conducted with seven individuals during the ACS Spring 2010 National Meeting & Exposition, March 21-25, 2010, and the remaining 13 interviews were conducted by telephone March 26-April 30, 2010. Summative interviews focused on determining the major outcomes from project participation. These final interviews particularly probed the importance of the perceived benefits, views concerning the replicability and sustainability of this type of mentoring model, and best advice for future iterations of this initiative. Participants were also asked to summarize whether and how participation in a Horizontal Mentoring Alliance was valuable. Finally, they were asked what was most important

¹ At the time of the baseline interviews, the senior women physicists had not yet met together as a group.

to them about having participated and what they would have me, the external program evaluator, “tell the NSF” about this initiative.

Method of Qualitative Analysis

Qualitative research methods are particularly useful in studying areas where existing knowledge is limited. Using careful sampling, qualitative data (i.e., in-depth interviews and open-ended survey questions) ground findings in the accounts, experiences, and explanations offered by those who are best situated to address the subject being studied. Careful analysis of such data can uncover, explore, and estimate the significance of issues that shape informants’ thinking and actions. Through consistent coding, and modern software, ethnographers can disentangle patterns in very large qualitative data sets.

Transcribed baseline interviews, as well as written responses, were entered individually into text files and then imported into *NVivo 9.0*, a computer software program used in qualitative analysis. Summative interviews were similarly transcribed, saved as text files, and entered into the updated version of the software program, *NVivo 10.0*. The entire project was then updated to *NVivo 10.0*.

Using a qualitative research method, a content analysis of each of the data sets was conducted to identify attitudes, behaviors, and the range of activities that Alliance members described concerning their participation in the Horizontal Mentoring Alliances initiative. In conducting an in-depth content analysis, text segments referencing distinct ideas are tagged by code names. Codes are not preconceived, but empirical: each new code marks a discrete idea not previously raised.

The summative interviews were coded using the codebook developed from the baseline interviews as a foundation. Using the baseline interview codebook to code summative interviews allows baseline and summative interview data to be directly compared and contrasted. When a previously expressed idea appeared in the summative data, the same code was applied to the interview text. If a new code was developed, a “#” was placed at the end of the new code. If a previously developed code was adapted or amended, an “&” was added to the end of the code.

Using *Nvivo 10.0*, codes and their associated text passages were linked, amassing a set of codes and their frequency of use across the data set. When coding of the qualitative data was completed, codes similar in nature were grouped together to define themes. These clustered frequencies, represented as grouped themes, or “parent” categories, describe the content, range and relative weighting of issues in participants’ collective report. The qualitative findings thus provide detailed and grounded evidence for evaluating the efficacy of the initiative. Evaluation and research findings from these qualitative data are strong because of complete participation by all Alliance members.

Overview of Qualitative Findings

An overview of the results of the content analyses of the baseline and summative interviews broken out by major categories is provided in Table 1. In all, 354 codes were developed to capture the content of the baseline interviews. The qualitative analysis of the baseline interviews revealed a total of 27 “parent” or thematic categories; there were 15 major categories (see Figure 1). The 15 major categories reflect participant responses relevant to answering questions central to the evaluation. Remaining participant comments sorted into 12 minor categories, capturing a broad range of responses which were not specifically informative to the evaluation. An additional 323 codes were developed to capture content from the summative interviews, for a total of 677 codes, overall. The content analysis of the summative interviews produced one additional parent category (i.e., “*Gains: NO gain, but lack of gain NOT related to participation*”) for a total of 16 “major” parent categories; no new “minor” parent categories were developed (see Figure 2). In the baseline interviews, the major categories account for 73% of all participant observations; in summative interviews, they account for 90% (see Table 1).

Figure 1. Summary of content analysis of the baseline interviews.

27	<i>parent categories;</i>	847	<i>comments;</i>	354	<i>codes</i>
15	“major” parent categories;	639	comments;	236	codes
12	“minor” parent categories;	208	comments;	118	codes

Figure 2. Summary of content analyses of baseline and summative interviews.

28	<i>parent categories;</i>	3019	<i>comments;</i>	677	<i>codes</i>
16	“major” parent categories;	2612	comments;	503	codes
12	“minor” parent categories;	407	comments;	174	codes

Table 1. Summary of baseline and summative content analyses by major parent category.

Major Parent Category	# of Codes in Category	Baseline interview SOURCES (N=11)	Baseline interview OBS	% of all Baseline OBS	Summative interview SOURCES (N=20)	Summative interview OBS	% of all Summative OBS	Total SOURCES (N=20)	Total OBS	% ALL OBS
Motivation to participate in the HMA	15	10	23	3%	5	10	1%	11	33	1%
Career Satisfaction	11	11	23	3%	9	22	1%	14	45	2%
Mentoring	50	11	43	6%	18	100	5%	18	143	5%
Liberal arts colleges vs. large research universities	15	8	36	5%	19	93	5%	19	129	5%
Institutional context	37	9	33	4%	18	88	4%	18	121	4%
Departmental context	37	11	34	4%	18	70	4%	19	104	4%
Gender issues	39	9	26	3%	19	54	3%	20	80	3%
HMA meetings	24	11	53	7%	18	60	3%	20	113	4%
Gains from participation	61	11	207	27%	20	758	39%	20	965	35%
Gains not made	14	4	5	1%	10	21	1%	12	26	1%
Gains: Mixed or qualified	16	6	7	1%	12	19	1%	15	26	1%
Gains: No gain, but absence of gain not due to HMA	14	0	0	0%	9	20	1%	9	20	1%
Difficulties of participating in the HMA	55	9	23	3%	17	58	3%	17	81	3%
Alliance members' wants, unmet needs and advice to HMA	25	9	18	2%	19	59	3%	19	77	3%
Replicability and sustainability	90	11	31	4%	20	332	17%	20	363	13%
Subtotal	503	11	562	73%	20	1764	90%	20	2326	85%
Miscellaneous comments comprising 12 small categories (department history, spouse/family, sabbatical, background, etc.)	174	11	208	27%	20	199	10%	20	407	15%
TOTAL	677	11	770	100%	40	1963	100%	40	2733	100%

In line with objectives of the external evaluation, baseline and summative interviews emphasized discovery of different information (see Appendix for baseline and summative interview protocols). Baseline interviews sought to find out motivations for participating, descriptions of individuals' academic contexts, identification of senior women science faculty's difficulties within liberal arts colleges, initial benefits and advice, etc. Summative interviews looked for a full account of outcomes, the importance participants' assigned to these benefits, and issues of replicability and sustainability, which are of particular interest to the National Science Foundation and the PAID ADVANCE program.

As is evident from Table 1, the proportion of discussion across the various categories was similar among both sets of interviews. However, individuals in summative interviews offered nearly twice the number of observations concerning their gains from participation as did individuals in baseline interviews. Thus, final results show that summative informants' commentary highlights greater gains made from participation (39% of summative observations vs. 27% of baseline observations) and their views on replicating and sustaining this type of mentoring initiative (17% of summative observations vs. 4% of baseline observations). Summative interviewees' responses also appear to have been more focused, with a fewer number of comments comprising the "miscellaneous" category (just 10% of summative observations vs. 27% of baseline observations).

Figures 1 and 2, and Table 1, clearly show the number of observations offered is often greater than the number of participants. The high number of observations vs. participants reflects the length of both the baseline and summative interviews, which typically lasted an hour or more, and the care informants took in responding to questions. In presenting findings, I provide counts of discrete observations, as well as the number of sources citing those observations. Overall, the categories and numbers of observations provide the range of issues and relative weighting of opinion. However, the number of speakers is a better measure of the distribution of views on a particular topic. Thus I use both counts of observations, as well as of individual sources.

Next, I present findings from the major categories identified in the content analyses of the baseline and summative interview data, followed by conclusions to be drawn from results of this study. In the following discussion, I borrow from my previous report on the qualitative findings of the baseline interviews to compare and contrast findings from the summative interviews so as to capture a full picture of participants' views and experiences for this project evaluation. Quotations are provided to illustrate the qualitative findings. Care has been taken in the selection of quotations to be a fair representation of all participants. No attribution is given to protect anonymity.

Findings of the Major Categories for the Baseline and Summative Interviews

Motivations to Participate

One percent of all participants' observations discussed motivations to participate (23 baseline observations; 10 summative observations) (cf., Table 1, above; Table 2, below).

Results from the baseline interviews show that members were primarily motivated to participate in the Horizontal Mentoring Alliance as a means to network and receive advice from other senior women science faculty. In baseline interviews, 73% of Horizontal Mentoring Alliance members cited the opportunity to get advice from other senior women science faculty as their motivation for participating in the initiative. Several Alliance members mentioned other reasons to participate, including the desire to mentor women faculty, as well as the opportunity to extend their professional circle, while also reaching beyond the commonly-felt isolation of working at rural liberal arts colleges. Some described the Principle Investigators' invitation to participate as an "incredible opportunity" which they couldn't turn down.

A lot of it just came out of just wanting to have a network of people that were also chemists. ... I wanted a group of individuals to sort of bounce ideas off of. I also wanted people, not necessarily that were doing the same science I was doing, but at least could understand my science or could understand. ... It was very hard to go to somebody who was more advanced than me and say, "Help me." I'm a full professor. I'm supposed to know what I'm doing. But it's okay to go ask somebody who's at your own career stage, "How have you made this work?" There's something more comfortable and more familiar about your asking a friend or colleague, not a superior, "How do I do this?" It's not a helpless-female, "Help me out," but just, "Oh, what's your set of tricks?" kind of thing. I think that's a big part of it. (Baseline interview)

I miss the company of other women that like science. It's nice to be able to just have casual conversations about some of the day-to-day challenges that you're up against, that may not be earth-shattering, but just to be able to share those experiences and hear different ways to go at it; to meet and get to know people from other institutions, to hear other ways of doing it, because we don't have frequent sabbaticals, and we don't get a lot of new blood in through the department and so it's a way to get alternate perspectives and things like that. I think women in liberal arts institutions can be extremely isolated because we're in two- to four-member departments generally out in the middle of nowhere with very few other white-collar professionals in the community and you can just really get so pigeon-holed in your own little job and keeping up with what you're doing, that you step on a university campus and like, "Wow, there's all these people who like science." (Baseline interview)

I am interested in promoting the careers of more women in science education and at the time I was invited to join the Alliance all of the administrators at my institution were male so it seemed institutional barriers were well entrenched in terms of opportunities for women at my institution. (Baseline interview)

Table 2. Baseline and summative observations on motivations to participate in the Horizontal Mentoring Alliances initiative.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
In order to get advice from other senior women science faculty	8	9	0	0	8	9
Very hesitant to participate Very pressed for time	0	0	4	4	4	4
Sees participation as an "incredible opportunity"	3	3	2	2	5	5
Felt obligation and desire to mentor women in science	2	3	1	1	3	4
Liked the women who were participating in Alliance: has known these women for a long time	3	3	0	0	3	3
To alleviate feeling of isolation	2	2	0	0	2	2
Felt sense of obligation to participate #	0	0	2	2	2	2
Opportunity for professional socialization with other women science faculty: expand circle	2	2	0	0	2	2
Was NOT struggling with any particular issues that motivated participation in alliance	0	0	1	1	1	1
Wanted support/good mentoring for new leadership position: feels has lots to learn from other women science faculty	1	1	0	0	1	1
TOTALS	10	23	5	10	11	33

Five participants offered an additional 10 observations in the summative interviews. As in the baseline interviews, a few summative informants also said that participating in the Horizontal Mentoring Alliances was a great opportunity they couldn't pass up. One other also saw participation in the initiative as an opportunity to mentor other women scientists. A few individuals said that, initially, they had been hesitant to participate because they were so pressed for time. However, in the end, they were very glad they had participated as they found it extremely worthwhile. A couple admitted that a sense of obligation underlay their reasons for participating in the Horizontal Mentoring Alliances.

When [she] called me up, I said, “Look, I’m really nervous about getting into this!” I said, “I don’t have a lot of extra time and I can’t commit to something that’s going to be very time-consuming for me because I am already strapped!” They both mentioned that this is *not* intended to be extra work: that, “This is a chance for you to find some support so that you can get your work done more efficiently.” That’s really paid off in ways that I’ve never dreamed! I really hate to think what my life would be like had I *not* participated! (Summative interview)

Everybody is so busy.... I think I felt a sense of obligation.... It’s difficult to say no, even if you feel like you don’t have the time.... You know, this is a positive thing. I want to support it. (Summative interview)

In sum, members were primarily motivated to participate in the Horizontal Mentoring Alliance as a means to network and receive advice from other senior women science faculty. Several individuals also mentioned other reasons to participate, including the desire to mentor women faculty, as well as the opportunity to extend their professional circle, while also reaching beyond the commonly-felt isolation of working at rural liberal arts colleges. Most of the summative observations repeated baseline observations. In summative interviews, a few individuals noted they were quite hesitant to participate, but, in the end, emphasized that they were very glad they did. A couple individuals acknowledged that a sense of obligation had motivated their participation. Overall, individuals’ motivations for participating in the Horizontal Mentoring Alliance show that the participation in the initiative was seen as a way to fill various types of gaps existing in these senior women science faculty members’ professional and personal lives.

Career Satisfaction

Two percent of all participants’ observations concerned career satisfaction (22 baseline observations; 23 summative observations) (cf., Table 1, above; Table 3, below).

As noted in the baseline interview report, nine Alliance participants were happy with their institutional context; two were not and were actively looking for and scouting out opportunities to “jump ship.” The majority was happy with the liberal arts college context, generally, and liked the balance between research and teaching and the opportunity to work one-on-one with students that liberal arts colleges afforded them. One participant, while offering a positive comment about her job satisfaction, also noted that she “felt beaten down” by the male-dominated department.

(My institution has) a beautiful campus. We have really wonderful students. It’s highly selective. Chemistry facilities are not great, kind of in line for renovation someday, but adequate. I’ve always been comfortable there. I enjoy teaching there and I don’t think I’d want to move and start over learning somewhere else. (Baseline interview)

Table 3. Baseline and summative observations on career satisfaction.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Happy with institution, career, context generally	5	6	5	6	9	12
Looking to move to another institution: present institution is too conservative; Conflict of values	2	4	2	5	2	9
Very happy with job: a perfect match: I love teaching!	4	5	4	4	7	9
Institution/liberal arts college context is a good match: a good balance between teaching and research	4	4	3	4	6	8
Loves working with the students one-on-one	2	2	0	0	2	2
<i>Mixed view</i> : Fairly happy at institution, but does feel beaten down by male-dominated department	1	1	0	0	1	1
Some regrets didn't follow an interdisciplinary career path; incorporate other interests with science discipline	1	1	0	0	1	1
Has gained a greater appreciation for her institutional context and colleagues from having seen how it can be other places where people feel stuck #	0	0	1	1	1	1
Period as assistant dean reinforced satisfaction with her institution, career; Learned new strengths and what she's good at and enjoys; Very happy #	0	0	1	1	1	1
Would not consider moving institutions now, too rooted; Very happy #	0	0	1	1	1	1
TOTALS	11	23	9	22	14	45

I just love the intellectual life of a liberal arts college. I just like the intellectual part of it, the fact that there are humanities and the social sciences and science. I have real broad academic interests, so it's a good setting for me in that regard. The other thing is that I really like 18- and 19-year-olds a lot. Even 20 years into the job, watching these kids come in at 17 and 18 and what happens in four years is amazing. It's just amazing. And it's a lot of fun, because you play a role in that. The students are pretty articulate about sort of saying, "Wow, I hadn't thought about this before until you mentioned it!" or, "Your encouragement here really made a difference." You don't get a huge amount of feedback, but once in a while you get a little nudge that says, "Yeah, you made a difference." (Baseline interview)

It's a perfect match for me in terms of the balance of teaching and research. (Baseline interview)

It's been a very supportive environment. My colleagues and I really are extremely complementary to one another in terms of being able to balance each other's strengths and weaknesses very efficiently. We've got a great department. (Baseline interview)

Most rewarding? Working with the students one-on-one. This is what attracted me to this setting and this is what I still enjoy the most. (Baseline write-in response)

There is a part of me that wishes I could pick the college up and drop it in a different geographic location. It's broader than, "I'm a long way from family," or anything like that. It's the values...(that) don't match my values. ...Things that just hit you in the face sort of everyday.... So it's sort of an overall culture that's particularly problematic and it's magnified by being in a small town and not having a lot of those resources. So interestingly, my biggest drive for leaving and trying to figure out to leave is personal and my challenge right now is, "What else am I willing to do?" because I'm not willing to start over at the bottom, apply as a faculty member and go through tenure again; not on your life.... But the question is, I don't know, "Would I be willing to be a Dean?" I'd really like to use the alliance to figure that out and I guess one of my goals is sort of figuring out, "What next?" It's hard, because I really don't want to give up the classroom, but on the other hand, if I don't ever grade another lab report, it would be too soon! (Baseline interview)

(I have) mixed feelings on this. I enjoy working with the students. I enjoy teaching chemistry. I enjoy a lot of the committee work I have had the opportunity to do. But, I have struggled being the only woman in my department for years and years. The men haven't even realized how much they have beaten me down—and worse yet I hadn't realized it either until I began talking with other women who had begun careers in liberal arts colleges at about the same time. My departmental colleagues had sucked the joy right out of me. I am definitely not the same easy-going person I was when I accepted the job. (Baseline interview)

Summative interview observations largely repeated participants' baseline observations. As in baseline interviews, the largest numbers of observations mentioned participants' career satisfaction, that participants were: happy with their institution and career context; happy with their job as a teacher; happy working at a liberal arts college with a good balance between teaching and research; and happy working one-on-one with students. A new type of observation

offered in the summative interviews shows that at least one member developed a greater appreciation for her own position having gained wider perspective on others' (worse) situations.

This college is an excellent match for me. It was a good landing place for me. (Summative interview)

I've come to appreciate more...by looking at other people's situations.... Being in the department where all of my colleagues are among my best friends and where we get along well and where we adapt to each other's patterns and interests well.... And that there is nobody that I'm bumping up against and just struggling against, in terms of wanting to make a change and someone's resistant..... Or being dragged along on things I don't want to do. We just have a great working relationship. I always knew that, but I don't think I appreciated it in the same way without having seen other people who were stuck with, "Well, this is the way it's always been done and so-and-so will never modify the way he does things, and so we have to do things his way." I'm not in that position and I guess I failed to realize how many people are in that position (laughs). It made me kind of feel like..."I'm in the right place for me." (Summative interview)

Some of the things that I had been particularly frustrated with at my own institution are less frustrating in the context of the conversations with the women in my alliance. And again, it's an opportunity to see that we have things at [my institution] that some of the other places are just not even thinking about yet. So, the satisfaction with the things that we do have has grown. Our deans do recognize that sending faculty off our campus is one of the principal ways to improve job satisfaction here—send us off somewhere (laughs). That has been part of a good strategy for a long time! ... Because it's very easy to stay in your own little cocoon, in your own little context, to get annoyed by stupid little stuff, and you realize that it is little when you compare it to something that's going on at another institution. I can say that I have found it personally valuable to be able to realize that my own situation is, in fact, so much better than some of the other situations. (Summative interview)

Overall, just under half of participants (45%) reported that they are happy with the career and institutional context and another 35% said they were very happy with their job.

Mentoring

Five percent of all participants' observations discussed mentoring (43 baseline observations; 100 summative observations) (cf., Table 1, above; see Table 4, below).

In the baseline interviews, nearly three-quarters of participants noted that no formal mentoring program existed when they were hired by their institution. Just over half of participants in the baseline interviews said that a mentoring program had been established at their institutions in the past five or six years. Two commented on a cultural injunction against mentoring at their institution, which considered it a form of "interfering in others' independence to do things as they saw fit." However, several individuals had experienced mentoring informally with varied degrees of success. Despite heavily male-dominated institutions, several also recalled, and were

Table 4. Baseline and summative observations on mentoring.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
There is NO mentoring for faculty in senior positions, just when you need it most #	0	0	11	18	11	18
There was no mentoring at all when she started	8	8	3	3	10	11
No mentoring, no advice, Institution is very conservative: mentoring is "considered interference"	2	4	3	6	4	10
Mentoring helps you avoid common pitfalls: can warn you before it's too late	1	1	5	7	6	8
Department mentoring program was instituted 5 or 6 years ago: faculty members matched with mentor OUTSIDE department	6	6	1	1	7	7
Has found her own little bubble of peer mentoring with friend in another department/outside of the sciences on own campus #	0	0	5	6	5	6
Effective mentoring empowers a person to have confidence to try things and succeed at them	3	3	3	3	5	6
Very glad to have participated at a time when she needed a lot of mentoring #	0	0	4	6	4	6
Reports that there are lots of formal/informal/hierarchical mentoring opportunities on campus, but NOT for faculty in senior positions #	0	0	2	4	2	4
Almost routinely goes out and gives lectures to undergrads, graduate students concerning women in science; feels strongly that it is important to serve as a role model to women coming after #	0	0	1	3	1	3
Formal mentoring program at institution is NOT department based: totally ineffective	1	1	2	2	3	3
Department mentoring for junior faculty members was attempted and failed: everyone was too busy	1	1	2	2	3	3
Mentoring has always been important to her, always worked to promote women in science #	0	0	3	3	3	3

Department has a peer mentoring group for junior faculty members (read drafts of papers, review proposals, etc.)	1	1	2	2	2	3
Really found she needed mentoring after receiving full professorship: "Now what?" Felt at a loss as to what she needed to do #	0	0	3	3	3	3
As a department chair, she is active in mentoring junior faculty	1	1	1	1	2	2
Department mentoring: MIXED effectiveness of matching faculty members with mentors OUTSIDE department	1	1	1	1	2	2
Does have a good mentor (department chair)	1	2	0	0	1	2
Does not feel she has mentors at own institution; has peers, but not mentors	2	2	0	0	2	2
Informal mentoring available from senior women faculty outside the sciences	2	2	0	0	2	2
Informal mentoring from others at institution: hit or miss, gaps	2	2	0	0	2	2
Went to previous chair for advice, mentoring	2	2	0	0	2	2
Alliance member does get informal mentoring: almost always from an individual OUTSIDE her department	1	1	1	1	2	2
Formal junior faculty mentoring established about 5 year ago; OK. Some want mentoring Some don't #	0	0	1	2	1	2
Informal mentoring is pretty ineffective Described as an "On a need to know basis only"; No preventative or proactive help #	0	0	2	2	2	2
No mentoring for entrance into position as assistant dean, just dive in #	0	0	2	2	2	2
There is mentoring at institution for junior faculty but NOT for women ONLY; That's the need #	0	0	2	2	2	2
When mentoring, it's important to emphasize the positive in academe #	0	0	1	2	1	2
Mentoring junior faculty is a LOT of work, effort #	0	0	1	2	1	2
Alliance member does get informal mentoring both in and outside department	1	1	0	0	1	1
Department still does NOT have formal mentoring program for faculty	1	1	0	0	1	1

Senior faculty in department and his wife "watched out" for her regarding teaching of general chemistry, but no broader mentoring	1	1	0	0	1	1
Very fortunate to have strong male and female mentors OUTSIDE institute for support	1	1	0	0	1	1
Peer at another liberal arts college has served as only mentor	1	1	0	0	1	1
Department, institution has provided funds in past for senior junior faculty mentoring: "Take a junior out to lunch"; No funds for this anymore #	0	0	1	1	1	1
Doing more with junior faculty mentoring, but even so pretty ad hoc #	0	0	1	1	1	1
Earlier on in career, she was warned by senior woman faculty NOT to take on position offered her: "Don't do it!" Gave her strength to say no #	0	0	1	1	1	1
Formal mentoring of senior faculty outside department with new faculty; Not great but better than nothing #	0	0	1	1	1	1
Formal mentoring for junior faculty established about 10 years ago; Ineffective, outdated. Too basic to be of help to anyone #	0	0	1	1	1	1
Formal mentoring program set up some years ago but died, is no longer operating even in principle #	0	0	1	1	1	1
Had a really great mentor as a post doc from a female who served as role model. Showed her it was possible Married with children and a supportive husband Very important to her #	0	0	1	1	1	1
Had really good mentoring as a graduate student from male advisor #	0	0	1	1	1	1
Has done lots of informal mentoring of junior faculty Attempted to start a group but it never came together #	0	0	1	1	1	1
Has found own little bubble of peer mentoring with another woman at institution not too far away #	0	0	1	1	1	1
Informal mentoring from more senior faculty and chair in department #	0	0	1	1	1	1
MIXED experience re mentoring: One going very well, the other never responded #	0	0	1	1	1	1

Not only is there not the number of deans and senior administration for mentoring (also complicated by gender), there are so few women in senior administration to serve as mentors #	0	0	1	1	1	1
Received some good mentoring from male colleague when first started at another institution #	0	0	1	1	1	1
Says undergraduate women don't want mentoring Think all is well, and don't need help #	0	0	1	1	1	1
When formal mentoring for junior faculty was established about five years ago, male faculty received emails to mentor junior colleagues; she did NOT. Heard about it from male colleagues #	0	0	1	1	1	1
TOTALS	11	43	18	100	18	143

grateful for, colleagues who made a concerted effort to help them early on in their academic careers (both within and outside their departments).

*When you were first hired, did the department provide good help in getting you started? No.
Did you have any mentors who helped you? No.
Was it offered? Did it exist? No. (Baseline write-in response)*

There was no, "Here's your mentor. Here's your department chair." Maybe a little bit of, "Watch out for this." It was more, "You make mistakes, you try something. If you get smacked down then you just get back up and do something different next time." (Baseline interview)

The culture of the institution that I'm at is one where it's sort of very old-fashioned...and so mentoring is not an acceptable thing culturally. It's viewed as interfering. At my school, anything that smacks of telling somebody what to do, even if it's not telling somebody what to do, is strictly forbidden. And so when we talk about mentoring in the department, faculty would say, "Well, I'm not going to tell anybody what to do." And I sort of thought, "Wow! We have a long way to go." They had absolutely no clue what mentoring meant as a concept. (Baseline interview)

There was a lot of informal mentoring. Most of the senior women faculty have taken somebody under their wing. The staff have recently developed a formal mentoring arrangement. There was a very short-lived attempt at formalized mentoring arrangement for junior faculty. It pretty much disappeared because everyone was too busy, at both the upper-level and the lower-level. Everybody was just too caught up in what they were doing to really think anything much of it. But I would say most of us have somebody who's a few years older up the pipe that we hang out with and get a lot of informal mentoring that is non-structured. (Baseline interview)

There is formal faculty mentoring now. I also participate in a college-supported mentor network for women faculty at my own institution. Mentoring of younger departmental colleagues is essential as a department chair or supervisor of courses involving younger faculty. (Baseline interview)

Informally, I could ask certain folks in the department for guidance on teaching strategies, which conferences would be the best for me to attend, and how to handle difficult student issues.... I learned most of what I needed by listening carefully around the department—of course an awful lot of decisions were actually made in the men's locker room or out while they were running. ...I have realized that it is always necessary to have someone you can use as a sounding board. The exact person or people that have filled this role have changed over time, but almost always they were outside my department. (Baseline interview)

There was a senior faculty person who I taught with my first few years and he was tremendous teaching mentor. So the first time I taught gen chem., he taught at 8am, I taught at 9am. I sat in on his class every day. He gave me his notes, 9 o'clock every night—he'd come by at 9 or 10 o'clock at night because we worked at nights—and so about 9 o'clock at night, he'd poke his head in my office, "Do you want to practice the demo?" So at 9 o'clock at night we were in there trying it out because we did demos every day in class. And he set it up and he did all that work. He'd set it up and he'd practice it and then I'd go to his class at 8am and watch and there was so much stuff in that class. There was content in that class I'd never really done before, so I would sit and listen to him and figure it out, take some notes so I could teach it in the next hour. His wife was at the institution, as well as an adjunct faculty. So the two of them watched out for me, which was really nice. But it was really with respect to teaching gen chem., not with respect to research or life in general. So I was really happy to have them for that, but there just weren't any other women around. There weren't really a lot of sympathetic men. Everybody kind of just did their own thing and figured everybody else would do their own thing. (Baseline interview)

Observations on mentoring in the summative interviews emphasized the dearth of effective mentoring at all levels of academe, offering a good number of comments about failed and ineffective mentoring programs for junior faculty. As senior women faculty, however, they most commonly noted that mentoring was non-existent "just when you needed it the most!" Just over half of participants (55%) expressed frustration at the lack of access to quality mentoring for senior faculty members. Two additional participants noted that there was no formal or informal mentoring for senior faculty, although there was for junior faculty. Three others said that they had felt at a loss as to what to do when promoted to full professor and really would have benefited from mentoring at that critical step in their professional life. Two participants who had recently moved into administrative positions received no training or mentoring at all: they were expected to "dive in." In all, 80% of participants observed a tremendous need for mentoring for senior faculty members.

I think there is certainly a tradition of mentoring for junior faculty, but I guess there's just this assumption that once you hit full professor, you know all the answers and you don't need any more help, or support, or input, from other people.... And it comes at the time when you're

supposed to be the font of wisdom for mentoring all the young ones coming along the line (laughs). (Summative interview)

I think that just because you get tenure, it doesn't mean the mentoring should stop because there are different phases that you go through, even post-tenure. You know, in terms of...now you're expected to do different things. You're expected to take on more service; maybe you're expected to help change the curriculum. How do you approach those things? (Summative interview)

We have learned that full professors need mentoring and need a different sort of mentoring from younger people. (Summative interview)

I think it's really important to emphasize that even though we're senior faculty members, we still need....we still have issues. And those issues are different for older women.....people who are farther along in their careers..... There are all these things you're being asked to do, different things. You have different career-family balance issues when you're older. You're asked to do leadership things, and not just on your own campus. You're asked to be on committees for national organizations, and how do you balance that? There is really such a need for mentoring for all this stuff. (Summative interview)

Most institutions are really good about getting someone through the first year, maybe all the way through the tenure process, and then you're, you know, it's assumed that you know it all! There is no mentoring available. (Summative interview)

I started a new administrative position at the beginning of this, which, actually dovetailed very well with the objectives of the initiative. ...And that was just more just, "Dive in!" I mean, the dean that I work for is really great and meets with me regularly and tries, I think, to provide me with the resources and information that I need. So it's not like I'm out there all alone, but yeah, there's no formal or informal process for that position. (Summative interview)

In the summative interviews, one quarter of alliance participants commented that mentoring was particularly valuable in preventing future problems, and thus quite helpful in applied practice.

I think learning about practices on other campuses has been particularly helpful. One alliance member...because she's in a dean-like position...just hearing her approach of to how deal with things has been beneficial because it's always tricky if you are faced with some conflicts, or faced with some difficult situations, how you phrase, or approach the problem. But she's pretty laid back about it, so I think I really learned a lot from her just by watching her and seeing her operate. I've learned some things from the other people as well.... This type of mentoring is really great for learning how to deal with situations and averting possible future difficulties. (Summative interview)

One quarter of alliance participants in summative interviews also noted that they had found a source of peer mentoring with a colleague in another department, outside of the sciences, or even from male colleagues.

I've learned from the mentoring alliance that it's good to have mentors, so I've actually cranked up my efforts to talk to people on my campus, though they are not in my field, and nor even in

the sciences...It's often the women in modern languages or gender studies who are phenomenally helpful and so I get a lot of inspiration from those women. (Summative interview)

I also have friends that I can discuss these things with, in other departments. (Summative interview)

Some people are more isolated than I'd even realized.... I have a couple women in biology who are great. It doesn't matter that they're not in chemistry. I have a couple of male friends who are great, and it doesn't matter that they are male. (Summative interview)

Twenty percent of alliance members in the summative interviews made special note that they were glad to be participating at a time when she found this type of mentoring to be especially timely.

I'm certainly glad to have participated in the project. It has been personally valuable. And it came at a time in my career that it was particularly valuable.... I don't have any regrets about participating. Would I do it again? Yes, I would do it again. It helped me in my position immensely. (Summative interview)

As in the baseline interviews, a large number of individual observations referenced attempted, failed, or ineffective departmental mentoring efforts directed at junior faculty.

Working at a Liberal Arts College vs. a Large Research University

Five percent of all participant observations contrasted working at a liberal arts college vs a large research university (36 baseline observations; 93 summative observations) (cf., Table 1, above; Table 5, below).

Counting both baseline and summative observations, participants' top three observations that contrast working at a liberal arts colleges with a large research, or R1, institution account for over half of all comments in this category (57%). A majority of baseline participants (55%) pointed out that, at a liberal arts college, there were much higher expectations to do more things in more and unrelated areas and that faculty members were expected "to wear a lot of different hats"; in summative interviews, 75% of participants offered this observation, and, in total, 85% of Horizontal Mentoring Alliance members expressed this view (see Table 5). About one third of alliance members in the baseline interviews (36%) also noted that liberal arts colleges were commonly characterized as isolated in multiple ways: they were located in rural areas; women were a definite minority; and representation of socioeconomic status and racial and ethnic diversity was narrow and limited. In summative interviews, the number of individuals expressing this view doubled. In all, 70% of participants named isolation as an issue for senior women science faculty members working at liberal arts colleges. In addition, while only three participants in the baseline interviews commented that R1 faculty have more

Table 5. Baseline and summative observations on working at a liberal arts college vs. a large research university.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
At a liberal arts college you have to do everything and you have to do it well, no insulation/hiding behind grants and publications: "We have to wear lots of different hats"; Much broader range of issues to deal with	6	8	15	21	17	29
Liberal arts colleges are more isolated in multiple ways: by gender, discipline, socioeconomic status	4	5	13	20	14	25
At R1s, faculty have more freedom because there is less emphasis on students and teaching and more on research. At R1s, it's all about research/publish and perish. There is implicit permission to focus on own career. At LACs, it's all about students: sacrifice self and career &	3	3	11	16	11	19
R1s have larger departments than liberal arts colleges Departments in R1s have an increased likelihood of greater numbers of women	2	3	6	6	6	9
LAC faculty members are possessive of their classes and their time in the classroom	1	1	6	8	7	9
Advancement at a LACs is difficult because there are so FEW positions AND they are NOT considered prestigious, only a LOT of work; Always competing against the same person	3	4	2	4	4	8
Liberal arts colleges have varied cultures and are different from R1s: HIGHLY LOCAL CULTURES; R1s offer greater diversity	2	2	2	6	3	8
R1s' emphasis on research naturally means reaching out to others, professional collaborations, communicating results, travel to conferences, etc.; This is NOT so/NOT common practice for LAC faculty	2	2	3	3	5	5

R1s and LACs have different political issues: at R1s, issues of power and who decides (i.e. space wars); NOT as important at LACs	2	2	2	2	4	4
LACs don't hire that often. Departments at LACS stay the same for years and years; R1s change/hire all the time #	0	0	2	3	2	3
At R1s there are women in administrative positions, but very rarely so at LACs	1	1	1	1	2	2
Rules are clearly stated at R1s: rules at LACs seem unclear	1	1	1	1	2	2
Fights negative stereotype/feelings of inferiority of being a professor at a LAC, she is not a "serious scientist" "Real scientists" teach/do research at R1s #	0	0	2	2	2	2
At R1s, mentoring is important in own department and discipline; At liberal arts colleges, mentoring can occur across disciplines: issues are broader more common regarding the liberal arts college context	1	2	0	0	1	2
R1 faculty focus on their department; liberal arts college faculty focus on the college as a whole	1	1	0	0	1	1
At an R1 institution, faculty members are NOT as tied to the department	1	1	0	0	1	1
TOTALS	8	36	19	93	19	129

freedom than liberal arts faculty because there is less emphasis on students and teaching, and more on research, this type of observation was voiced by over half of alliance members in the summative interviews (55%). In these comments, participants also reference larger departments and the "publish and perish" imperative of R1s (which provides implicit permission for R1 faculty members to focus on their own careers): at a liberal arts college, departments are small, it is all about the students, and the institutional ethos is such that faculty members are expected to sacrifice themselves.

At a liberal arts college, you have to do everything and you have to do it all well. We always joke in our department somebody doesn't have to be a great teacher and a great researcher—and it's, like, "Yes, you do! Don't lie!" So I think only folks at other liberal arts colleges, especially these very research-active places, are the only ones that kind of get the fact that you're writing your grants, you're doing your research, you're publishing your papers, you're being an exceptional teacher, you're running the sexual harassment program at work, and you're department chair, and that's your life. And it's a lot! Folks at R1 institutions also do a lot, they work 24/7. But it's not trying to do everything, so I'm not saying we work harder by any stretch.

Everybody's working too hard, that's the bottom line. But it's more of this variety of the tasks, the fact that you're expected to be good at all of them. (Baseline interview)

We tried to tell ourselves—we tried to tell each other—in very specific cases that you don't have to do it all and that you cannot survive if you try to do it all. Working at a liberal arts college demands everything from you. It will swallow you up! (Summative interview)

Everything revolves around the student at the liberal arts college.... So it's finding the right kind of research that would be appropriate for the background they have, but hopefully still doing something that contributes to the scientific knowledge base that can be published, that we can get grant funding for. And then the teaching. It's all about them. And the service is all related to making the university run more efficiently and effectively to take care of student needs. So it's all student-centered. But all the hats are so different. How do you find time to write a grant proposal when the university wants you to hire a new dean and you have two or three courses to teach, with lab? ...I'm so far behind on writing, which makes it then harder to get the grant because I haven't written up the last work. So it's all a vicious circle! I've only got one head and they have a bunch of big hats they want me to be wearing simultaneously, and they don't want them stacked, they want each one making contact. (Summative interview)

I do feel like we are more isolated. Well, it may be true that there are few women at some of the R1 institutions. I think most of them are in much larger cities and have more natural opportunities to interact with other women. The other thing that's different, R1 faculty—this might speak to why they might need this kind of approach—they tend to focus solely on their department as opposed to liberal arts colleges where all your committees are across the campus. (Baseline interview)

We've been talking on campus about the fact that we extol this unsurpassed excellence at the campus.... Everyone feels like they have to live up to it in every aspect of their life. Instead of having a portfolio of accomplished people at the institution where they have one particular strength, we're sort of forcing everyone to demonstrate that they have strengths in *every* area. (Summative interview)

In an R1, you might have a department of 20 or 50 people and if there are 12 people you don't get along with, that still leaves a lot of choices. Whereas most of the liberal arts college, if you have a dozen faculty in chemistry, it's huge, and for most of us it's two to five. And if you don't get along with two, now that's a big deal. You don't have the professional isolation on top of the gender isolation on top of the socioeconomic and academic isolation that you do when you're a little college in a little town in the middle of nowhere and there are three other chemists within a 50 mile radius. It's a whole different scale. ...There are very different kinds of needs in terms of what you're trying to manage professionally and I don't think that the mentoring that's needed in the liberal arts or the small liberal arts college is mentoring about your primary job function. I don't think that I need—or the other women in my alliance need—mentoring on how to be good teachers. I think we get that from all across campus. But we need the nurturing as scientists, we need the mentoring for balancing all the other things that are lopped on top of our primary professional responsibility, which is to be teachers, and I think at an R1, your primary professional responsibility is to be a researcher and I think there's a need for mentoring about research and not writing grants and about choosing projects and handling grad students, about your primary job function. Whereas, I think the mentoring that I feel the

need for is mentoring for everything BUT for my primary job function—and making the rest of my life work around my job. (Baseline interview)

At an R1 institution women are not as isolated to begin with. There might be 30 or 40 members of a department, two or three of whom are of similar age, two or three of whom are doing similar research. And, in general, there are going to be more women. (Summative interview)

I think when women in R1 institutions network, it may be for more research-focused reasons, like trying to find research collaborators or maybe to find new positions, something like that. They might have a specific question or need in mind, and I think naturally they have opportunities to travel more, because of their research. They aren't as tied to their campus and so they probably get to know more women at other institutions who maybe don't have the need for one of these kinds of alliances to be set up. For those at liberal arts colleges, we tend to put the institution and the students first, instead of ourselves. So when it comes to, for example, travel during the semester, as we've said, you tend to think you can't do that, you can't leave your students. And so you don't take opportunities to get out and meet the women who might not be on your own campus. (Baseline interview)

A lot of my male colleagues had networks in place, but I felt like....when I started here, I also had young children and my husband was clear that I had one meeting a year that he would watch them, so I just was not getting out and building networks. I was just very isolated...I was just trying to keep what I had going. So, I feel like, "Wow! Finally I have a network!" I imagine that's not so much an issue at a research university. (Summative interview)

Four individuals noted that advancement in the liberal arts context is unusually limited: there simply weren't that many positions that came open, and most administrative positions were generally viewed as conferring negative status on women: no one wanted these jobs.

One of my frustrations at our institution, because it's so small, there aren't too many opportunities for leadership. (Baseline interview)

You can be chair of certain committees and that's a leadership position. But very few of those are extremely prestigious. They're all tremendous amounts of work. So there's only a couple little things you can do on campus that are extremely well-respected and thought of as prestigious positions. They're positions people want to avoid because there's so much work. (Baseline interview)

If you step into the administrative, you're taking, it's a step down. It's like, "Why do you want to do that? That's just not the right direction to be moving!" (Summative interviews)

Overall, participants' observations contrasting work within the context of the liberal arts college with that of the large research university speak to the issues underlying participants' motivations to participate in this initiative: women faculty members' isolation, the added stress of having to fulfill multiple, varied roles within the institution and one's department, the difficulties of balancing demanding professional and personal responsibilities, and not having anyone to turn to for advice.

Institutional Context

Comments regarding their institutional context were 45 of all participant observations (33 baseline observations; 88 summative observations) (cf., Table 1, above; Table 6, below)

The types of observations offered by participants in the summative interviews echoed those given by participants in the baseline interviews, but, in general, to an even greater degree. Just under half of participants (40%) in the baseline and summative interviews commented that their institutions were located in “a cultural backwater.” In addition, a similar percentage of alliance members (35%) characterized their institutional context as “very traditional, patriarchal, and male-dominated.”

You still feel pretty isolated working at (my institution), because you’re only one of three, you’re the only biochemist, you’re the only whatever. (My institution) is very rural and you don’t have a lot professional contacts. (Baseline interview)

Not only are we isolated geographically and as first woman, but also the culture of the academy, all the autonomy that you have—which is something very appealing about the job—the downside of that is that autonomy can really lead to incredible isolation. (Baseline interview)

It’s a wonderful place, it really is, but it has this archaic underlying to it, and it may go back to the fact that, up until [about 20 years ago] it was a [religious] college. So, we’re waiting for the last of those really [religious] full professors to retire and have a turnover of administrators, and change what the institutional memory is. The problem is we still have the institutional memory that we’re a [religious] college where *men* are in charge. (Summative interview)

I think my institution is quite male-orientated and I think it’s *quite* traditional. (Summative interview)

They described a workplace in which traditional (i.e., outdated) norms defining a “serious scientist” dictated that faculty members lead a monastic-like life devoted to work, without outside interests or distractions (i.e., family responsibilities).

If you’re not doing science 24 hours a day, seven days a week, then you’re not legitimate. ...That I shouldn’t participate in [another interest of mine outside of science] because I’m supposed to be doing research. And this was coming from the provost, who was a workaholic. (Summative interview)

Being able to say “no” and go home at 6:00pm and not feel guilty about it. That has been a very good thing, because I used to feel very guilty if I was one of the first to leave in the afternoon—then I must not be doing my job well. No! I just work more efficiently in my office and I get stuff done. It’s okay! And I don’t have to be there on Saturday and Sunday every single weekend! I’m catching on. It’s a hard lesson. But occasionally I still feel guilty. Like when the student says, “Wow, what are you doing here? You’re not one of the ones who works long hours!” The students are always watching and they interpret what they see by whatever background they bring to it. They look around and see, “Oh, all these young men are here working. Well, that woman’s not. She’s not a real scientist. How did she get to be here so long? She must have been the opportunity hire!” You’d think we’d be past that by now. (Summative interview)

Table 6. Baseline and summative observations on institutional context.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Very rural; Institution is in a cultural backwater (true of LACs generally)	5	9	6	7	8	16
Describes very traditional patriarchal, male-dominated workplace: monastic life devoted to work; no outside/other interests allowed if you are a “scientist”	1	1	7	13	7	14
Male faculty very supportive as a person; However, NO awareness of her position as only woman; NO RECOGNITION FOR CONTRIBUTIONS	2	2	6	9	7	11
Institution is very conservative politically; conflicts with own values	2	4	3	6	4	10
Department gets along: helpful, supportive, friendly; fairly apolitical &	1	1	5	5	6	6
Institution is pretty progressive, relatively speaking, compared to other LACs. Has been promoting minority student representation in science for many years. Has viable maternity and family leave #	0	0	4	6	4	6
Department decisions are made "in the gym," running/playing basketball: male bonding activities determine decisions important to the department; or in the smoky faculty lounge over donuts and coffee	3	3	2	2	4	5
Knows context will not change much. Has come to terms with this in own way. Looks for other outlets, i.e., community engagement #	0	0	4	4	4	4
Institution is very élitist: "We're the best" attitude. "No need for professional collaboration"	1	1	2	3	2	4
HMA participant is still very much struggling at her institution; it is still very negative and unsupportive #	0	0	1	4	1	4
At a college that was historically women only, but is now coed: a gentle context, but really strange and different; NOT particularly woman-friendly #	1	1	1	3	1	4
Only woman faculty member in discipline	1	1	2	2	3	3

She does participate in local institutional and disciplinary networks and meetings (i.e., Women in Science); not the same as HMAs, no mentoring, more competitive, "These are your neighbors; you can't show your dirty laundry!" #	0	0	3	3	3	3
Department is geared towards faculty with families, especially with small children; faculty in department bond around children. "You're out if you don't have kids"	2	2	0	0	2	2
A lot of change since she was lone female in the department. Has grown with the times: lots more flexibility now than in the past; use to be much more traditional regarding male norms defining what is required to be a "serious scientist" #	0	0	2	2	2	2
Half/critical mass of institution/department is conscious and aware. The other half is waiting to retire. Context is okay; better than it used to be #	0	0	2	2	2	2
There has been turnover in top administration in past few years. New president and new dean of faculty. Just as economy hit the skids. All trying to keep it together. Narrow focus #	0	0	2	2	2	2
Though institution and department are friendly enough, she feels very isolated. Hasn't really connected with others on campus. Very bizarre context #	0	0	2	2	2	2
Simply thought chilly climate was normal, "This is the way it is." Didn't realize how hostile, unhelpful institutional environment was, at first #	0	0	1	2	1	2
Says that because there is a female president and some women in senior administrative positions, institution thinks "All is well" and that there are no gender issues that need to be addressed #	0	0	1	2	1	2
Male faculty members are very supportive of women students	1	1	0	0	1	1
Alliance member says she has a protective Dean who appreciates education research as a scholarly endeavor	1	1	0	0	1	1
Some older faculty members have retired. Alliance member feels isolated from the younger faculty. Different than it used to be #	0	0	1	1	1	1

Context, climate has NOT changed. Department hires people in alignment with mission, so work culture is accepted. All are enculturated with the same traditional patriarchal values #	0	0	1	1	1	1
The department atmosphere is now WORSE because men now know she is unhappy; this makes things more difficult. But at least it's not pretense any longer #	0	0	1	1	1	1
Alliance member is at a top-notch LAC. Very good resources compared to most LACs, especially in the sciences #	0	0	1	1	1	1
New junior faculty members in the department reach out for advice, present ideas and ask for suggestions, are very open. This is an entirely NEW culture for department. #	0	0	1	1	1	1
<i>Subtotal</i>	7	27	18	84	20	111
<i>Observations on Women in Senior Administrative Positions at their Institution</i>						
There have been a variety of women in senior administrative positions over time, including a president	2	2	1	1	3	3
Half of chairs are women, but no upper- administrative positions are held by women; Some assistant deans are women	2	2	0	0	2	2
There were women in senior leadership positions when she was hired	1	1	0	0	1	1
There are other women department chairs; They are NOT good sources of advice: SOURD by their experience	1	1	0	0	1	1
New female president has brought in more women into senior administrative positions, but women faculty are still few in number #	0	0	1	1	1	1
No woman has ever served as department chair at her institution #	0	0	1	1	1	1
Very male-dominated at the administrative level. But next year, there will be a new female Dean of Faculty. That will be interesting. #	0	0	1	1	1	1
<i>Subtotal</i>	6	6	4	4	10	10
TOTALS	9	33	18	88	18	121

One fifth of participants also typified their institutions as “conservative”; another two participants said that they found the predominate attitude at their institution to be “very élitist.”

[My institution], in general, does not see the need to look outside. They think everything they do is the best and they’re also very traditional, so research is what really counts and they’re not really interested in education; not that we don’t do some innovative things, but they’re not interested in sharing with others what we do.... They have a very élitist attitude. (Baseline interview)

[My institution] doesn’t really care about what other schools are doing...and it’s a pretty traditional—or rather, conservative. (Summative interview)

In line with their observations of working in traditionally male-dominated workplaces, one fifth of alliance members remarked that key or important decisions affecting their department were apt to be made “on the basketball court,” “in the gym” or “in the smoky faculty lounge over donuts and coffee,” and that you were “out if you don’t have kids.”

It’s fairly friendly, but it’s much more geared to faculty with small children; certainly more geared to the male faculty because there are very few things we do as a department except those that center around sports. In fact, the kinds of casual things that the faculty do together are play basketball, and there are a couple male faculty that are not as tall as several of the others so they’re even excluded; so it’s very interesting. So really tall males bonding around basketball.... (Baseline interview)

Much of the social structure that many of the faculty have center around their kids. There’s one high school in town; so if your kids are in high school, you all see each other. You know, if you support your kids at the soccer game, you see your colleagues at the soccer game, or whatever, and I’m just not in that loop because I don’t have kids. I’m not so enamored with high school basketball to go for the sake of going. (Baseline interview)

When I first started working here, the men in my faculty played volleyball together at lunch, and sometimes we would start a department meeting and it’s like so many things had been pre-discussed during the volleyball game. (Summative interview)

You need to go down to the dining hall, to the faculty dining room, because this is where you’ll hear what’s going on around campus. So I got me in the habit of going down and having lunch with people in religion, and history, and English, so that I would meet people outside of chemistry, so I would know what was going on campus wide. It was a small enough faculty at that point that most of the “movers and shakers”—that’s set in quotes [laughs]—they were down there at lunch and that’s the ONLY way I found out what was going on. I actually learned from them what was going on in my department because the men were making all the decisions in the locker room when they went running in the afternoon, or played basketball, or racquetball, or....that’s when everything was decided, so I would find out afterwards at the dining hall. I just thought it was normal. I thought it was obnoxious that I never got to be part of the discussions, but that’s just the way it was. (Summative interview)

While several alliance members in both baseline and summative interviews credited their male colleagues with being supportive, such support was more or less mediocre: it did no harm, but it didn't help much either. Overall, male faculty members were characterized as fairly oblivious to any of the issues that women faced as the usually lone female in their departments.

I basically had to pretend I was male for most of my professional career. I dated in secret and didn't feel I could let folks know I was engaged until after the tenure decision was final. I was given the impression that work in my department was expected to be what I spent every waking hour on. I could either be a woman with a normal balanced life or I could be a chemist who had no other interests. When I naively mentioned once that I had always wanted to be a girl scout leader since scouting had given me such wonderful opportunities to develop leadership roles I was told in no uncertain terms that if I wanted to be successful in the chemistry department I better not waste my time on that. This came straight from my chairman. This same individual also told me that even though four female students wanted to work with me one summer that would not be a good idea and that he couldn't allow that. After all, "Who would change the pump oil for us?" I could continue but it is water under the bridge. (Baseline interview)

I attribute the attraction of the women to the chemistry department not just because chemistry lead and had women faculty from an early stage; really the male faculty are very supportive of the female students. One woman or two women in the department can't do it alone, so I'm very grateful for that, they're very supportive of the students. I feel support as a person, but not as a female. I don't think there's recognition of what it's like to be a lone senior woman, basically, at the college. (Baseline interview)

Both times I've gone on sabbatical it's been like just so refreshing ...just wonderful. I was suddenly treated with respect, asked my opinion, treated as a normal contributing scientist. Then when I did the one in industry, same thing. You have a PhD in chemistry. They just assume you must be pretty talented and you must be able to do research and I was just treated normally. Every time I come back and I'm high as a kite and life is good, and then after about six months I'm back to, "Oh, yeah. It's this again." So, I need another sabbatical and I need for there to be some changes at [my institution]. (Summative interview)

The climate is not particularly chilly for me at this stage of my career. It was for many, many, many years. Sometimes we hearken back to that. When I joined the alliance I had certain discontents. I realized that I was not going to be as productive as my most productive colleagues—who were guys, in the typical guy mode— and don't NEARLY face the kinds of things I face every day. But I've learned that that's okay and the alliance mentorship helped me come to a peaceful resolution that it's okay—that that's the case. I have a pretty supportive department and when they're not supportive I can take it in stride..... When I joined, I was the single woman. I hadn't had my children yet and that was a huge struggle and nobody understood, and certain people still don't understand. It's actually okay because a few people do understand ... and the people who don't fully understand are kind of passing out of the picture. They're still wonderful friends; you just have to learn what you can bring to them and what you want to keep to yourself because it will just frustrate you. (Summative interview)

Working at heavily male-dominated institutions, it is not surprising that only a couple alliance participants claimed that women served in senior administrative positions at their institutions.

There's certainly a lot more woman faculty now, the way governance operates. It's still pretty much male-dominated, but there is a woman who's the head financial officer of the college. On graduation day there is at least one woman on the stage. It's gendered when you're the only one. You just have to not notice that kind of stuff. You have to not let it bother you. I'm not saying you have to be one of the guys, but you just have to be one of the chemists. (Baseline interview)

Our faculty, I think we're still right at about 30% women, although I should check that because we've had so many new hires. We've hired, like, 15% of our faculty in the last five years, so I actually don't know the numbers anymore. But we've been between 30% and 40% women, I think. Our upper administration is very much male. However, that's going to change next year. Our new Dean of Faculty is a woman, a woman chemist actually. So this is quite a change for us [laughs], but it doesn't feel that way. (Summative interview)

At one institution, the fact that there were women who held senior administrative positions did not serve to ameliorate the context for women science faculty at the department-level:

We have a lot of women in administration, so people might just think, "Oh, we've got that checked off!... No woman has ever been elected department chair—other than in the humanities and social sciences departments. So no technical department has ever elected a woman. [We don't have a lot of women] in faculty positions, and we have lots of—well, not a lot—but we do have senior women, and they get passed over for junior male colleagues. The last few years the Dean of Faculty and all the Associate Deans were male, and all of the Department Chairs were males, and yet they were touting making such progress with women! The senior women were saying, "No, it's no different for us and it probably isn't going to be for these other women coming up the ranks either!" We're not seeing the climate change. The kinds of procedures we use to elect department chairs just aren't going to elect a woman. Some things like that need to be changed, need to be looked at. (Summative interview)

Overall, alliance participants described institutional contexts in which they were isolated, not only by gender and discipline, but geographically and culturally, as well. They also described institutions and departments that remained stubbornly traditional, conservative and male-dominated. While these views were commonly expressed in baseline interviews, alliance members emphasized these factors in summative interviews.

Departmental Context

Comments about their departmental context were 4% of all participant observations (34 baseline observations; 70 summative observations) (cf., Table 1, above; Table 7, below).

A majority of baseline interview participants (64%) said that their departments were aware of their participation in the Horizontal Mentoring Alliance or that their departments were aware of their participation, but they weren't emphasizing it much and keeping their involvement "low profile." While three mentioned that their chairs or other colleagues and administrators were

Table 7. Baseline and summative observations on departmental context.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Department DOES know about participant's involvement in the HMA: very interested or some support	3	3	7	11	9	14
Department DOES know about Horizontal Mentoring Alliance participation, but she is not emphasizing it much: low profile so doesn't have to explain time away from campus	4	4	2	2	6	6
Because of downturn in economy, there is no money for anything. The department has now stopped providing travel funding for faculty to attend conferences. Department is not hiring anyone #	0	0	7	9	7	9
Alliance member does NOT feel valued by her department/institution. Does NOT receive recognition for accomplishments, contributions to department #	0	0	4	9	4	9
Department pays travel to one conference per year	1	1	5	6	6	7
Little, no interest/recognition from department regarding professional accomplishments; does know of Horizontal Mentoring Alliance, but no one has asked about it; haven't asked about other work either	2	3	4	4	4	7
Department chair blatantly made sexist jokes when in front of/to colleagues when she was hired	1	1	2	3	3	4
Department/institution is oblivious to women faculty in science issues #	0	0	4	4	4	4
When she started department Chair and Dean hostile: Not many resources for mentoring	2	3	0	0	2	3
Department did not provide start-up funds when she started: bought own microscope	1	1	2	2	2	3
Very unhelpful male faculty; NO help in preparing courses outside her field	1	1	2	2	3	3

Department is "Midwestern friendly": very helpful, but shallow not deep: Received what was needed, but not much overt support; No meaningful collegial feedback re. papers, proposals, etc.	2	2	0	0	2	2
Departments are political by definition	1	1	1	1	2	2
Travel: Time away from classes has NOT been an issue for Department	1	1	1	1	2	2
Department is uneven in terms of salary equity: "Just stupid"	1	1	1	1	2	2
MIXED regarding equity discussions: Some think the battle is over; the other half never saw the problem. Not much progress despite two ADVANCE grants at own institution #	0	0	2	2	2	2
Other women science faculty are interested in the HMA initiative: talk with her about what she is learning #	0	0	2	2	2	2
Since the HMA grant does not bring money to department in terms of research or supporting students in research, it is not valued #	0	0	2	2	2	2
Department does NOT know she is participating in the HMA	1	1	0	0	1	1
Department did provide good start-up support	3	3	0	0	3	3
Thinks another woman in her department does NOT feel valued, listened to	1	1	0	0	1	1
Department socializing is always awkward	1	1	0	0	1	1
Participant says/feels that there is "no safe place in department"	1	1	0	0	1	1
Other, newer women in department are NOT as conscious of gender issues; are not proactive regarding promotion of women in science/mentoring (particularly of students)	1	1	0	0	1	1
Department provides good career counseling/advice for STUDENTS: lots of career direction with an emphasis on interdisciplinary studies	1	1	0	0	1	1
Very political department: Committees/decision-making such that seniority carries most weight, "no arguing"	1	1	0	0	1	1

Women in department are very different: good for students, lots of role models	1	1	0	0	1	1
Workshop for new faculty is/was helpful; Offered every year; "Peer group mentoring" model	1	1	0	0	1	1
Collaborates with faculty member in another non-science department #	0	0	1	1	1	1
Collaborates with faculty members in other science departments at own institution #	0	0	1	1	1	1
Department has had a hard time recruiting women because it is easy to see how dysfunctional the department is and that it still operates by an "old boys" system #	0	0	1	1	1	1
Incoming president will put a new face on the institution #	0	0	1	1	1	1
Junior faculty members organized lecture series featuring women and minorities only. Very bold. Pushed hard. Gender equity is gaining recognition as an issue #	0	0	1	1	1	1
Large turnover in department these past several years: four new junior faculty members--just one woman and three men who belong at an R1. Not good #	0	0	1	1	1	1
Other women in the sciences on own campus are NOT particularly helpful; she does NOT turn to them for help #	0	0	1	1	1	1
Quite a few hires over the past five years or so; pretty intensive given small departments, et al #	0	0	1	1	1	1
When she was pregnant, she had to ask, plan with colleagues for them to cover her classes #	0	0	1	1	1	1
TOTALS	11	34	18	70	19	104

curious about their work and asked questions, more commonly, their male peers showed little or no interest about the Alliance, or, indeed, about any aspect of their professional work.

In summative interviews, 45% of participants commented that their department knew of their involvement.

I haven't received too much attention to this, to my chagrin, since there are a lot of "words" about supporting women in science. (Baseline interview)

When I began working with the Mellon group I passed along a copy of the proposal to my department chair. I think it opened his eyes to the fact that perhaps the woman in his department needed more support. He has treated me differently—in a good way—ever since reading the initial Mellon proposal. When the NSF grant came through, he was stunned that we got the funding and realized that this was an even bigger issue than he had thought. The other men in the department have been a bit more aloof. I heard one of them telling students that it was nice that I got a grant but that it didn't do anything to help the department. The Dean and the Provost have both been very interested in the project and are eager to hear more as we learn more about Horizontal Mentoring Alliances. (Summative interview)

Do others (especially other senior or ranking members) at your institution know that you are participating in this Alliance? Yes.

Have they commented about it? Positively? Negatively? No. (Baseline interview, write-in response)

They know of the (grant) award, but no one has asked me about it... I have one really good friend in the department who I share a lot of this with, but no one else has asked me, "What's going on with your award?" ... Nobody's asked me what I've been doing. ...I'm really amazed how few people, not even the Dean of Faculty, cares to know what I'm doing. (Baseline interview)

In new types of summative observations, almost equal numbers of participants said that, due to the downturn in the economy, departments were no longer providing travel funds, and, alternatively, that departments were providing faculty funds to travel to conferences (7 vs. 6 participants).

Of note, four participants said that they did not feel their contributions were valued by the department. Another two stated that because the grant did not bring money into the department or directly benefit students, it wasn't valued by the department.

Since I was getting no positive feedback from anyone in my department...once I got tenure it was...Laura's on her own, just let her do her thing, and then the sexism in the background and the somewhat hostile environment on certain occasions. What I had discovered I had been doing to cope, was I had been finding committee work outside of my department. At one point, there was one year I was on, I think, 7 different university committees...chairing one and second in command on another committee. I was killing myself with committee work, but at the same time I realize that the reason I was doing it was because I got positive feedback there. The dean, the provost...they were noticing that I was talented and I had something that could provide a value to the university....and I was getting none of that from my own department so I had just instinctively, without realizing that I was even doing it, gravitated to the place where I was getting positive feedback. (Summative interview)

I've been doing a number of departmental reviews and I was really impressed with the climate at Seattle University. They have the kind of deal where at the end of the day they, bring out bottles of wine and cheese and they sit around and drink wine and eat cheese and they have their own wine glasses! I thought, "What a great idea!" So I came back and started making sure that I actively recognized the success of my young colleagues...and you know...had wine and cheese. After being at Seattle U, I thought, "Well, I'll just buy the department a bunch of wine glasses!" So then I was kind of waiting for the next success to happen and I was the PI on an NSF proposal for a half a million dollar NMR that we got. So I thought, "Well, great! Somebody will throw a party for those of us on the grant and bring out the wine glasses!" One of my colleagues said, "Nancy, that's great! You should have a party." I said, "I feel a little funny...me throwing a party for a grant that I got."and nobody did anything about that. ... And I don't know, maybe people thought that, you know, when you're senior you don't need that recognition, but I was a little bit surprised. It's the biggest equipment grant we've gotten at [my institution]. (Summative interview)

I'm all excited the day that we get word the grant's been funded...I'm going home to celebrate...and there's a big group of students...summer research is going on...there's a bunch of people playing ping-pong...it's like 5 o'clock the day we found out...and I'm walking thru going, "Hey, we just got the grant. We got a half million dollars for our grant!" And he says, "Well, that's great!" And as I'm heading out I hear them say, "So what kind of grant did she just get?...And he said, "Uh, it's a nice grant, but it doesn't have any impact on us. It's not anything that's going to help us.And this is the guy in the department who I collaborate the most with in research and teaching and I spend more time with him socializing and everything else...and for him, of all people to say this...no one else in the department even said congratulations ...because it really doesn't impact us...it's not money to pay students to do research...it's not money for a new instrument...it's not something that will help the men in the department. It's not research, literally...it's not [emphasis] *research*. (Summative interview)

Overall, HMA participants did not describe any meaningful changes in their departments during the period of the initiative: things remained pretty much the same. For some, there might be a bright spot here or there, but, in general, the department was not seen as very welcoming.

Gender Issues

Four percent of participants' observations mentioned issues related to gender (26 baseline observations; 54 summative observations) (cf., Table 1, above; Table 8, below).

Despite the fact that the very large majority of alliance participants were the first woman to be hired in their department, there was not a great number of issues specifically related to gender that they found troubling, though, by definition, gender issues quite clearly existed for them. In baseline interviews, a few participants commented that women tend to be less confident than their male colleagues. A few also had experienced the burden of being the only role model for women students: the "token mom trotted out at events." One participant, however, did not feel that she was singled out to be a role model for women students in science. A couple participants noted differences between women's and men's behaviors, with women characteristically

Table 8. Baseline and summative observations on gender issues.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Women tend to be less self-confident. Suffer from imposter syndrome. Blame self, work harder &	3	3	6	10	13	13
Imposter syndrome: knowing when enough hard work is enough is difficult; always striving to prove self	1	1	7	9	7	10
Women tend to consider other people's feelings more than men. Think about how things will impact others. Women are helpful and conciliatory. Say "yes" when they would rather not &	1	1	4	4	5	5
Department, new dean, institution are NOT open to hearing about gender equity issues. Participant would NOT approach administration on gender issues. They are oblivious to the issues #	0	0	4	5	4	5
Women tend to work harder, be more efficient with their time; Flout stereotypes of what it is to be a "serious scientist" #	0	0	5	5	5	5
Does feel that women students look to her as role model of the working mom	2	3	0	0	2	3
Has experienced instances of being invisible, talked over by men	1	1	2	2	3	3
Institution does NOT have mission statement regarding increasing representation of women	2	2	0	0	2	2
Did NOT feel it an issue to be a woman in science UNTIL she was hired as faculty member at a LAC; did NOT experience gender issues as an undergraduate or graduate student, only once inside academe	1	1	1	1	2	2
Reports that, in the past, junior women faculty members in the department tried to hide pregnancy and did NOT take any maternity leave even though there is really good representation of women faculty on campus #	0	0	2	2	2	2

Women, generally, need mentoring more than men, need emotional support with their struggles #	0	0	2	2	2	2
Participant faced a two-body problem regarding sabbatical	1	1	0	0	1	1
"Command and control" is an effective strategy for dealing with ornery men	1	1	0	0	1	1
Critical Mass: If other women can do this (with kids, et al.) than so can I!	1	1	0	0	1	1
Did feel like token woman hired to be role model to women and WAS	1	1	0	0	1	1
Did NOT feel like a token female when hired, only later felt burden of being a woman role model	1	1	0	0	1	1
Felt like she was the token working mom trotted out at events; Once was only mom in sciences	1	1	0	0	1	1
No one has a stay at home wife anymore to manage kids, etc.	1	1	0	0	1	1
Female PhDs scare the hell out of men. Hard to find a date, especially in rural LAC environments	1	1	0	0	1	1
Female students have limited view of careers and what's possible with a family	1	1	0	0	1	1
Gender issues are NOT particularly problematic for this participant	1	1	0	0	1	1
Tells of being confused with only other woman in science. Feels she knows what it's like to be Black or Asian and have people think, "They all look the same."	1	1	0	0	1	1
Tells of colleague at another institution that is heavily gendered and negative towards women	1	1	0	0	1	1
Waited until after tenure to tell department she was engaged	1	1	0	0	1	1
Women naively expect that hard work will be rewarded. Not so. It's connections, luck and timing.	1	1	0	0	1	1
At own progressive institution, men take family leave just as much as women #	0	0	1	1	1	1

Being known as being super competent often means picking up when others are dropping the ball #	0	0	1	1	1	1
Blatant sexism is still pretty rampant. Hard to believe in this day and age #	0	0	1	1	1	1
Currently, faculty members simply cover for each other for maternity, elder care issues. No extra compensation. "We have to take care of each other" #	0	0	1	1	1	1
Department/institution does NOT have a formal maternity, family leave policy Done ad hoc. Doesn't happen all that often at a small college so it's always been handled on an individual basis #	0	0	1	1	1	1
Department/institution NOT interested in gender equity issues: simply ignore them. Faculty protested against tenure denial Made NO difference whatsoever #	0	0	1	1	1	1
Does think that there is need for an inclusive family leave policy that covers male and female faculty facing childcare elder issues etc. #	0	0	1	1	1	1
Gender equity is a non-issue at her institution because there is good representation of women among the junior faculty: think that's all there is to it #	0	0	1	1	1	1
Had a baby first year at institution. Taught right up to birth. Only took two weeks off #	0	0	1	1	1	1
Now men are just as likely as women to have childcare responsibilities, issues #	0	0	1	1	1	1
Spoke up on behalf of pregnant junior faculty member regarding trying to schedule things to make it easier for her once the baby was born, etc. Alliance member raised awareness among other faculty members regarding family leave planning #	0	0	1	1	1	1
Women internalize. take on traditional wife, home roles to a much greater degree than men #	0	0	1	1	1	1
Women tend to hide their light, their accomplishments and shy away from the spotlight Men toot their own horns very easily #	0	0	1	1	1	1

Women tend to wait their turn too patiently; causes problems at department meetings. Men and women communicate differently. Men tend to interrupt, take over the conversation #	0	0	1	1	1	1
TOTALS	9	26	19	54	20	80

described as being more considerate and conciliatory towards their colleagues and, saying “yes” when, really they would rather not.

My sense is that women tend to be less confident in their abilities. So what I think mentoring does is to provide a support system for you, so that you either feel comfortable going out and doing the sorts of things that are necessary to be professionally successful or you are forced, as I was, to apply for grants and all that sort of stuff. This is the sort of thing you want for your children, too. You want them to have experiences or to be forced into experiences where they overcome obstacles and then they know they can, because the more times you do that, the more you’re willing to do that in the future. So I think that that’s the thing that mentoring does. Mentoring is also important in that it helps you avoid the pitfalls that you might stumble into through ignorance. Instead of feeling like you have to discover everything yourself, there’s someone to help and guide you, so you feel you’re not alone in this. I know for me, it’s a question of confidence. (Baseline interview)

I’m wondering if some women, not all women, if women tend to second-guess what they’re doing or else tend to consider not only would an action benefit them, but is an action appropriate, does it benefit a larger group of people. I think sometimes it seems like women tend to consider more of those issues than men do. (Baseline interview)

I’ve been there 13 years and two years ago was the first time they hired another woman— they hired a biologist—and just this year they’re hiring a new one for next year, so it’s booming! It would be nice to not be the only role model for all of our female students, because we have a lot of female undergraduate in the sciences. We’re actually very estrogen-dominated. We have close to 75% of the science students are female. So it felt kind of burdensome for a while there for them to see me as the only possible example. It kind of was odd. (Baseline interview)

I would say in terms of feeling isolated, etc., I went through a phase where I felt like I was the token working mom. Like someone had decided that our students need a role model of a working mom, so we’ll find one. And I was hired. And then I became the poster child of working moms and I was trotted out at all these events as the working mom, and sitting on panels and discussions and committees. That was real tiresome for me. (Baseline interview)

Observations in summative interviews matched these same types of observations, but at nearly double the rate. The top two observations related to gender issues were descriptions of women as being less self-confident than men, in general, and highly-accomplished, intelligent women feeling themselves to be “imposters.”

For years, being all alone, I always looked out and thought....oh, if I were only better I could do this with more seamless energy and ability. But just to know that there are others like me and that they face similar stumbling blocks, similar successes, differing approaches that I hadn't even considered...(Summative interview)

I wonder if the imposter syndrome is just common amongst all women scientists, or women in general. Because, in extending these invitations for the summit and saying what we wanted to accomplish, I often had people write me, "I'm not sure I can contribute anything." "How did you choose me?" And it's, like, "Yes, you can contribute! Come!" (Summative interview)

Moreover, participants added to their observations on ways in which women's behaviors differed from men's. As before, participants observed that women, more than men, tended to: have difficulty saying "no," consider other people's feelings first, and; be more helpful and conciliatory. In their summative comments, participants added other behaviors commonly exhibited by women; hiding or downplaying their accomplishments and shying away from the spotlight; being too patient, i.e., waiting last to speak up at a meeting, and; working harder and being more efficient with their time. Participants recognized that these behaviors often served to disadvantage women. Being in a Horizontal Mentoring Alliance participants learned to recognize these behaviors and give themselves permission to "take it easier on ourselves."

All of us, I think, have been given strength to say, "No, we're not going to do that. That's not important. Someone else can be found to do it." Or, alternatively, "Yeah, this is going to take a lot of time, but you know what? It's worth it. You need to do it." We also, self-consciously, tried to help each other set priorities, because we all know how easy it is to kind of get sucked into stuff. We try really hard not to do that in a conscious way... It's certainly helpful to have that kind of support, to have someone say, "You know what? You don't need to do this." (Summative interview)

Horizontal Mentoring Alliance Meetings

Comments on Horizontal Mentoring Alliance meetings were 4% of all participants' observations (53 baseline observations; 60 summative observations) (cf., Table 1, above; see Table 9, below).

Generally, alliance participants said that they were in fairly regular communication with other members. In baseline interviews, just over 80% of alliance participants mentioned meeting periodically by phone with other members—particularly those who had established professional collaborations with other alliance members. Almost half said that they emailed on a regular basis. In response to specific questions, participants related the substance of their first meetings in which they: "talked non-stop all weekend"; reviewed CVs; established short- and long-term professional goals; and discussed teaching load and equity. A few pointed out that they set agendas and made sure that "business got done."

Table 9. Baseline and summative observations on Horizontal Mentoring Alliances meetings.

Type of Observation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Alliance members have periodic phone conversations, especially with those involved in professional collaborations	7	9	4	4	10	13
Alliance members have phone conversations regularly; about every two weeks (video conferencing included)	2	3	7	10	8	13
1st meeting: Spent entire weekend talking	3	4	6	7	7	11
Email or phone for issues needing quick response In-person meetings are the time to talk about longer view, larger, career issues	3	4	3	3	6	7
Main topic of 1st meeting: how to deal with difficult people	4	4	2	3	5	7
Group participation has been good; Most everyone has been able to make it to all of the meetings #	0	0	5	7	5	7
Alliance has met three times #	4	4	2	2	6	6
Have NOT met very regularly online, emailed, etc., but a strong group nonetheless #	0	0	3	6	3	6
Alliance members email periodically	5	5	0	0	5	5
Had to give up on ideal circumstances of every group member attending each meeting Just not possible. #	0	0	4	5	4	5
Alliance has only met once	4	4	0	0	4	4
Alliance meetings are very organized: agenda, assigned tasks: "business gets done"	3	3	1	1	4	4
Alliance has met twice	1	1	2	2	3	3
Alliance originally started under Mellon grant: Alliance members had met three times previously to the Horizontal Mentoring Alliance	3	3	2	2	4	5

If there had been regularly scheduled electronic meetings, this would have been a big burden: NO extra time for more meetings #	0	0	3	3	3	3
Main topic of 1st meeting: discussed teaching load, equity	2	2	0	0	2	2
Sakai site is used to post resources	2	2	0	0	2	2
Main topic of 1st meeting: review CVs	1	1	1	1	2	2
Alliance has met four times #	0	0	2	2	2	2
Three group members on sabbatical one year #	0	0	2	2	2	2
Main topic of 1st meeting: discussing and establishing short- and long-term goals	1	1	0	0	1	1
None of the Alliance members has hit a crisis needing immediate communication; critical and important issues are saved for face-to-face meetings	1	1	0	0	1	1
Main topic of 2nd meeting: how to present ourselves	1	1	0	0	1	1
There is more communication with Alliance members in own discipline	1	1	0	0	1	1
TOTALS	11	53	18	60	20	113

Observations in summative interviews were similar in character. In summative interviews, 55% of participants reported regular telephone (or Skype) sessions about every two weeks, including those who developed professional collaborations with other alliance members. Two groups said that they had met face-to-face twice, two groups reported meeting three times, and two groups reported meeting four times. Not every group member was always able to make every group meeting and a few conceded this was an ideal they “had to let go of.” A few reported that their alliance had not met online regularly, but felt that they were a strong group nonetheless. In general, group members were pleased with other group members’ participation. The following quotations are representative of participants’ observations of this type.

There are some specific day-to-day challenges that arise that need quick response—these are handled well electronically—although a phone call in addition is always appreciated if someone has the time or opportunity. For long-range career planning, sitting together in-person is great. When there isn’t a specific time constraint, it is easier to relax and blue sky about opportunities and how to take advantage of them. (Baseline interview)

We've had conference calls each week.... We organized ourselves...our alliance...around the book, *Every Other Thursday*...we probably talk about the book for 5 minutes and then we ended up going in other directions and not having an agenda, but having the meeting on our calendars....so it was built in. It meant that we could address issues that people had coming up and we went all different kinds of directions. So both the traveling and doing that, as well. I think for our alliance it worked also to have the every-other-week conference calls. (Summative interview)

Every once in a while one of us will "need a mentor today" and we send out an emergency request for rapid response on a particular issue. Every time this has happened we have all jumped in to provide ideas and feedback. It is great to have a group to serve this function. (Baseline interview)

How have you communicated? Email? Phone? Use of webcam, whiteboard, Skype? SAKAI?
All of the above. (Baseline interview write-in response)

The first time we met, I think the topic was, "What are the issues?" So we just talked a lot. I wear pedometers to see how many steps I make and I normally make between 5000 and 10,000 steps in a day and that weekend I think I had less than 1000 steps for the whole weekend, because we literally sat and talked the whole weekend. One night, I finally said, "I need to walk," so we walked around the campus and came back, but even then it was a pitiful 1000 steps. We just sat and talked and talked, talked about everything, from A to B. Teaching load became a real issue, equity in teaching load, How can you feel good about your teaching load when it's really high, and when your teaching load is really low? How you can feel you're contributing? and What are your other responsibilities? and how to balance on that. We had no trouble coming up with things to talk about. Difficult people. We talked a lot about how to handle difficult people. (Baseline interview)

We have some very specific times that we set on our calendars for conference calls. We usually have an agenda but each call begins with casual updates on recent events in our lives. Some of the updates are professional while others are just wonderful life experiences. We then get down to business. (Baseline interview)

We had to let go of the, "Everybody has to be there!" idea. The first one, everybody was there. But I don't think there has been since then. So, letting ourselves off the hook for finding a time when all 5 of us could meet was a barrier that we had to give back. You know...3 out of 5 is good, let's do it anyway...or 4 out of 5 is good let's do it anyway. (Summative interview)

Overall, the HMA self-defined meeting structure and varied means of communication (email, online, in-person, etc.) worked well and enabled participants to stay connected.

Gains from Participating in the Horizontal Mentoring Alliances

Alliance members strongly emphasized the benefits and outcomes from participating in the Horizontal Mentoring Alliances initiative. Indeed, participants' positive observations far outnumbered any other category of comments: in baseline interviews, gains comments were 27% of all participants' comments (n=207 observations,) and in summative interviews they were 35%

of all comments offered (n=758 observations) (cf., Table 1, above; see Table, 10, below). As Table 10 indicates, each participant in the baseline interviews offered an average of 19 observations on gains made from participation; while in summative interviews, each participant offered an average of 38 observations on gains from participation in the Horizontal Mentoring Alliance, indicating even greater appreciation for involvement in the mutual-mentoring initiative over time. Overall, in both baseline and summative interviews, the 20 Horizontal Mentoring Alliances participants offered nearly 1000 observations on the benefits they took away from their involvement in the initiative, or 48 gains observations each, on average (see Table 10, below).²

Table 10. Overview of baseline and summative observations on gains, gains not made, qualified or mixed gains, and gains not made, but absence of gain not due to Horizontal Mentoring Alliances.

Gains categories	Baseline interview SOURCES (N=11)	Baseline interview OBS	Ave. # of OBS per person	Summative interview SOURCES (N=20)	Summative interview OBS	Ave. # of OBS per person	Total SOURCES (N=20)	Total OBS	Ave. # of OBS per person
Gains from participation	11	207	18.8	20	758	37.9	20	965	48.3
Gains NOT made from participation; an absence of gain	4	5	1.3	10	21	2.1	12	26	2.2
Gains that are qualified, or a “mixed” view of gain	6	7	1.2	12	19	1.6	15	26	1.7
Gains: NO gain, but absence of gain NOT related to HMA	0	0	0.0	9	20	2.2	9	20	2.2
TOTALS	11	219	19.9	20	818	40.9	20	1037	51.9

²² Personal note from the external evaluator: In my many years doing program evaluation, I have never encountered such a high average of gains’ observations: reports of gains are double what I normally find reported for participant benefits.

In stark comparison, numbers of observations regarding “gains not made,” “mixed or qualified gains” and “no gain, but absence of gain not due to the Horizontal Mentoring Alliances” were nominal: on average, 24 observations per type of observation, or an average of just over one type of observation each per participant (cf., Table 10).³

As is clear, participants’ observations of gains from their involvement in the Horizontal Mentoring Alliances were overwhelmingly positive. Table 11, below, lists the many and myriad benefits Horizontal Mentoring Alliance members described as outcomes of participation.

The 10 top gains from participation in the Horizontal Mentoring Alliance, which were described by 75%, or more, of participants, are largely “soft gains”—benefits which are hard to define and difficult or impossible to quantify, but which, participants’ pointed out, speak to the very need for this type of mentoring and mentoring initiative:

- Group feels like equal peers; Shares advice, ideas; Interaction of women at similar levels; Genuine support; From professional to personal
- Outside viewpoint; Different perspective
- Learning to speak up for oneself; Accept due recognition; Ask for what one wants; Increased self-confidence
- Transfer to self, personal life: “I am so much better off now than before joining the Alliances”
- Seeing where she stands relative to women faculty at other institutions; What others have and vice versa; Comparisons by institution
- Transfer to women at own institution: Junior faculty, women students on own campus. Gave presentation; Some interest among women at institution; Organized small peer mentor groups to discuss book on women in academe
- Talking, socializing with other women; Time out, away from one's institution; Time breathe
- Permission to focus on own professional development, long-term goals
- Relief of isolation

³ I will not discuss these findings since there are so few observations, overall. However, for interested readers, tables for “gains not made,” “mixed or qualified gains” and “no gain, but absence of gain not due to the initiative” are provided in Appendix B and show participants’ observations of these types.

Table 11. Baseline and summative observations on gains from participating in the Horizontal Mentoring Alliances initiative.

Type of Gain	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Group feels like equal peers Shares advice ideas Interaction of women at similar levels Genuine support From professional to personal	11	34	19	55	19	89
Outside viewpoint Different perspective	11	22	20	61	20	83
Learning to speak up for oneself Accept due recognition Ask for what one wants Self confidence	8	14	15	31	17	45
Transfer to self, personal life I am so much better off now than before joining the Alliance &	1	2	16	41	16	43
Seeing where she stands relative to women faculty at other institutions What others have and vice versa Comparisons by institution &	3	5	18	37	18	42
Transfer to women at own institution Junior faculty, women students on own campus Gave presentation Some interest among women at institution Monthly meeting just to get together, socialize share Organized small peer mentor groups to discuss book on women in academe &	7	9	14	26	15	35
Talking, socializing with other women Time out away from one's institution Time to breathe &	8	12	11	23	13	35
Permission to focus on own professional development, long-term goals	5	8	14	26	16	34
Relief of isolation	2	3	15	28	15	31
Discovering, learning, knowing she is not alone in what she has to cope with at own institution Others facing the same situations	2	2	15	28	15	30
Have become genuine friends Will likely continue beyond alliance life Organic life of its own	8	13	11	16	14	29

Anonymity to address institutional issues without fear of compromising confidentiality	5	9	13	19	14	28
New appreciation for importance of negotiating to get what one wants Raise awareness Being able to say NO	5	6	12	20	13	26
A different kind of mentoring you don't get anywhere else	5	6	13	18	15	24
Addressing issues holistically From work to family Life is not compartmentalized	2	2	14	21	15	23
Getting advice on stuff you didn't know you needed advice on Unexpected benefits &	4	5	11	17	12	22
Advice given worked in practice	5	10	8	10	12	20
Participation in Alliance brings prestige Alliance members are highly respected Greater recognition from chair, own department regarding talents and contributions HMA participation respected Gives her cache with department #	6	6	10	14	11	20
Many of the gains are soft gains, Hard to document But this makes gains even more important #	0	0	10	20	10	20
New professional collaboration New, expanded networks &	5	8	8	12	8	20
Nothing to be gained from others success or failure Neutrality	3	3	11	16	12	19
Transfer to department/institution: Deans, chairs ask for input regarding equity, how things are done at other institutions, etc. Of interest to male faculty at institution Issues for them too &	4	4	10	13	11	17
Relief from burn out Rejuvenated #	0	0	9	17	9	17
Lack of department politics, struggles, jealousies: provides great relief	1	2	8	14	8	16
Women participating in the NSF PAID ADVANCE project have been really, really wonderful HMAs are great #	0	0	9	15	9	15
Always someone authoritative to go to for help and information even late at night #	0	0	9	14	9	14

Established short-, long-term goals to achieve Clarified what was important and of interest to her &	5	5	6	8	10	13
Transfer to department/institution: Seeing how things are done at other colleges and universities is good for women filling admin roles Chairs Deans How do I improve my institution #	0	0	10	13	10	13
Seeing things she didn't see or sense before	3	5	5	8	8	13
Opportunity to expand professional interests	1	2	6	10	6	12
Advice that works but highly individualized Importance of recognizing, addressing issues in local context	1	1	8	10	9	11
Transfer to department/institution: benefits are longer-term Happy faculty who stay instead of leaving saves the institution a lot of money down the line in terms of savings otherwise spent on rehiring, etc. HMAs are, in reality, very cost effective #	0	0	7	11	7	11
Transfer in support to women at other LACs: Organized network of women in local LACs, local chapter of ACS, Now she and they have a group to go to locally Set up vertical mentoring between senior woman outside and junior women at own institution in same discipline #	0	0	6	11	6	11
Grid of department benefits to compare relative positions very beneficial information for self, department/institution	1	1	7	7	8	8
Always glad to have taken the time to participate Always really worthwhile #	0	0	7	8	7	8
Benefits of participation are mutual and reciprocal #	0	0	6	8	6	8
Each member has her strengths she brings, shares with group	2	2	3	3	4	5
Newfound appreciation for the importance of good mentoring #	0	0	3	5	3	5
Accomplished short- and long-term goals she set Made progress on her career goals, advancement #	0	0	4	4	4	4

Read books on relevant issues Shared Learned a lot	2	2	2	2	4	4
More benefits than anticipated More benefits than she could have hoped for &	1	1	2	3	2	4
Received strong support during very difficult personal time Permission just to be #	0	0	3	4	3	4
Transfer to students: Because of reduction in teaching load, she has done more undergraduate research with students Valued by dean #	0	0	3	3	3	3
Transfer to department/institution: As a result of presenting data to Chair, she was able to reduce teaching load for ENTIRE department by 20%, get reduced teaching load for JUNIOR faculty only, NOT senior faculty, Not yet #	0	0	2	3	2	3
Transfer to department/institution: Stepping forward for more leadership opportunities	1	1	1	2	2	3
A real ego boost to see, feel that she is able to contribute to the group She knows something useful that they need to know Thought she wouldn't be able to contribute much #	0	0	2	2	2	2
Belonging to an HMA made her accountable for accomplishing goals #	0	0	2	2	2	2
New-found appreciation for playing to one's strengths is best Multiple pathways and choices #	0	0	2	2	2	2
Presentations to group very helpful Balance	2	2	0	0	2	2
She has published and presented with students much more Professional gains &	0	0	2	2	2	2
Transfer to department/institution: Organizing group discussions around balancing work and life Inclusive of men too #	0	0	2	2	2	2
Transfer to department/institution: Took gender equity data to dean Received salary adjustment #	0	0	2	2	2	2
Transfer to students: Because funding from NSF PAID ADVANCE pays her travel She is able to bring, take students to conferences Big cache on her campus Valued by dean #	0	0	2	2	2	2

Secured research for sabbatical as a result of HMA #	0	0	1	2	1	2
Gains in factual knowledge, literature on women in STEM, gender equity Greater self-legitimacy when mentoring: "I can back it up" #	0	0	1	1	1	1
Learned a lot from other HMA members through observing Seeing how they did things Role models for her #	0	0	1	1	1	1
Transfer to department: Monies funded talks on biology and chemistry curricula and interdisciplinary curricula #	0	0	1	1	1	1
Transfer to department/institution: Brought in guest speaker Put together mini symposia #	0	0	1	1	1	1
Transfer to department/institution: Formalized a maternity/family leave policy #	0	0	1	1	1	1
Transfer to department/institution: Thinks there is a "softer climate" now that women across science talk among each other #	0	0	1	1	1	1
Transfer to policy NSF Producing white paper #	0	0	1	1	1	1
TOTALS	11	207	20	758	20	965

In addition, 50%, or more, of all Horizontal Mentoring Alliance reported the following benefits from participation:

- Have become genuine friends; Will likely continue beyond alliance life; Organic life of its own
- Anonymity to address institutional issues without fear of compromising confidentiality
- New appreciation for importance of negotiating to get what one wants Raise awareness Being able to say NO
- HMA provides a different kind of mentoring you don't get anywhere else
- Addressing issues holistically From work to family Life is not compartmentalized
- Getting advice on stuff you didn't know you needed advice on Unexpected benefits
- Advice given worked in practice
- Participation in Alliance brings prestige Alliance members are highly respected Greater recognition from chair, own department regarding talents and contributions HMA participation respected Gives her cache with department

- Many of the gains are soft gains, Hard to document But this makes gains even more important
- New professional collaboration New, expanded networks
- Nothing to be gained from others success or failure Neutrality
- Transfer to department/institution: Deans, chairs ask for input regarding equity, how things are done at other institutions, etc. Of interest to male faculty at institution Issues for them too
- Relief from burn out Rejuvenated
- Lack of department politics, struggles, jealousies: provides great relief
- Women participating in the NSF PAID ADVANCE project have been really, really wonderful HMAs are great
- Always someone authoritative to go to for help and information even late at night
- Established short-, long-term goals to achieve Clarified what was important and of interest to her

Below, I offer quotations from both the baseline and summative interviews to illustrate Horizontal Mentoring Alliance members' major gains from participation. In reading through extracts from the interviews, readers will notice how participants' accounts relate multiple, often interrelated benefits.

Thus a majority of participants reported gains in being in a group of equal peers, interacting with other senior women science, faculty, sharing advice and alternative perspectives, feeling genuine support—from professional to the personal—and relief from isolation.

I think people feel pretty much as though they are peers in this group and I think there is a pretty much even sharing of advice and ideas. (Baseline interview)

There's this sense of having somebody who's in the same boat you're in to bounce things off of and that I think gives you a basis on which to really have a more friendly relationship and even also share how you managed to get the kids to the afterschool activities or what do you do with your spouse when you want to go to a meeting. It is very personal, it's about trying to make your life function and we're all in a very similar kind of position. (Baseline interview)

Folks from other institutions have a different perspective, which is valuable. (Baseline interview)

We may be age peers, we may be professional rank peers, but yet there are some aspects of the job that she'll encounter before I do..... So there's an experience thing that means sometimes you're the one who knows more and sometimes you're not and that helps. And it goes across the whole spectrum, in terms of publications and grant rating and children, department chairship, difficult colleagues. If you have more than two people, there's always somebody in the group that's hit it before you did, so there's good advice to be had when you're ready for it. (Baseline interview)

What I was struck by was how much we have in common. It was almost like after a ten-minute introduction I felt that I knew them really well. We have the same jobs. We teach the same classes. We have the same students. We have the same challenges. Even though we do different types of research—but with such similar contexts or backgrounds—it was really easy to get to know them very quickly. So we had a really nice weekend talking about different issues and ways to face things and getting different ideas for, “Oh, that’s how you do that!” and not feeling like you have to solve every problem for the first time yourself. It was also interesting to see people who are very much alike in so many ways but also are different in different ways.It surprised me the more I get to know (Alliance member). Here she is, full professor at a very prestigious institution. She’s in a position to be envied in terms of being in a college with a lot of resources and a great reputation. She’s the chair, so, “Wow! That’s so cool!” But she’s so nervous and jittery and not very confident about things that go on in her department and second-guesses herself a lot. I was like, “Huh! I didn’t realize that was normal.” That was an option! I thought you have to be confident and know what you’re doing all the time! It does make me see things from a different perspective, where I thought somebody like that would be in control of everything. (Baseline interview)

I think one of the strongest benefits is we’ve gotten to know one another. We’ve touched on not just our professional lives, but our personal lives. So we have a really good understanding of each person. I think the two can’t be separated. Our personal lives affect the choices we make professionally. We, through time, have built an incredible amount of trust in one another. That’s made it easy to share issues or concerns with no fear of somebody telling someone on your campus what’s going on. Because of the frequency with which we talk, it’s really easy to pick up where we just left off and we follow up and say, “All right. How did x go the other day? We were talking about some meeting you were going to have to run...” or whatever the case might be. It’s not that we just focus on big issues, but we’re able to share minor issues and situations and achievements or whatever the case might be. So it’s really filled quite a few roles. (Baseline interview)

I don’t know... I’m pretty shy. So I thought, “Well, I’ll go, but I’ll probably sit in the back and listen.” (Laughs) I really didn’t see myself getting that engaged in it because I thought, “I’m really going to be the outsider here. I’m not really going to fit in.” So the first thing that took me by surprise was just how much we’re alike. All of the people in my group, in fact, were not alike at all; we’re quite different! But we have so much in common that it’s just easy to pick up a conversation and you know exactly where it’s headed and the side trips you take off the conversation are always relevant because we are in similar situations. We are at similar points in our careers. And it’s just easy to talk to them about anything. And then the interesting part is where the differences come, where you can see, “Oh, in this situation they did that,” or, “This person is dealing with older parents. I’d better listen up because mine are getting there,” you know? (Laughs) It’s the differences that make things interesting. But, it was totally easy to click with them. (Summative interview)

I don’t find people who are like me at Starbucks. I don’t know where I find people like me! So life is a little lonely when you carve out this career that is not the career that almost anyone else in your situation followed.... People in the alliance are like me in many ways, and not like me in other crucial ways. These people are my peers and I get a lot out of them (Summative interview)

The most significant outcomes? I think it was important to meet faculty—female faculty, full professors—at other institutions, for a variety of reasons. One, we were able to share our experiences throughout our careers at each institution, and then we shared a lot of ideas of pedagogy and classes related to our profession. So it was good to have somebody to talk to that's in your field, in a similar position, but at other institutions without the fear of any retribution or, you know, someone's going to say, "Well, what the heck are you doing that for?" So I thought that was particularly beneficial. (Summative interview)

Interviewer: What was important to you?

Horizontal Mentoring Alliance participant: Realizing that, even though my school was totally at the bottom of the list, as far as national reputation, we all have the same problems (laughs). We were all dealing with the same kinds of thing. It doesn't matter what kind of liberal arts college it was, we were dealing with the same thing. We were all the first or the second woman in the department, or the division. We had grown up in the days of dealing with being one of the few women on campus.... We all had problem colleagues we were having to deal with, and sometimes the problem colleague had nothing to do with us being a woman. It was just a colleague at the top that we were all dealing with. So what was helpful about the alliance, was, number one, finding that out. That it wasn't just me having a problem with a colleague. Then it was discussion amongst us as to how we could deal with it and learn how to work with it, which was very valued. Then just kind of self-report...bringing our self out...at least in my case, bring myself out and realizing that I wasn't alone, and that I had the same kind of professional and academic problems with my other colleagues, and it made me feel less stressed about trying things and doing things like writing grants and papers, and bugging administrators for things that I wanted for myself and my department. Being more vocal about the way things operate. ... Just realizing that you're not the only one that's kind of isolated in this location—and I'm truly isolated.... You know, you're in a school which is in a small town in the middle of nowhere and there's not even another institution close by. For me [the closest institutions] are 15 miles north and 40 miles south. It's just that little extra distance, it makes it so much harder to get out and make contacts.... So with the alliance, it may just be someone over the phone, you know, who holds your hand tight, giving you encouragement and lets you know that you're not alone with this kind of problem. (Summative interview)

I guess, I hadn't realized how isolated I was. It's just like back in that dysfunctional family: you don't realize what you're in the middle of until you step outside of it! So it was nice to be able to step outside of my own circumstances and see the similarities and the differences with the women from other institutions and sometimes I came out feeling like boy I had a sweet deal, and other times I need to work on this. I started out just wanting to pitch in, because the issues of mentoring other faculty or something that I feel some responsibility toward, so it's an issue that I wanted to be supportive of but I was wanting to be really sure I wasn't just adding more work. (Summative interview)

Interviewer: What have been the most significant outcomes of your participation in your alliance?

Horizontal Mentoring Alliance participant: It's the feeling that I'm not alone (laughs) and the feeling of support and ability to handle more complex problems because I know I have a back-up team that I can bounce ideas around and I do not have to constantly explain the situation. When I talk with my cohort members, it's almost as if they understand what I'm going to say in the

next sentence, and have been there before, and have excellent ideas that I can talk about with them and learn new ways of approaching problems that I encounter in teaching, and research, and campus-wide conversations, and all sorts of ideas like that. It's really given me more confidence to pursue some really tough projects that I would have been more concerned about undertaking without the knowledge that I had a team of people who could provide context, give me an avenue for brainstorming, and help me see things from different perspectives.... My cohort members have also juggled the family responsibilities, the departmental responsibilities, the campus community desires and responsibilities—not just responsibilities, but things that you really feel define you as an individual. And you want to be able to pursue these but can't, or feel like you don't have enough time or energy.... You could if you had all the time in the world to juggle all of these more effectively. But in most venues, the family life issues and regular life issues—life outside the professional work sphere—are secretly there and you're just juggling under the table. There's no way of getting it up on the table and trying to figure out how all the pieces fit together in regular settings. In this group it's transparent! (Summative interview)

There's also just an awful lot of feeling like you're not alone. When you are a senior woman in a department of eight people—there are other women in my department now—but for many years I was the only woman in the department and it always felt like, those challenges I felt I faced, in terms of balancing life and work, seemed to be different from the challenges faced by my male colleagues. And some of the challenges I felt in the classroom, in terms of, "What are you doing at the front of the classroom?" were not challenges that my male colleagues faced. And some of the challenges of, "Wait a minute. Aren't you supposed to be like my mother and be real supportive and real caring and nurturing?", again, were not expectations that my male colleagues faced. I do know some other women in my discipline, but I never, it never occurred to me to say, "Oh, well I'm going to call these people up and talk to them." It wouldn't occur to me that I should take someone else's time to talk about my problems. But this is something I'm *supposed* to do in the alliance. It's a whole different issue when you talk to someone about your problems and they say, "Oh, I know exactly what you're saying!" One of the things that we discovered is that we don't even have to finish our sentences sometimes, because everybody else knows *exactly* what you're talking about! Just the sense that, "Oh, maybe I'm not crazy, maybe it isn't just me!" is something that, I'm not sure how else I would have been able to get that feeling, that sense of there being others who have faced the same things, and they found ways through it or around it, and, "I can learn new strategies from them!" I don't know how else I would have ever been able to get that. (Summative interview)

A majority of alliance members described how being part of the initiative had given participants: gains in confidence; more confidence to "speak up for myself" and ask for what they wanted from their departments; willingness to accept due recognition for their professional work and contributions, and permission to focus more time and attention on their professional goals.

They (alliance members) gave me the confidence to get out and renegotiate my job responsibilities. It never would have dawned on me to do that. But I can see within the group, we spend a long time wrangling with how to deal with difficult people, either as department chair or a fellow member of the department, and dealing with people who are intimidating or are uncooperative or whatever, and just being able to hear other solutions to the problem or that somebody else had dealt with the same challenges, really kind of gave me of gave me a little bit more backbone to go back again and handle it again and face it one more time. "No, you're not alone," does a lot to make it easier to walk into a distasteful situation and just face it

down. And it's a confidence thing. Just knowing that you're not the only person in the world that's dealing with it gives confidence as well. It's also very valuable to be able to go back to your department chair and say this group of people that's funded by the National Science Foundation, that are in institutions that are aspirant institutions, and to say that the way we are handling things is not the best way in the world gives me leverage like no tomorrow with my Dean, that I don't think anything would have changed if we as a department were complaining. It's an outside perspective with a stamp of authority. (Baseline interview)

I have regained some of my confidence. I now know that I have always been doing a great job here but that it just wasn't being recognized. I have learned how to "tell my story" a bit more effectively. I have learned that if I don't speak up about an interesting result in the lab no one will ever know that we have had an interesting result. More likely they probably will assume that nothing interesting is happening in my lab. (Baseline interview)

Just by talking to us about our teaching load, she came back from that weekend and went to go talk to her Dean and said, "All right. I just had an Alliance meeting and nobody's teaching anywhere near as much as we are. Everybody gets credit for teaching lab and class contact hours." And she was able to negotiate not just for her, but for others, more credit for teaching labs.... It gave her the ammunition she needed to go in and say, "I could be more effective, according to these people, if I had fewer courses and got credit for the labs." It's caused an institutional change. (Baseline interview)

I would say that it has probably helped me be more not myself in that I'm a Midwestern girl. I have acquired the Midwestern modesty. You don't go out and you don't praise yourself and all that sort of stuff. That has helped me recognize that sometimes if you don't, nobody will, and that goes against the grain for me, but I think it's a valuable thing to do. And I've also watched some of the women in my Alliance who are very forthright and say this is what I know what I need, this is what I do, and I'm going to go for it, and I looked at them, and said, "Huh, maybe I can do some of that stuff." (Baseline interview)

I think that if I didn't have this group, I would not think about my professional development to the extent that I do now. This has really encouraged me to constantly think about what it is I want to do, what should the next step be, what are some of my goals, what are some better ways to achieve that goal? I don't think I would have thought about that because, again, at my campus, there just aren't enough people interested in that as a topic.... And this Alliance has helped me focus on raising my own visibility. Not to the point where it's obnoxious. I always grew up thinking that I was always the kid rewarded for doing well and that doesn't come easy as an adult. A lot of successful people, unless you share with them what you're doing, they're not necessarily finding out. Since so much of what I'm involved in is off-campus, opportunities for people to know what I'm doing are limited. And I do think it has increased my confidence level. Sometimes when we're trying to help each other through a particular situation, I see some behavior or characteristic in someone else and it looks terrible and we want them to stop it, I say to myself well, I'm not going to do that either. So that's helped to see perhaps some kind of personal characteristic reflected in someone else and recognize how that looks to the outside and make some changes in my own behavior. (Baseline interview)

We shared salary data and stories and (sighs) I was given an endowed professorship that came with nothing. When I received this I was so stressed out with being the mom of young kids and

toddlers, I really just didn't have, I guess, the time to consult with people or to figure out what I should be getting. So, after the fact, I pretty much realized that I had been selectively screwed. That I had this title and people assumed that it came with things like a pay raise or certain types of positive things to help my research program. So one of the things the alliance did is, it became clear to me the problem I had with having gotten this endowed professorship, but without any of the benefits.... I used some of that data to talk to our dean, and the dean...was very positive in terms of my involvement in this program. I really felt that I had a lot more bargaining power coming from this group and him buying into the goals of the group. And he did adjust my salary somewhat. I'm not saying it's fantastic, but I received a salary adjustment. And I feel like the alliance just helped structure and give me the data I needed to make these arguments...as well as the confidence too. (Summative interview)

Well, I think I had considered focusing on my career and I had been thinking that, at this stage, that I know my strengths better than I did 10 or 15 years ago, and that I also have the latitude to make choices about where I want to put more effort and time. Testing those ideas with these women was really important to me. I just had the confidence I needed because when you put more emphasis on one side of things, well, other things aren't going to be nurtured as thoroughly. And it was good to test these ideas with my new peers. I felt like, even though I hadn't spent a lot of time with these women, since we had been through similar career trajectories they were able to sort of quickly come to understand what would be optimal for me. It would probably be an overstatement for me to claim that I had not really thought about my career and my path. I had been thinking about that. I'm not sure I would have moved as aggressively because I was feeling somewhat tentative in that I'm in a position where things are working and you can develop a feeling of, "Why rock the boat. Things are working here and things are fine and do I really want to take on more responsibilities?" And the group really convinced me that I did and I shouldn't take the safe route, I should just go for it.... My short-term and long-term career goals were more in terms of research, which I've just been articulating. And once I decided to focus on that, there are different ways to sort of bring that about. So in the beginning, it was being clear on what the general focus was, and then I used my time with the group more to consider the different ways to accomplish that and the different strategies to take. (Summative interview)

Horizontal Mentoring Alliance participant: I can't remember exactly what was on my list when we started. I would say having the accountability with the rest of the alliance has helped move me forward, I think, more productively than I have in the past.... Certainly that accountability to the group has made a difference in terms of my prioritizing my work and being willing to say no to some things that have come across on campus, where I might not have said that before. And, when I've said yes, to think about why it is that I'm saying yes, and to really pick the places where I say yes. "I'm going to be on this committee and serving this way at the college because that's going to be important and worth my time." Every time you say yes to something then you're saying no to something else, something new. Then you're saying no to something else on your goal list and you need to be honest about that, and I think that was another thing that was very helpful about having the goals. Not only the accountability, but also just recognizing that if you add something to your plate you have to push something else off, in a concrete way.

Interviewer: Was it difficult to say no before?

Horizontal Mentoring Alliance participant: I would say I had very rarely said no before. I think what was useful about the horizontal mentoring was thinking more carefully about when you

say yes to things, what it means that you're saying yes to, and again, what's your trade-off for doing something else. I would say, in the past, it was easier to say yes to things and then just say, "Well that's going to happen next year, so, yes, I can add it to my plate," without thinking carefully about, "Well, what does that mean for the goal that you have that says you're going to submit a grant proposal next year? You maybe can't do everything that's on your list." So it's not that it made it easier to say no, it made it a little harder to say yes, which I think is very valuable, for me at least.... The other thing, I guess, and this also goes along with the saying yes or no, is that for the alliance, it was the first time on my goal list that I included family concerns. They're always there. But I'm a single parent of two young children. And to have permission and encouragement to say, "Okay. You get to list *everything*, not just work-related things." Because that's what I always did for my work goals. But also you need to go ahead and say, "This is what I want to do," you know? "I want to get the garage cleaned out." You know what I'm saying? Things like that which actually went into my pile of, "No. I'm not going to get this done," was, I think, very valuable because it just provided a bigger context. Being in a group of women, for me, gave me permission to bring everything to the table that was going on in my life, not just the work things. That was incredibly valuable in terms of thinking about, "Well, I'm not balancing things." (Summative interview)

They're not, of course, outcomes that you can quantify, at least for me, in numbers of papers or things like that. I would say the most significant outcomes are just more a sense of confidence. I know this is kind of crazy for somebody who's been at her job for 15 years, but still, a sense of confidence and, "Yeah. I'm doing the right kinds of things and not feeling so isolated." So, a specific example, I guess I would say is that my research had sort of wandered into developing curriculum materials for students and it felt like sort of second-class work on some level. I felt like I was sort of betraying my calling as an experimentalist, leaving the lab to go do this other work. So I always felt sort of, I don't know, "Did I give up on something?" In being with this group, in our alliance we really focused on, "What does it mean to be professionally active at this stage in our careers?" I realized that what I'm doing is what I really love to do and it is making an important contribution and although I knew that at some level all the way along, it's given me more a sense of confidence and I feel like I don't have to be as apologetic about what I do. When I tell people about my research and work in curriculum development, I don't have to say, "But I loved being an experimentalist at one point." I don't feel like I have to qualify that any more. So that's what I mean by sort of a confidence and a comfort level with the type of work I'm doing now and moving forward with that. (Summative interview)

A majority of alliance members also mentioned the benefits of building friendships that will last beyond the formal initiative; enjoying the opportunities to socialize with other women; getting away from their institutions and enjoying confidentiality and neutral ground, free from department and institutional politics. Seventy-five percent said that this is a valuable type of mentoring "you can't get anywhere else."

We've gotten to be such tremendous friends.... I like these women so much I'd be willing to spend my own money...to get together for a weekend somewhere. (Baseline interview)

I think, probably for me, when I started having kids, I sort of cut out contact with colleagues, including female colleagues. There was no time to do anything but to raise the kids and work on

research. So, in some senses, my social skills have atrophied. So, it's been really nice to have a chance to talk with women. That's really been a good thing for me. (Baseline interview)

It's a really supportive group. This is something I don't get in my marriage and I don't get in my professional life and that is being with people who say, "Tell me more. Why do you think that?" That kind of stuff. I don't get it at work. I don't get it at home. So the only place I can get it is with these other women. So what a great gift to be able to be with a group of people who say, "Well, tell me more about that. How does it make you feel?" ...All I know is that I don't get enough of it, and I've learned that I have to seek it out, because I need it desperately. I think the general care, concern, friendship part of it is working great. (Baseline interview)

The important thing about this horizontal mentoring is that we're not all at the same institution, so if I say something about a colleague I'm mad at, it's not going to get back to him. It's not going to get to three or four other people in the institution that, "So-and-so made this person mad," or, "So-and-so is mad at you." (Baseline interview)

They don't have anything to gain or lose from your success or failure. If I come up with a really cool idea for a new course or whatever, it's not going to step on their toes, preventing them from offering something they want to offer. So I can bounce things off them— "Does this sound like a good idea?"—knowing that it's not going to be filtered through a, "What's that going to mean for me?" kind of thing. (Baseline interview)

The thing that this alliance provided that is not available through any other source for me, is a group of other women who are at the same stage in their careers. I was the only woman in a tenure-track or tenured position in my department for 24 years. There were no role models for me to learn from. There was no one who could tell me how to balance my family with my career. The men had wives at home taking care of all that family stuff. I often thought I needed one too! Now, having a group of women with similar backgrounds, professional experiences and talents, I finally have a source of encouragement and motivation to push myself forward towards a more fulfilling career. Most importantly, I have an ongoing relationship with these women. I know that they will be there to provide me with guidance and that I will be there for them. It wasn't just a one shot deal. All problems can't be addressed in a half-day or full-day workshop. It takes time to develop a viable plan of action. Short workshops are helpful, but without the follow-up, the lessons learned in a workshop often are forgotten. (Summative interview)

Being away from our campuses....we didn't have the day-to-day onslaught of things that we had to do, or, "I know you're at this conference, but could you do this?" We were able to carve out some time and space for focusing on this issue, and focusing on each other and what we were facing, and what ideas we might have for addressing things in the future. It was definitely very helpful to meet away from the other demands that would ordinarily be pulling at you, distracting you. (Summative interview)

When we get together, how refreshing it is to be totally off guard! We don't have to worry about something we say getting back to an administrator, or a colleague, or a student. Because we're at different institutions we have that interaction that was completely non-political. We didn't have to worry about local campus politics, or, "Should I be saying that?" So you could be completely free to bounce an idea, or a complaint, or a worry—whatever—off of everybody

else. It was very interesting, then, to hear about situations that were arising at other institutions and saying, “Well, at least that’s not happening where I am!” or “Oh, I don’t have it so bad because this person has to do that!” you know? That kind of sharing, where anything goes, and you didn’t have to worry about what you said, is really refreshing. I don’t know if that makes any sense.... And alliances can shift within your institutions. So I might sit down and have what I think is a private conversation with, say, another female professor, who then later finds herself talking to somebody else who might say something, “Oh, well I know that she does such and such.” So there’s always this sense you have to protect yourself from being misinterpreted or misquoted. (Summative interview)

First of all I can’t imagine ever having people in my institution that would mentor me. There are no other senior women! So it is very good to have people that are spread out across the country, that don’t really have a stake in what you’re doing. No one has a personal stake in what the other is doing; it’s just that people want to help each other, want to see each other do well. And it brings back no benefits to the person who originates an idea. So I think that’s great. Often people advise you to do stuff at your institution because it’s of non-negligible benefit to them. And that doesn’t operate here. So people are very, what’s the word? Altruistic. Genuinely altruistic. (Summative interview)

You could tell someone something that’s going on and you knew it wasn’t going to come back and haunt you at your place. You had that anonymity and sort of that reassurance that you were safe in terms of revealing either what was going on at your campus, or your own insecurities—or whatever the case might be. I think that kind of distance and different perspective helped. (Summative interview)

An important gains observations, 80% of participants commented, “I am so much better off now than before joining the Alliance,” and 60% said that they had “received many more benefits than I expected.”

Interviewer: Is this more or less what you expected when you joined, or have you been pleasantly surprised?

Horizontal Mentoring Alliance member: I expected some of it, but I didn’t expect as much.... I figured it would be a positive experience, and a growing experience, but I didn’t really realize how much it would give me in terms of support and ideas. It’s much more than I thought at the very beginning. (Summative interview)

Interviewer: Why don’t we start with my asking you what you see as being the most significant outcomes of your participation in your alliance.

I learned a lot. I’m interested in women in science professionally. I’ve done some studies and worked on things like this. So professionally, I’m very interested in different way of supporting women in science. I think learning that it’s useful for senior women to have a mentor, to have a group of mentors, and experiencing horizontal mentoring—which I knew about but have not been part of before—were both really interesting to me for that reason. Personally, in terms of my own career and family and all of those things, it’s hard to exaggerate the influence that this has had. When I started this, I thought, “Well, this is the sort of thing I do, so I should do it.” This sounds really arrogant, but I didn’t expect it to be useful to me personally. I just thought it would be something that I would do because it’s kind of my job to do that sort of thing. Having

colleagues whose experience is similar to mine and being able to run all my ideas, and dilemmas, and things past them, has been just extraordinary.... [The alliance] was just was so supportive. It was just incredible. It was just really useful in a way that I didn't anticipate. It's really difficult for me to exaggerate how important it's been. (Summative interview)

A majority of alliance members noted how benefits from participation in the mutual-mentoring initiative transferred to their own institutions, departments, colleagues and students. In these types of observations, participants often emphasized the importance of "legitimacy" derived from the NSF's sponsorship of the initiative.

What have I gotten out of this? For me personally? Lots. Not only the chances to just go places and to network and meet more women in chemistry, which has definitely been good for me in lots of ways. I would say, credibility-wise, when I come back from these meetings with information for my department or for my dean or even when I talk with the president of the college, you know, I can say, "Well at..." and give very specific examples. "At this college they have this much travel allowance," or, "At this college they have a diversity officer, and at this college they have..." and give them really specific examples, is wonderful. It give me a lot of credibility. They'll ask me more questions about how that impacts the university or the college, or whatever. So that been really good. (Summative interview)

I feel like I took the advice of these women more strongly than I would of taken the advice of someone who was further along than me. I'm not quite sure I can explain why that is, but maybe it's just the feeling of, "These people really understand the issues I have here and now." I think if a dean or a college president was telling me to do something, I wouldn't feel that commonality. They understand me; they must be right about what I should do. But the commonality helped build trust for me in terms of really valuing the input I was given.... When there was a vexing problem, you could hear how another institution remedied it. Actually, a few times I brought that type of input back to my department or program, and it was really helpful. Sometimes you just get stuck with doing things a certain way, it's problematic. What you need to hear is that it doesn't have to be way. "This school resolves it in this way." So very, very helpful. (Summative interview)

I think we all pretty much leave our conversations feeling upbeat. Feeling "energized," I think, is the right word. We have our every-other-Thursday phone conversations and I think it's a matter of, "Yes, you have to make time." And being able to say it's for an NSF-sponsored group has more social buy-in, shall we say, around the departments that we inhabit. It gives me permission to carve out time in the day and say, "No. This is reserved for this activity and I'm going to do it." I think we all leave those conversations feeling quite energized. I know I walk up and down the hall talking with my other colleagues after the conversations and, in particular, talking to my junior women colleagues and saying, "Well, they do this at this institution. What do you think about that?" In that regard, I guess, we've grown in confidence and personal satisfaction. (Summative interview)

I feel like I'm better situated to mentor women in my department because sometimes when issues come up, if I am advising younger women, I don't want to do it exclusively from my personal experience, but have a broader base of experience of others to draw on. So, for example, in my group, one of the faculty members put together a PowerPoint presentation on balancing work and family and it drew on the literature, as well as individual experience. And I

found that very useful when talking to a colleague that had twins. I felt like she was much more interested in what I had to say because it wasn't just, "When I had a child..." it was, "Oh, our group looked at this issue and..." I felt like, "OK, now I'm truly mentoring." (Summative interview)

The funding from the alliance to get me to meetings didn't seem like a big deal at the time, but with the economic downturn my institution quit paying for people to go to meetings. The opportunity to come to San Francisco was because of the alliance, because they were able to get me here. My teaching load went down, I involved myself more with research students, and now I'm able to bring them to meetings because NSF is picking up my way. (Summative interview)

Gaining broader perspective from other members' experiences and given the opportunity to compare and contrast their situations with others', in summative interviews, 90% of participants expressed greater appreciation for their own contexts. Many also expressed greater appreciation for the opportunity to participate in the initiative.

I've come to appreciate more—by looking at other people's situations—being in the department where all of my colleagues are among my best friends: where we get along well and where we adapt to each other's patterns and interests well and that there is nobody that I'm bumping up against and struggling against in terms of wanting to make a change and someone's resistant or being dragged along on things I don't want to do. We just have a great working relationship. I always knew that, but I don't think I appreciated it in the same way without having seen other people who were stuck to, "Well this is the way it's always been done and so and so will never modify the way he does things, and so we have to do things his way." I'm not in that position and I guess I failed to realize how many people *are* in that position (laughs). It made me kind of feel like...I'm in the right place for me. (Summative interview)

I didn't ever have any interest in leaving my discipline or leaving my institution and doing something else. But having a cohort of folks that I can go to that's going to give me advice that somebody from outside is giving you a different perspective...it builds confidence. It's something that is really intangible but makes such a big difference in terms of satisfaction in your job. I think that was very valuable in terms of feeling like I'm doing something that I really love—which I am—but when I get really tired or feel like I'm going to pull my hair out, it's very useful to have a support group in some sense, that's outside your own campus. (Summative interview)

I was really a very grumpy woman full professor before I got involved in the project, and now I'm a much less grumpy woman full professor at my institution, for which I can thank the project. (Summative interview)

Some participants expressed the view that monies supporting the Horizontal Mentoring Alliance really are cost-effective as a means to support faculty retention. The money spent to support this type of faculty professional development would undoubtedly save the department and institution a good deal of money when compared to the expenses associated with recruiting, rehiring new faculty.

Honestly, it's just been a phenomenal experience. If we can get the NSF to consider itty-bitty seed grants for people, for schools to say, "Here's a pot of money and you don't have to stand on your head and write a 12-page budget for it," but to say, "I am a faculty member at a small liberal arts college and I want to go to a national meeting," and have that be a relatively easy check to receive. That could have huge value because those people are so isolated! If you want to retain them as part of the scientific community, you need to invest in them. (Summative interview)

I guess I would say that there is so much potential in senior faculty that, with a little bit of inspiration, and a little bit of support, they can accomplish so much more and be so much more satisfied in their careers. And that's got to have a huge impact on their campus, on their students. So that's the kind of support I'd like to continue. It's just a reawakening of a faculty member. It's not that they weren't successful as they were, but there was just so much more that they could do and wanted to do, could be inspired to do, with the help of others!... You can't transform an institution without having an impact first, on individuals. This is a way to do it. (Summative interview)

During the time of the initiative, alliance members experienced life-threatening illnesses, the death of a parent, the death of a spouse, and other serious, difficult and stressful challenges. For these individuals, participation in the mutual-mentoring initiative proved valuable in ways they could not have anticipated. The support and advice of their alliance members during a terrible time was sincerely appreciated.

Interviewer: So this has really been a lifeline for you?

Horizontal Mentoring Alliance member: Yes, it has. It really has. (Summative interview)

In sum, Horizontal Mentoring Alliance members cited a very large number of benefits from their participation in the initiative. Dominant gains cited by a large majority of participants—including belonging to a of equals, sharing advice and ideas, and relief of isolation, among a range of other professional and personal benefits—shows the initiative has been very successful in meeting its project objectives.

Difficulties Encountered Participating in the Horizontal Mentoring Alliances

Three percent of all members' comments mentioned difficulties encountered participating in the Horizontal Mentoring Alliances initiative (23 baseline observations; 58 summative observations) (cf., Table 1, above, and Table 12, below).

Difficulties experienced by participants were balanced among three types:

- those related to issues of time;
- those associated with geography, and
- those associated with the group.

Table 12. Baseline and summative observations on difficulties encountered participating in the Horizontal Mentoring Alliances initiative.

Difficulties encountered participating in an HMA	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Because Alliance members were from different sub-disciplines, they did NOT attend same professional conferences Made it hard to coordinate meetings with each other #	0	0	11	16	11	16
One member of Alliance wasn't able to make it to a number of the group meetings due to health issues, family issues #	0	0	4	5	4	5
Did NOT feel much in common with other group members Difficulties finding common ground Felt marginalized at times Group choice unclear #	0	0	3	5	3	5
Group hasn't quite coalesced, come together solidly Different needs Some groups work better than others	1	1	3	4	3	5
One person in group ends up putting in extra travel days to accommodate others schedules	2	2	2	3	3	5
There just ARE NO OTHER SENIOR WOMEN FACULTY OUT THERE	3	5	0	0	3	5
Wonders whether she should relinquish position to someone who needs it would benefit more Still wonders whether she was the right choice &	1	2	1	3	1	5
Technology issues high enough barriers to inhibit participation Set up of communication software, etc., requires too much time effort #	0	0	3	4	3	4
One woman in group tends to do all the work, organize everything for everyone else re meetings agendas Stressful for that woman MORE time &	1	1	2	2	3	3

Doesn't feel she is very helpful as a mentor Doesn't face same issues as others in alliance	2	2	1	1	2	3
Feels a bit out of place; not as alienated in department as many others in alliance.	1	2	1	1	1	3
Invited other alliance members to come to talk at her institution Only one person took her up on this offer Wanted to go visit other institution and give presentation but not invited Disappointing #	0	0	1	3	1	3
Did not see bigger picture Longer term view of what was expected of group and what it should produce Did not see value in tasks for alliance group Went along anyway cause they didn't have a counter proposal Did not know what they wanted themselves #	0	0	2	2	2	2
Frustrated that she doesn't see more transfer to institution, or way to transfer to institution #	0	0	2	2	2	2
One member has not responded to email trying to coordinate meetings Unsure what issues might be	1	1	1	1	2	2
She hasn't been able to identify own needs that group could help her with	2	2	0	0	2	2
Some givers, some takers Takers take most of the energy	2	2	0	0	2	2
Feels Alliance just get together to complain NO action Just there to commiserate Doesn't like this aspect Not for me #	0	0	1	2	1	2
Alliance clearly less of a priority for one individual in alliance	1	1	0	0	1	1
Did not always get on with other group members Having a group helped to buffer this difficulty #	0	0	1	1	1	1
Did not know group members well enough to share personal issues #	0	0	1	1	1	1
Effective communication is necessary and difficult to establish	1	1	0	0	1	1
Paid out of pocket to cover travel not covered by grant Misunderstood Wished she'd known sooner #	0	0	1	1	1	1

Senior women in alliance do most of the mentoring Get less mentoring themselves	1	1	0	0	1	1
Wanted to go to more meetings, just not possible Not sure Alliance totally understands, approves of choice NOT to attend meeting #	0	0	1	1	1	1
TOTAL	9	23	17	58	17	81

The most commonly mentioned difficulty was voiced during the summative interviews, where 55% of participants said that, because alliance members were from different sub-disciplines, they did not attend same professional conferences and this made it hard to coordinate meetings with each other. Often, issues of time and geography were raised simultaneously.

We're in very different areas so we don't go to the same meetings, so we're not going to bump into each other anywhere. So those things were barriers to really being able to gel, I think. Because we don't all go to American Chemical Society meetings—I do—but we had a couple of biochemists, they don't go to ACS meetings. They go to other meetings. So it was so challenging for us to get together because we're going in five different directions. I think that that was difficult. (Summative interview)

Most chemists come to the American Chemical Society meeting, as opposed to the biologists that have a ton of different professional societies. I think being in a small school, there is that tension between the specialty meeting of your research and the bigger umbrella organization of your discipline, and there's only so much...and it's not just travel dollars because I think everybody, R-1 vs. liberal arts, faces the, "There's more meetings to go to than travel dollars." But I think it's also the pressure to be on campus and the number of days it's acceptable to miss in a given semester. (Summative interview)

In our alliance, we had one person who was in a different time zone, who was at a greater distance. The rest of us were closer. We had our initial meeting and then it was a long....we tried to get another one and it took longer....and then we met...some of us met at an ACS meeting. That turned out to be another challenge because, as it turns out, not everyone in our alliance uses the ACS meetings as their first choice. So to go to the ACS meeting was to not go to something that was professionally more relevant for them. So that was a bit of a challenge. (Summative interview)

More general difficulties related to time and geography concerned the different time required for travel, particularly for those living in rural areas or for those with geographically-dispersed group members.

Someone is always having to go cross-country in order for us to meet and so it makes it much harder to find the time. If we're meeting on the East Coast, those of us on the East Coast, we can just go to Washington, D.C. But then [another alliance member] has a couple more hours of travel, more like four or five. And [another alliance member], she loses a day each way. So it's harder with the geographically dispersed alliance members. I think it will be harder for us to

keep meeting than it will be for the group that's more regionally located. So I think for future, if future ones get set up, that will make it more sustainable. (Summative interview)

Our particular alliance, we were geographically spread out.... We were a little too far apart. My advice would be, if you are going to have these mentoring networks, try and make them geographically not so difficult, or constrained. I think the distance was problematic because we'd want to get together for like a day, or a day and a half, and the people that didn't live in urban areas, when they're driving two hours just to get to an airport and then changing planes twice, it's kind of a long ways to go for a day and a half meeting. I think that could be optimized, and particularly for women in the group with younger children. (Summative interview)

I think that there are some challenges to the geography. Just the logistics of trying to find time. Trying to coordinate five of us for a phone call. One of us sat down with each of our course schedules online and blocked out, "Okay. I know none of these times work because one of us teaches.".... And you complicate that with, we span three time zones. Nine in the morning for the East Coast folks is six in the morning for the West Coast folks. Or five in the afternoon, is the middle of their work day.... It's surprising how challenging it is to find times to talk. So I do think that, even if we were all in the same time zone, could be helpful or, just also geographically closer. (Summative interview)

In other observations, alliance members' agreed that just finding time to participate had proved a difficulty. Smaller numbers of participants offered a few comments on a range of difficulties associated with time: taking time at weekends was hard on family; taking time during the academic year or during the summer was equally hard. About half of participants agreed that travel was more difficult from their rural liberal arts colleges and that it was difficult to coordinate travel across the US from their more remote locations. A few noted that scheduling conference calls across time zones was difficult.

In addition, it does appear that a few women (n=3) did not feel much in common with other alliance members and, at times, found it "hard to fit in." A few (n=3) also found that "some groups worked better than others" and that it took time for some groups to "coalesce."

I mean I'm different from the rest of my group. I am not married and I have no kids. They all had families so there was a chunk of the time where I felt very, kind of marginalized. They had a family life that they were having to deal with on top of everything else and I didn't have that.... Sometimes I did feel left out because they were talking about how they were having to handle their families and everything—and I understood those issues—I just have no connection with it. (Summative interview)

For our alliance, everybody seemed to be doing, or focusing on different things. So even though we were all senior women chemists, not all of us were doing research, for example. Maybe there were two people who had real research agendas, that were still continuing to work in the lab and publish. There were two people who were strictly into teaching and pedagogy. And then there was one who, she was more of an administrator.... So that whole variety made it kind of difficult to find a common ground. Now, I don't know if that is good or bad. You could argue, "Well, the good side is you get the benefits of talking about pedagogy." But for me, talking

about how you handle research initiatives and all that was kind of lost, because most people in the group weren't doing that." (Summative interview)

I really enjoy the people that I'm in the alliance with. I think they're very interesting people and I'm glad for the chance to have gotten to know them better. But we don't have a unifying principle. We are not all in the same area of chemistry. We're not all in the same area of the country. And we didn't come to this with a sense of shared concerns.... So we are people who are in this but...it seem like the group as a whole didn't gel. (Summative interview)

A few found the technology barriers (regarding electronic communications) high (n=3):

One of the women in the group did a very nice presentation on dealing with stresses of life for women and how to deal with saying no and organizing your life so it worked better, but I couldn't get access.... I don't know what happened to getting access to the website we were working with. And, I just kept running out of time to find somebody to help me get access to it. (Summative interview)

If some external force would have stepped in and helped, and had sort of set up the electronic things.... Again, I could—I had the knowledge and the expertise to do it—but not the time or motivation. For our group, it would have taken an external force to come in and say, "I'm going to show you how to do it and I'm going to download all the software for you and all you have to do is push a button." (Laughs.) (Summative interview)

A couple participants noted that one reason this initiative had been so valuable was that there were so few of them and they were so spread out that it was hard to find each other! In the end, the main difficulty is that there are no other senior women faculty members in science out there: "We are it!"

Right now, it's very clear to me that most of these people involved in the alliance are first woman in their department or second at best. So there isn't anybody. We only have each other. (Summative interview)

Alliance Members' Wants, Unmet Needs, and Advice to the Initiative

Alliance members were asked to comment on what was missing from or could improve the initiative. In response, 19 participants provided 77 observations (18 baseline observations; 59 summative observations), constituting 3% of observations, overall (cf., Table 1, above; see Table 13, below).

Most commonly, participants said that having had more direction at the beginning would have been helpful. Forty percent of participants observed that more direction initially about "what we're supposed to do" would have been useful.

Table 13. Alliance members' wants, unmet needs, and advice to the initiative.

Advice	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
More direction initially about what would be useful to produce for the whole group overall Precise tasks and limited choice to start &	1	1	7	10	8	11
Number of times group met was adequate, appropriate #	0	0	8	11	8	11
Would be interested in meeting other older women in the alliance Women closer to her age and career stage Encourage interaction across alliances	5	7	3	4	7	11
More interactions More regular communication Once a month would be good Put date on calendar More time together	3	5	4	5	7	10
Provide lists of resources to better provide structure, direction to HMAs More tools to provide focus #	0	0	4	4	4	4
Size of group was good Worked well #	0	0	4	4	4	4
Traveling to new places each time worked well Like seeing other members departments, campuses	0	0	3	4	3	4
Would like to meet get to know women in the other alliances	1	2	2	3	2	4
Alliances that are closer geographically might help alleviate travel difficulties, be more sustainable #	0	0	2	3	2	3
More inter-institutional trading Traveling to each other's institution to see what it is like Give higher profile to colleague Show she is valued #	0	0	2	2	2	2
Need to set boundaries so the grant business doesn't eat up Alliance time	1	2	1	1	2	2
Plan for greater flexibility re what to do with funds at own institution written Be as flexible as possible from outset #	0	0	2	2	2	2
Advertise and let women apply This will ensure that people who apply want to participate, will benefit #	0	0	1	1	1	1

Alliance meeting with professional development counselor for women in the sciences Very good #	0	0	1	1	1	1
Did not find outside consultant workshop very helpful She didn't know us, our institution #	0	0	1	1	1	1
Find and include more women faculty of color There must be a few out there #	0	0	1	1	1	1
Gather information from Alliances Distribute newsletter Keep each other, Alliances informed #	0	0	1	1	1	1
List of other senior women in science nationally	1	1	0	0	1	1
Need for technical support in setting up electronic communications between Alliance members #	0	0	1	1	1	1
Reunion, follow up meeting sometime down the road #	0	0	1	1	1	1
Thinks that a smaller age range works better than a wider age range Worries that older alliance member hasn't benefitted much, has done all the mentoring #	0	0	1	1	1	1
TOTALS	9	18	19	59	19	77

At the beginning, we struggled to know what our task was. And part of that may have been actually the good part of it...not knowing what are we supposed to be doing: that was for us to determine. But I think it would have benefited us sometimes to have a little more direction about, you know, "Your topic of the day is X." Because we would literally...from soup to nuts...bounce around a lot. I think for us, because we tend to be very task-orientated, that that was frustrating for all of us, to just not know. When we're told to write a paper on this topic, oh, well cool! "We're on that! We so on that! [laughs]. Which was good. It may also have been useful if we had known kind of our roles within the group. "This person's expected to keep the notes, and this person is expected to...," whatever. But that naturally emerged. (Summative interview)

Since we didn't quite know why we were picked, or what exactly we were supposed to do, we always worried that we weren't doing what the PIs had in mind [laughs]. We had that worry a little bit, but we got positive feedback when we told them what we discussed at our meetings so we stopped really worrying about that so much as we had in the beginning.... We didn't know if we were meeting the goals of the project as effectively as we might... I think maybe providing some examples like, "These particular cohorts focused on this, or did that," or, just to have a variety of possibilities out there that you could see.... I agree with that it should be a locally

homegrown focus, but just to kind of set the stage, give some ideas, a group scenario...so that you know you were at least in the right ballpark. (Summative interview)

The 40% of participants who commented on the adequacy of how often alliance members met expressed the view that it was an appropriate number of times. Members appreciated that the frequency with which they met was determined by the group.

The time that we set aside was pretty much sufficient. I thought the number of meetings that we had face-to-face were good. (Summative interview)

It turned out that not everyone went to that meeting each year and so we were left finding times ourselves.... Since we knew one another more, too, we were more prone to having conference calls or doing something on SKYPE. And that worked for us. (Summative interview)

I don't remember who it was that suggested the book *Every Other Thursday*, but we decided that was a good framework. We would talk every other Thursday by Skype. We have done reasonably well at keeping that up. There have been some points where we didn't do that.... Then we've met, I think, once a year. So, I would say that, yes, we did meet often enough to feel like we had a real connection to each other. I think it was critically important for us to try to do something where we talked on a regular basis. We don't all make it to the every other Thursday conversation, but almost every time we're supposed to have a conversation, at least two of us have had a conversation. (Summative interview)

However, a similar percentage of participants (35%) indicated that they wanted more opportunities to meet with their alliance, other alliances, as well as with all alliance members, as a whole:

I think it would be great if we could try to encourage more interaction across all of the Alliances. (Baseline interview)

I would have loved to have met more. I realize how difficult it was for all of us to get together, busy schedules and travel, and all.... (Summative interview)

I hope that we can figure out a way to sustain it. I think it's really, really, been important and valuable to me, and to the other members of my group. I wish we would have more opportunity or chance to meet with the other alliances. I feel like I would have a lot to benefit from more interactions. (Summative interview)

One participant said she would like to have a list of all senior women science faculty nationally:

I was very intrigued...how few senior women are out there to choose from. I would be very interested in seeing someone put together a list of women at the smaller institutions that aren't being addressed by the Alliance. Just name, institution, e-mail address and maybe their field of specialization. But just something like that might be valuable. I don't know how many people are out there. I was talking with one of the guys from my department and he said he managed to find 15 senior women chemists at Swarthmore College. He said, "Oh, there's got to be tons more!" I don't know if there're 20, if there's 100, or if there's 500. I'd be really curious, if she took the time to go through and find people, I'd be really curious to see a list, to see how big it is, to see what institutions are there. Because I have no idea.I don't know if the NSF would

have (collected that information), but I know the ACS does their career survey and their salary survey and all that other stuff and they ask for demographics and they've got you classified into types of institutions. So ACS should be able to pop the list out if NSF can't. There's got to be a database out there with this information in it. I know the WCC might have it. (Baseline interview)

Overall, participants found few things wanting in the initiative. Their main advice was to provide greater structure at the outset: being “task-oriented,” alliance members felt more comfortable knowing they were “doing something.” While a number were happy with how often they met with their group and the other alliances, a similar number wanted more communication and more opportunities to meet together, particularly as a whole.

Replicating and Sustaining the Horizontal Mentoring Alliances Initiative

Central to this initiative and the evaluation were research questions exploring the replicability and sustainability of the Horizontal Mentoring Alliances initiative—questions important to the NSF ADVANCE program, overall. To answer these questions, in interviews, the external evaluator asked participants to comment on what elements they saw as important or critical to making the initiative such a success. Participants were also asked to comment on what they saw as the main barriers to sustaining the initiative and suggest ways it might be sustained. The external evaluator also sought alliance members' views on whether they thought the initiative could or should be replicated in other contexts and/or for other groups (e.g., in research-extensive universities for women science faculty, generally). Finally, participants were asked to reflect on their participation and to summarize what about the initiative was important and what the NSF should learn from this initiative. In responding to these questions, alliance members' observations define “what works,” provide insights into how the model might most usefully be replicated, answers for how such models should be effectively implemented, and thoughts on how such a mutual-mentoring model might be sustained. Participants' comments summarizing what about the initiative was important and what the NSF should learn from this initiative (“Tell the NSF...”) address the overarching program evaluation question regarding the extent to which the initiative achieved its objectives. Multiple, independently-gathered observations serve to corroborate, complement and support participant accounts and provide evidence answering research questions regarding the utility of this type of mentoring model and its application in other contexts as an effective means to support, retain and advance the careers of women science faculty, that is, the overall objective of the Horizontal Mentoring Alliance initiative and the NSF ADVANCE program.

Observations comprising the “replicating and sustaining the Horizontal Mentoring Alliances” category were 17% of all summative interview observations, and 13% of all participant observations; indeed, as Table 1, above, shows, in summative interviews, this category ranks second in number of observations, following participants' positive gains observations. While participants offered some observations on replicability and sustainability in the baseline

interviews (n=31), they offered tenfold the amount in summative interviews (n=332) (see Table 14, below). Though questions about replicability and sustainability were a focus of the summative interviews, these issues were important to the participants, and, as with all other questions, alliance members offered thoughtful, considered responses to questions on replicability, sustainability, and the larger outcomes of the Horizontal Mentoring Alliance project.

As these topics are highly interrelated and as observations explain and reinforce other comments, they are discussed together. Numbers and percentages supporting findings are presented in Table 14.

Replicability and sustainability

The greatest barrier to sustaining the Horizontal Mentoring Alliances is funding to support the mentoring initiative: 60% of participants acknowledged that finding a funding source to pay for travel so that members could meet together was the single-most critical factor affecting alliance members' ability to replicating and sustaining such an initiative.

We were trying to figure out, "What's our best advice?" Because we all feel like what a shame it would be for it just to come to a screeching halt. And yet you know that the costs are so high that it would be difficult to sustain it. We talked a lot about how a lot of the expense is the travel. (Summative interview)

How do you fund it? Because it is expensive. Somebody's paying for four or five meals and nights in a hotel, and that kind of stuff. So, Where is the money going to come from? (Summative interview)

I think it has also been important for us to meet periodically face-to-face. We've been trying to work this out because we've been trying to figure out, How could you do this with the least amount of resources? If we didn't have an NSF grant to pay for our travel, Would it work? I think it wouldn't work. We've been getting together once, maybe twice a year. This is really essential to keep the relationships personal, plus it makes it easier to work on things. Some of our meetings have been work meetings to prepare the white paper for the summary for June and that sort of thing. At some point, you really need to be together. So, we've been trying to think of ways that people could do this with minimal support. (Summative interview)

I would definitely like to maintain connections with the women in my alliance. I think one of the challenges is that it is going to become increasingly difficult. The reason our alliance has been able to meet is because all the travel and meeting expenses have been covered by the project. If that's not the case, then I think that, in the absence of funding for travel and lodging and meal expenses, it would be very difficult to do. (Summative interview)

Forty percent of participants expressed the view that legitimacy was a factor affecting replicability and sustainability: since gender equity is still not seen as an important issue in many

Table 14. Baseline and summative observations on replicating and sustaining the Horizontal Mentoring Alliances initiative.

Replication and sustainability issues of the HMA project	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Funds Money Especially money to fund travel to meet with one another Vital to sustainability and replicability &	1	1	12	15	12	16
Initiative requires legitimacy Funding from credible, respected organization because gender equity is still not seen as important issue Thus the NSF ADVANCE programs Gives women permission to acknowledge issues #	0	0	8	11	8	11
HMA's could find some support through professional organizations, like PKAL, ACS, APS, CUR, AAC&U #	0	0	7	10	7	10
Justifying and explaining purpose of HMA is difficult Seems soft Poses problem for sustainability #	0	0	7	10	7	10
Time limitations pose difficulties for sustainability	3	3	3	3	5	6
Could see NSF, professional organization workshops for women I.e. Two-day workshops where women could convene, talk Pay travel, small stipend Has legitimacy of the NSF, professional organization #	0	0	4	4	4	4
It would be helpful to find an overarching structure to support HMA's, I.e., GLCA, Mellon, A way to provide structure to geographic clusters #	0	0	4	4	4	4
Wonders how you go about identifying the right person to participate when replicating this initiative#	0	0	2	4	2	4
Group that meshes well, likes each other important for sustainability	1	1	2	2	3	3
Maintaining momentum with entire group Some miss meetings due to sickness Family Life circumstances	2	2	1	1	3	3
So few senior women faculty is an obstacle to replication	2	2	1	1	3	3
Departments should have a pot of money for to support faculty professional development (some do) #	0	0	2	2	2	2

Perhaps could expand inclusion to other disciplines, Natural Sciences, etc. #	0	0	2	2	2	2
Proposes an electronic forum where faculty could help each other address these same types of issues, i.e., Ning #	0	0	2	2	2	2
Will have to do something different Expand goals Don't do more of the same Has served its purpose #	0	0	2	2	2	2
NSF could provide micro funds to small LAC departments HUGE benefit for everyone #	0	0	1	2	1	2
Proposes informal get-togethers of women with common issues in conjunction with prof conferences Put out an announcement If women are already going, funding may not be an issue #	0	0	1	2	1	2
Distance between Alliance members hinders sustainability	1	1	0	0	1	1
Does NOT perceive that distance between institution is imp for maintaining confidentiality, Does not see being too close locally as an issue Not a problem #	0	0	1	1	1	1
Maintaining momentum Plan an activity that keeps momentum going Incentive to keep involved #	1	1	0	0	1	1
Proposes developing nationwide mentoring network to aid sustainability	1	1	0	0	1	1
Real change, addressing work-life balance issues requires INSTITUTION buy-in You won't get that at an R1 #	0	0	1	1	1	1
Still a real need for more research, more publications, proving of soft measures that matter #	0	0	1	1	1	1
Thinks HMAs should be replicated widely at small non-elite LACs Huge need #	1	1	8	8	8	9
Thinks HMAs serve later-stage careers best	6	6	0	0	6	6
Thinks HMAs would benefit a variety of contexts, groups Very practical, utilitarian support groups #	0	0	6	6	6	6
Thinks HMAs would benefit women at all stages of one's academic career	1	1	5	5	6	6
Thinks HMAs would benefit faculty at R1s Alliance function same for R1s as LACs just different issues Group of sustained support	1	1	4	4	4	5
Thinks HMAs would be of benefit to all women, Women tend to put themselves last and this is a place to put yourself first #	0	0	4	4	4	4

Thinks HMAs would benefit faculty earlier in career stage i.e. not near retirement near end of career More valuable earlier Pre-tenure &	1	1	3	3	4	4
Thinks HMAs would benefit women in chilly, hostile climates, departments Have gone as far as they are ALLOWED to go CONTEXT is an important factor to consider in terms of selecting women to participate #	0	0	4	4	4	4
Thinks HMAs would benefit any marginalized group #	0	0	3	3	3	3
Thinks HMAs would benefit men equally #	0	0	3	3	3	3
Thinks HMAs would benefit mid-career women #	3	3	0	0	3	3
Thinks HMAs would benefit women in non-tenure track careers #	0	0	3	3	3	3
Thinks HMAs would benefit women post-docs #	0	0	3	3	3	3
Thinks HMAs work independent of discipline Could work in any field #	0	0	2	2	2	2
Thinks HMAs would be useful WITHIN an institution Really a great need for more collegiality within own institution Helping other women in or out of discipline to not feel isolated Create opportunities for women to socialize within own institution #	0	0	2	2	2	2
Thinks HMAs would benefit faculty at community colleges #	0	0	2	2	2	2
Thinks HMAs would benefit faculty of color #	0	0	2	2	2	2
Thinks HMAs could possibly be expanded to include men too as a way to better garner funding #	0	0	1	1	1	1
Thinks HMAs could work on a more local regional level so as to cut down costs #	0	0	1	1	1	1
Thinks HMAs would benefit women in industry #	0	0	1	1	1	1
MIXED Thinks HMAs might benefit men Doesn't see that men struggle like women, But an HMA might work for men who are shy, need direction, are co-parenting and stressed, isolated and marginalized #	0	0	5	5	5	5

MIXED Thinks HMAs might work at an R1, maybe not Doesn't think R1 faculty would buy-in to the idea in the first place But might work #	0	0	4	4	4	4
MIXED Thinks HMAs might benefit men Thinks men would just talk about their science, not about personal struggles and issues Too soft for men Not their style #	0	0	3	4	3	4
MIXED Thinks HMAs might work at R1s Thinks women and men at R1s are too enculturated to the male paradigm in science Too competitive Too focused But there is probably a need #	0	0	3	3	3	3
MIXED Thinks HMAs might work as meetings, workshops at conferences You need that personal bond established first Might not get that just at a workshop #	0	0	1	1	1	1
Thinks HMAs would NOT work on a local level; too close, too competitive #	0	0	4	4	4	4
Thinks HMAs would NOT benefit men, are not necessary She doesn't see men suffering from isolation #	0	0	2	2	2	2
Thinks HMAs would NOT work at an R1 It's all about career at an R1 Life-work balance is NOT an issue #	0	0	1	1	1	1
Thinks HMAs would NOT work if only electronic communication In-person communication is critical #	0	0	1	1	1	1
TELL NSF This is really, really valuable #	0	0	13	19	13	19
TELL NSF Money cannot buy the benefits she has gained from participation "Soft" gains, but critical to her personally and how she performs #	0	0	7	10	7	10
TELL NSF Through HMA participation gained real practical applied understanding of what leadership is about Important in supporting advancement of women in leadership roles Has helped to advance her career in a very positive way #	0	0	4	5	4	5
TELL NSF Very grateful for the NSF ADVANCE program Really important #	0	0	3	3	3	3
TELL NSF Support of senior women faculty is important They serve as role models to younger women, Very important that young women see someone like them in front of the class, especially for minorities #	0	0	1	1	1	1

WHAT WORKS Meeting face-to-face several times the initial year created bonds that lasted without in person contact #	0	0	10	13	10	13
WHAT WORKS A common basis at the nucleus, i.e., being at an LAC, all women, etc. #	0	0	8	13	8	13
WHAT WORKS Getting outside one's institution Getting outside perspective and safety at a distance #	0	0	8	13	8	13
WHAT WORKS Unstructured time and conversation Really important revelations have come out of spontaneous conversation You can't plan for these outcomes They emerge organically #	0	0	7	12	7	12
WHAT WORKS Relatively small amount of money (i.e., for travel to a conference) for LONG TERM benefits to the institution in retaining faculty #	0	0	9	11	9	11
WHAT WORKS NSF credibility behind, funding HMA Gives the project and participation legitimacy #	0	0	9	10	9	10
WHAT WORKS Important to set aside designate time to deal with this stuff, otherwise there is no time Gets lost in the shuffle	1	1	7	9	8	10
WHAT WORKS Funding to pay for travel so that they can get together This has been HUGE #	0	0	6	9	6	9
WHAT WORKS Localism individualized mentoring addressing specific circumstances Define for own group what works &	2	2	4	4	6	6
WHAT WORKS Meeting once in person is critical to establish bonds #	0	0	6	6	6	6
WHAT WORKS Horizontal mentoring, Lack of hierarchy, Flat structure that is inclusive #	0	0	4	5	4	5
WHAT WORKS Regular ongoing communication between Alliance members for group cohesion Regularly scheduled phone, Skype meetings every two weeks Kept us accountable, connected #	0	0	4	5	4	5
WHAT WORKS Book <i>Every Other Thursday</i> helped members to focus, gave common ground for conversation, structure for group discussion, sharing #	0	0	3	5	3	5

WHAT WORKS Sustained engagement vs. one shot workshops	2	3	2	2	3	5
WHAT WORKS Being made to eat together in order to get reimbursement Seemed silly at the time But BRILLIANT in practice Eating together broke the ice, really got people talking, bonding #	0	0	4	4	4	4
WHAT WORKS Delicate balance between homogeneity and heterogeneity of the group #	0	0	4	4	4	4
WHAT WORKS Trust established in group is important in being able to share #	0	0	3	3	3	3
WHAT WORKS Leverage of comparing aspiration institutions Small LACs competitive this way #	0	0	2	2	2	2
WHAT WORKS Meeting face-to-face in an ongoing fashion critical to maintaining group cohesion momentum #	0	0	1	1	1	1
WHAT WORKS The power of small groups Issues percolate and solutions bubble to the top	0	0	1	1	1	1
TOTAL	11	31	20	332	20	363

institutions and departments, the NSF's implementation of the ADVANCE program provides critical acknowledgement of issues affecting women science faculty's career satisfaction and advancement and gender equity in academe. In moving forward with future mutual-mentoring models like the HMA, participants were strong in the opinion that the backing of a prestigious organization would be necessary. Approaching professional organizations and associations (i.e., PKAL, GLCA, ACS, AAPT, The Mellon Foundation, NSF, etc.) were proposed as logical sponsors to help build a mutual-mentoring network with the cachet needed to provide the legitimacy necessary for the initiative to be successful.

I think it would need, in the absence of NSF, it would need some kind of a title, some kind of a recognized program. Some kind of organization that was behind it so that it's not just, "I'm going to attend a retreat with a bunch of women," but, "I'm going to the such and such." I think some legitimacy provided by an external...like, right now there are NSF workshops. NSF funds workshops that you can go to, and I can tell my dean, "I'm going to go to an NSF workshop on chemistry." And I think there are other kinds of workshops, they're run by organizations, professional societies, or whatever, that would be similar to an NSF stamp on it. I know there are retreats for, like, learning to be a better department chair. Things like that. (Summative interview)

The project itself had a legitimacy and credibility that, you know, it was one of the things that the dean commented on. I turned in my one-page or two page, "This is what I've been doing." Just bullet points. And he picks out like three things and the alliance was one that he said, "I'm so glad you're participating in this." So it's something that was, at least on my campus, seen as a very positive thing to be involved in. I think the fact that this was funded by the NSF helps because nobody was going to say, "Oh, you're doing the women's group thing." There's a hundred different connotations—not that people would have said you shouldn't do it—but it puts it in a different category. (Summative interview)

In terms of sustainability or carrying it forward, it certainly seems like there would be avenues through professional organizations. It seems like CUR, PKAL, AAC&U, ACS, you know, it seem like one of those organizations could be a good venue. ACS has an amazing women's chemistry committee who does amazing things. It seems like having them set up some sort of mentoring thing.... I mean CUR has done some mentoring things, but it's never been hugely funded. But they have tried to do some mentoring things. I think that we've learned a ton about how to make it work. So one route for sustaining this kind of an initiative could be through existing professional organizations. (Summative interview)

The financial support to get people to places where they can get together, for small schools any release from the financial burden of attending meetings.... If there were meeting funds, or travel funds that people could apply for to create small working groups that would pay for a night in a hotel and transportation for half a dozen people to get together.... The benefits to all parties involved are far beyond the dollars that you put into it. How to make that opportunity available to people with the blessing of NSF, gives you permission to step out of your life and your department. To say to my department chair, "I have to go on an NSF trip this weekend. I can't do x and the other thing," is a blessing from above that every department head will listen to.... Call them summit meetings, call them retreats, call them whatever you want to call them....call it a meeting. They'll like it better. To just put five people in a room for an afternoon or two days, the value of that is well beyond the dollars that are spent. The blessing from above is essential to that because I cannot see any person in their right mind, at an R-1 institution, saying, "I'm going to go off for the weekend to meet with the girls." And it's such a valuable use of time. To have the NSF blessing of a summit meeting of six people, where there's not necessarily an agenda required, or maybe there are two talking points that need to be covered. A brainstorming session or a think tank. Call it whatever you want to that makes people sit up and go, "Oh, well that must be important." Pull six different people out of six different institutions and sit them in a room and let them get to know each other. That will pay off in such huge ways, but I don't know how you can sell that to any administrator. I just don't know how to sell that and if you could sell it to NSF and NSF would bless it, then your department would allow it. But, without the NSF blessing the department is never going to say that's a good use of your time. So it's really a twisted up knot [laughs]. (Summative interview)

One quarter of participants raised the time limitation of busy lives as factors affecting the replicability and sustainability of similar mentoring alliances.

All of our situations, we're just so busy and you forget about things like reaching out because you're so tied up in day to day stuff. I don't know how. For some, friendship should be enough to overcome that barrier, but for others, probably not. (Summative interview)

One fifth of alliance participants suggested that, as an alternative to the Horizontal Mentoring Alliance, perhaps the NSF or other professional organization could pay travel and a small stipend and host two-day workshops where women could convene and talk about such career advancement issues, etc, face-to-face.

With legitimacy behind a mutual mentoring initiative, participants thought horizontal mentoring could be replicated in a variety of contexts, including research-extensive universities, non-élite liberal arts colleges, master's granting institutions, and community colleges, among others. They also saw it benefiting women in non-tenure-track careers, as well as adjuncts and post-docs, among others. Indeed, alliance members saw the mutual-mentoring model as beneficial for any marginalized group (see Table 14 for numbers of participants and observations for these types of observations):

I think it would definitely work in other contexts. From what I've seen of my colleagues at R1 institutions they do need officially-sanctioned support and there's nothing like having the NSF initials there to make people feel like whatever you're doing is legitimated because it's underwritten by our National Science Foundation. I think there is a need. I see people struggling in universities all around me.... I can definitely see it being something that is shaped, modeled in a slightly different way so that it is relevant to women in another professional setting. I feel it's translatable, transferable to women in say, R-1 institutions. Or, there's these R2 places—I don't know what the Carnegie Classification is to be honest—universities that are not R1s, places that have a lot of returning students, that grant a lot of Masters degrees, perhaps even. Of course, women are more likely to occupy temporary positions than women who have settled into a permanent positions, or adjuncts or sharing, doing a one-half job share, or a one-third job share. These horizontal mentoring alliances could be really, really, really, helpful to women in those contexts. (Summative interview)

I think it is very possible to port it to a wide variety of things. I think having the support of NSF, even if it's just to get the groups started, having the NSF and professional societies say, "Hey, this is very useful, will be enormously beneficial to all kinds of people. I can see it being helpful to younger women, younger faculty members, people focused on a particular type of pedagogical innovation, minority faculty, or grad students—all sorts of possibilities, I think, can benefit from this. Especially if it is seen in the profession as having the support of the funding agencies and the professional societies, and indeed, buy-in from administration representatives. I have thought..."Gee, this is so beneficial here for me, maybe my friend up at the University of Minnesota, there are not many women [scientists] up there. Maybe they might find this helpful!" I haven't talked to them, but we have talked with the people at the [professional society] about our horizontal mentoring experience and whether they might be able to provide some ways of getting these fledgling groups started and then providing some space and time for people to meet. Maybe have people come to conferences and meet a little bit beforehand in their horizontal mentoring group, or whatever. So we have talked about ways that it might be ported to other groups.... I can see it as being helpful in many, many different ways. (Summative interview)

I think even after this is officially concluded, our group will continue. I am confident...our problem is that we won't be able to meet in person as much. We'll talk more on the phone, do more conference calls, more Skype.... free conference calls. We're going to have to have to

move to free conference call strategies. But, I am confident we will keep doing that. It's been too much value to us to just let it disappear.... Deep down, I keep thinking, "This has got to spread to more groups of women because it has been a lifeline for me. It has been something that has allowed me to have access to someone who can help me think through how to respond to situations. I think anytime you have people working in isolation, they need access to a group like this. I presented a poster on our project at the southeast regional meeting and what struck me was the people who came by were not people at undergraduate schools. I had two women from R1's in the southeast who were very isolated. While they had their research contacts, they didn't have any women to talk to about the other issues, and so they were trying to figure out how they could plug into this, and unfortunately our focus was on women at the undergraduate institutions. It became clear to me that there are clusters of women who've been to the COACH workshops, and they've done all of those, but they don't have the ongoing network of people that they need. The other group that surprised me was a group of male chemical educators, at R1's, who are not doing traditional research, and they, the man I talked to, actually said, "What you're doing is exactly what I had to do to establish a lifeline when I shifted gears because of health problems. I want to be active still as a chemist, but I couldn't do it in a research lab anymore with chemicals. I had to do something else. I've found four other men like me at R1's and we've set up the same thing. And it's our lifeline. It's how we survive." It's clear that this model will work at undergraduate places. It will work with R1's. It will work with community colleges, the women who are there....that was another group that came and talked with me. There was a woman who was at a community college and she has completely different needs than I have, but she needs some women who are in the same boat to talk to. So I think the strategy of finding horizontal mentors goes in all these different areas, but each area....you have to have a group of people who are in the same boat...same stage in their career, or at least similar stages, in similar settings. I imagine there are some women in industry who have the exact same issues. (Summative interview)

In particular, several participants felt there was a huge need for horizontal mentoring in small (non-élite) liberal arts colleges. Indeed, one member expressed the view that supporting faculty at these institutions was important to securing the education of a large number of future American scientists as it is in these small, but important institutions of higher education, where undergraduate talent is fostered and supported, enabling them to persist to graduation and go on to graduate study.

I was fighting for survival when this started and I'm much farther up Maslow's ladder at this point. It took some convincing and some prying me out of that environment to get me to participate. I think the value to the long-term health of the scientific community is immeasurable. I mean, it's just huge.... There is a national need to nurture the little bitty departments because—and I'm sorry I'm going to go soap box on you for a minute—when I looked at the other schools in my area, there are a number of institutions that become no more than service department for biologists. In other words, they didn't have enough majors to sustain a chemistry major, so they're only there to teach general chemistry and organic for biology.... We graduate a handful of chemistry majors and we're talking about the biggest budget on campus when you add our library budget to our equipment budget. We cost more than any other department on campus and we produce fewer majors. That's something that most schools are going to eventually say, "Do we really need it?" The students that we're able to serve go to graduate school, get PhD's, do all those things, but they're students that need

that tiny little pocket of nurturing to get them there. They would be swallowed up if they went to an R1 straight out of high school, and they would never be scientists. Once we let them grow up in our protected little cocoon they're viable, valuable researchers at the PhD level. To let chemistry instruction become the province of the elite liberal arts and the R1's is to lop off a huge percentage of the potential scientists in this country, as has happened in physics. Physics has gotten to be too expensive for small colleges, so it's exceptionally rare to find a small college with a physics program. Chemistry is on that same road in a big way, and I don't think there is a national level awareness of that...to help protect that environment....whether it's a meeting grant that I could apply for from the NSF...because my institution can't afford to send me. I'm not talking about \$100,000.... I'm talking about \$1,500.00 to go to a meeting, or \$2,000.00 so I can take a student with me, or....even if we go just to be there, instead of to present....the value to that student, the value to me professionally of getting to meet other people, get out of my bubble, learn new things, maintain currency in my field.....if NSF would support those tiny little starter funds...they're little dollar amounts, but that could really improve the quality of what's available at the small schools. That would help, not only the individuals, but help us to find the leverage within our own institution to say, "We have value. Don't eliminate us because we provide a very valuable service to the scientific community by bringing some of these kids up the pipe that aren't ready yet at 18." The flip side of that is the R1's need it too. But the little-bitties need help too and deserve to be kind of protected for a while. The R1's need it to be a more humane environment for everybody [laughs] (Summative interview)

Some felt it could be replicated in any discipline.

I think this type of mentoring is independent of discipline. I don't think mixing disciplines within an alliance, I'm not sure if that would work.... I don't think anybody has felt too limited just with other chemists or physicists. What's important is the context, I think, like the "liberal arts college." I think we tend to be much more insular than the faculty at R1's that do need to get out with their research and generally have much more opportunity to do so. (Summative interview)

In discussing replicating and sustaining mutual-mentoring networks, participants commented on the broader and longer-term outcomes of supporting such initiatives and the tremendous cost-to-benefits ratio of recruiting, hiring and paying new start-up costs to replace unhappy faculty who have left compared to paying for travel to a couple of meetings per year and retaining happy, satisfied faculty members.

Interviewer: What are the issues to sustaining a mentoring alliance?

Alliance member: Well I think the key one is of course the time. And of course funding. Our [alliance] has been incredibly valuable. Will ours continue moving forward? I think so, I hope so, but I don't know for sure. I think that's a hard question, particularly without travel funds to go to meetings. I mean we've already thought about that. At the [professional society] meeting there is a workshop for women faculty, and they have one for senior women faculty to help with issues associated with conflict management, things like that. So, we're already talking about, in order to sustain ours, to plan to apply as a group to go to one of these senior women workshops on this topic, as way for us to keep our group going, but also as a way to encourage the [professional society] to start some of these networks within the workshops that they run. I think that's a really hard question on how to sustain them without the travel funds to get us all

together in the same place every once in a while.... The cost of not retaining somebody in the field if a woman gets overwhelmed or feels isolated and thinks, "I'm going to just do something else." We really can't afford to do that if we want to then grow a more diverse pool of those engaged in science. It's not very expensive on the scale of things, in terms of retaining people and what it costs. And really the investment that's already gone into training these women. I mean, most of us have that have gone to graduate school didn't pay our way. An NSF grant is probably what paid for us to get our training. So they've already invested five years' worth of salary and equipment and all of that in us and they've gotten quite a bit as a result, I would say. But part of what they spent their money for was to train us and to keep us in the field. Supporting a program like this, if it keeps us in the field, it's a small price, really. (Summative interview)

Indeed, a couple participants suggested that departments should bear the costs of supporting this type of initiative as a strategy to retain women faculty members.

Perhaps an HMA where the bulk of the expenses could end up back with the institution because they're trying to keep that faculty member because they won't have gender balance in their science departments. I think if someone came to my dean and said...we want to start...I think if there was an opportunity to go for a weekend of just, sort of, mentoring...sort of a retreat...and I wanted money to fund my participation in that retreat...which could be women full professors in chemistry...or in science...or whatever...that that might be treated as a professional conference, and that might be something that I could use some of my travel money for. (Summative interview)

While some participants in baseline interviews expressed the view that this type of mentoring was most beneficial for women faculty later in their careers, in summative interviews, nearly an equal number thought that horizontal mentoring benefited women at any stage in their academic career.

At later stages in a career, the horizontal mentoring structure becomes the most valuable. Frankly there just aren't many people further along who have been through this process as a woman. Campus-wide there are probably less than a half dozen women who have been here in an academic role longer than I have been here. (Baseline interview)

I think it's more important, I guess, I would argue, for people who feel isolated for one reason or another. It may be that people at liberal arts colleges feel isolated in general because they don't have somebody from their own research who's there. They come from a graduate program and now they're coming to a liberal arts college, which is a very different environment for them to try to figure out what it means to be a teacher-scholar. So I don't know if I would identify one particular group that would benefit from this type of mentoring than any other. I think the model that we need to promote somehow is to say, "You know, people at all stages in their career." If we want them, for example, to stay in the sciences, they need to have a network of mentors. Horizontal mentoring, I think, is a great way to build a network and to ask scientists to do that.... I would say we haven't focused on figuring out how to teach our students how to build a network and that carries over all the way through our professional lives. It's sort of something about the model of a scientist working alone in a lab that still oddly persists even though almost nobody works that way. I think something in the culture of science, we need to sort of admit that mentoring at all levels would help. (Summative interview)

Some alliance members said that this type of mentoring would be beneficial for junior faculty near to and just following their tenure review:

Interviewer: The NSF...there were a number of research questions to this project and the NSF is certainly interested in how this type of mentoring structure—a horizontal mentoring alliance—would be useful to other groups, or in other contexts. How would you respond to that? Who do you think this would be helpful for and in what context?

Alliance member: If a similar model could be devised, I would say it might be most valuable for those folks who have put in four years and still have two to go before tenure. They've made it through the initial reviews and are sort of right around tenure and right after tenure kind of thing.

Interviewer: And why is that? It seems to me that there are a lot of mentoring programs in place for junior faculty, precisely to make sure that people are headed in the right direction as they head toward tenure.

Alliance member: Yeah, but is this to keep people headed in the right direction or is this to keep people sane while they're doing so? (Laughs.)

Interviewer: Well, you tell me.

Alliance member: I guess the NSF is probably looking towards having them head in the right direction, staying within the field, and I guess the other side of that is what we did is very difficult when you have small children. You can't just say, "Okay, I'm going to [XXXX] for the weekend to meet with my alliance," because the other demands...you know, there's family demands at that point as well. I think if I had the opportunity to meet with other young women faculty at that stage of the career even.

Interviewer: Am I hearing that it would have been helpful to have more peer mentoring, even as a junior faculty member? That maybe this opportunity to address things in a holistic manner is important at any level?

Alliance member: Yes. I think that's why a mixture of people who, like from two years before tenure to two years after tenure so that there would be some who had just negotiated that process successfully and others who were coming up on it. But not brand new teachers, not people who were still trying to get through their first year of teaching. I think that's a crucial area, a crucial time for keeping women in the in the pipeline, keep women moving towards promotion. (Summative interview)

A few participants thought that horizontal mentoring could benefit men equally.

I think men at my institution would like something like this. I think my husband would. To have places to vent that's not his wife, you know, perspectives on what frustrates him, ideas for how he might find more joy in teaching gen chem for the 20th time. All of those things. Things that department heads struggle with in terms of staffing and scheduling and management issues that you're not trained to handle, really. You just learn it by the seat of your pants. I think he would definitely benefit from it, plus the fact that, to get away, meet other people, it would all be good for him. And child care issues! (Laughs). (Summative interview)

Others doubted that men struggled the same way that women did and did not think men would find horizontal mentoring beneficial, especially men at R1 institutions.

I don't know that men bond in the same way, or share personal challenges in the same way that women do, so I'm not sure they would, as a group, reap the same benefits that....our alliance spent the better part of an hour talking about somebody's mother's health care and how hard it was to handle dealing with mom and dealing with work...but that was tremendously valuable to all of us because that's coming down my road, too, at some point. Because when men meet each other they don't react to one and other the way that I see women doing, I don't know that the same model will work with the same value for the men. That's not to say that there isn't a different model that will work well for men in groups. They need to build relationships with other faculty outside of their institution as much as we do. Now...how do you make them do that is the question [laughs].... Even those who want to build those kinds of networks, you know, they just have a different approach. (Summative interview)

We are fairly focused, but I also try to picture like...suppose a random group of 5 male faculty were set together for the weekend...I think the conversation would have mostly focused on chemistry...they would try to find professional interests in common and there would have been a discussion about their research programs...we've hardly done any of that. We haven't talked science...partly because we are all in different research fields...but it's not like going to a conference and meeting up with a bunch of people who are doing the same thing. I think it would be very different if you took the same model and ...trying to do the same thing, and I think they would end up looking for common ground in the science...in the actual research their doing as opposed to, you know...children. I don't know I might be wrong with that. I guess it would depend on their family situation and how they're balancing all this stuff, and what they're doing in spare time, what they're doing to make sure they have more spare time...these types of things I think would not be talked about (Summative interview)

What Works?

Participants identified elements critical to the initiative's success and offered observations regarding "what works." One quarter to half of all participants identified the following as important to making the horizontal mentoring alliances effective in practice:

- Meeting face-to-face several times the initial year created bonds that lasted without in-person contact

I think the initial meetings, where we spent time that wasn't just meeting time, but did things together....you know, a meal, a hike, or something like that....that was really critical to bonding. It wasn't that we were just all attending a meeting and have a dinner, but as a group we spent a day and a half together...I thought that was really effective.... In the beginning when we were just getting to know one and other, that was just really important.... And now, I do feel like I have friends and that's really nice. (Summative interview)

To get this going, I think it's really essential to have face-to-face meetings...at least one, preferably two or three. I think having future meetings as a cohort could only be beneficial to our group...future face-to-face meetings. (Summative interview)

- A common basis at the nucleus, i.e., being at an LAC, all women, etc.

I think one of the real contributions of the project is an endorsement of horizontal mentoring. I have no idea if the project whether this is a completely unique idea here or if it's been borrowed and transferred from another work environment. Certainly it was the first time I've been introduced to the idea of horizontal mentoring. I found it very valuable personally, and so I think that that idea has traction beyond the project. I think that horizontal mentoring can happen really in any group that's pretty homogenous. To some extent, mentoring is often found to be most valuable in heterogonous groups. But, I think the fact that our group has been really quite homogenous has been...has pushed the efficiency. I think that that is an idea that can come out of the project. So, in terms of replicability, I think that any time you've got a relatively homogenous group you've got an opportunity for horizontal mentoring.... I think the lack of hierarchy is extremely important, the lack of evaluation that is...there is no evaluative component to these alliances...I think that's very important. When you remove that, now you give people the freedom to say things you can't say in an evaluative context. Particularly in small academic institutions, going beyond your institution is an opportunity to be free from the evaluations that just always occur within your institution. (Summative interview)

I certainly think women have unique issues, but I also think that probably everyone has unique issues when you come down to it. I think if we're to make something like this valuable you need to find common features with the people that are going to from that nucleus, you have to have certain things in common. I think that's what worked so well for this, is that we were kind of these senior women professors at small schools. (Summative interview)

I think the similarities—particularly over a relatively short-term project—having women at the same professional level, at the same type of institutions, in the same overarching academic discipline, got us to be efficient quickly. I've certainly participated in a lot of discussions with folks across sciences and across careers at liberal arts meetings, and you're always having to set the context for your particular academic discipline, your particular institution, it's unique particularities, you spend a lot of time on that. We could get through all of that stuff in one morning meeting...to meet each other in our alliance, discuss the nuances of our own particular institution, but we all have ACS majors.... We're not in exactly the same sub-disciplines, so I think, the relative homogeneity of our alliance group got us to be productive relatively quickly. (Summative interview)

- Getting outside one's institution; getting outside perspective and safety at a distance

I do think that going someplace to meet is a far better strategy, I know for me, than electronic meetings because you lose so much. When you're at your home institution,

they're always so many other things that are crying for your attention that the opportunity to be elsewhere and focus on other things was, I think, a very important aspect of whatever success we had. (Summative interview)

If I had to stand there and say why this is a great program? The relative isolation and the fear of any kind of repercussions if you complained to the wrong person within an institution. If you express any kind of feelings of inadequacy within the context of your own institution, that can all backfire and you really have nobody to talk to about certain things. People who are not in academics don't understand what it's like to be in academics. They think that we teach one course a day. I mean, "How hard can that be?" Then there's a sense that we're all just lollygagging around, and reading, and exploring ideas.... When, really, we're working our butts off to get this graded, to get a lecture ready, to deal with students who are having issues. Nobody else understands that but your peers. (Summative interview)

It wasn't so much getting away from the campus, but rather, the campus environment was not the right environment for what we were trying to do. But I will say that being someplace where we knew that nobody from our campus was going to walk by and hear what we were saying and those sort of things I think was an important part. (Summative interview)

I think anytime you can get away from your own institution and its cocoon, you're better off. But I think it is a change of perspective and it's an opportunity to really, applicably, step outside of your box to think about something else. (Summative interview)

- Unstructured time and conversation; really important revelations have come out of spontaneous conversation; you can't plan for these outcomes, they emerge organically

What I get this from my experience with the alliance is the unstructured conversational time. To be able to sit at dinner or sit somewhere for two hours in an afternoon and have conversation...to let that conversation go wherever it's going to go. That's where I've learned the most. I didn't know I was teaching too much, I thought everybody was teaching too much. Until somebody looked me in the face and said, "My God! You're kidding! You have that many hours?" It never occurred to me to challenge that. It's the kinds of things that you take as normal that you would never ask someone about, but that when you hear how someone else does it and you go, "Really? You get away that?" You know? Those are the things that are real pivotal moments, and you can't get that if every communication is target specific.... The big value is just unstructured conversational time, in a face-to-face environment. For example, at our last alliance meeting, we were just sitting waiting for the last person to show up and somebody was commenting about how their institution was cutting back their gen ed. requirements and they were going to be down to one science class for their general education requirement. They're doing that at my institution as well, and here there were four people in the room and three of them were facing the same curricular changes. I thought it was just my administration that had gone insane, you know? (Laughs.) ...It doesn't have to be often. Once a year would be good to have those kinds of random conversations that just open your eyes to something in a brand new way. I think there's value in that that is so hard to measure, but that's where the *big* value things happen....

95% of the value has been the off-task time. There's no way you can structure that, or control that, or hit those as agenda items....it's OK...now we're going to talk about balance of home and family...you know....it doesn't work. It's just got to be more organic. And that's just been huge for me. (Summative interview)

I think that part of this is just the opportunity to speak openly with people from another institution about the things that you've seen. There's a comfort level in both the...even the similarities of background and of experience, and the fact that we were distant from our own institutions, so we could speak candidly about those. That actually was a really refreshing aspect of this. (Summative interview)

- Relatively small amount of money (i.e., for travel to a conference) for LONG TERM benefits to the institution in retaining faculty

It's almost a survival sort of thing. When you are a woman in a small liberal arts college you are so isolated! And you know, 20 years from now that may not be true. Maybe even 10 years from now that won't be true. But you get to the point where you're just...running out of steam. Finding ways to reinvigorate people, I think, is critically important so that they don't just continue going through the motions, but rather are actively participating in the life of their college and their discipline, and things of that sort. You know, it really isn't that much in terms of money compared to the return. (Summative interview)

You know, institutions support faculty with travel funds to go to research conferences, but what they ought to do is also give them money for faculty development, and that's what this could be. Now, I know [another institution] is forward thinking institutions that does have these two pots of money and guarantees faculty money. We get \$450.00 per year for travel at [my institution]. What can you do with that? But anyhow, you're forced to decide, "Okay. I want to put that towards a research meeting or do I want to use that for this.... It's getting the institutions to recognize that faculty development, even at the senior level, is important, and here's a way to provide for it...to provide travel funds. It's a very small investment in a faculty member that you're going to have for years, it really is. If someone says this really transforms their entire life and they're bringing it back to their institution, that's a huge, huge, benefit from a small input of money. (Summative interview)

There are no more promotions now. So what is it you're going to do to keep vitality and enthusiasm for you career? That's where having the outside voices helping you I think is really critical. The benefits of getting away, even for a few days, they're really important. You know, just in terms of your satisfaction being here [at my institution]: not going home in tears after departmental meetings anymore, not going home and saying, "I need 3 martinis tonight!" (Laughs), or "Can we go the beach this weekend, I need a change of scenery" (Laughs.) You're hearing all the lines I give my husband when I've had a really bad day! [My institution] is a wonderful place, it really is, but it has this archaic underlying to it.... It's been very enlightening to finally catch on to what's going on. I knew that my career was not where I wanted it to be, but I couldn't put my finger on what was going wrong because I just lived with it for so long. I know I am a very different person now than when I was hired. When I was hired I was easy going, confident, secure in my abilities, and now I'm always second-guessing. I'm just finally

getting back to, “Damn, I’m good !” This has been an ongoing project now for six years, to try to get me back to remembering.... You go on sabbatical and everyone just assumes that you’re good and you have normal interactions with people. Then you come back and you drop in and say, “Oh gosh. I’m back here again.” Both times I’ve gone on sabbatical it’s been like just so refreshing.... It was just wonderful. I was suddenly treated with respect, asked my opinion, treated as a normal contributing scientist.... Every time I come back and I’m high as a kite and life is good, and then after about six months I’m back to, “It’s this again.” So, I need another sabbatical and I need for there to be some changes at [my institution]. So participating in this alliance, this is for us to be better at what we do, and be better role models for our students, learning how to take care of ourselves and our own needs, instead of just always saying, “Okay. I’ll do something else so the students are okay.” They see, they watch. They need to see us being comfortable and confident, as leaders within our discipline. It really don’t think it’s asking for too much for some funds to support this kind of thing. (Summative interview)

- NSF credibility behind/funding HMA gives the project and participation important legitimacy (discussed above)
- Important to set aside designate time to deal with this stuff, otherwise there is no time and it gets lost in the shuffle

We looked at everybody’s schedules and said, “Okay, this is the time we should meet,” and so we try to do that most semesters. I think that has been very helpful. So we all go, “Oh, I don’t have the time to do this.” But then after we get off the phone we’re like, “I’m so glad I did this!” It’s an investment in sanity. That’s sort of unbelievable. I don’t know how you measure that “sanity meter.” (HMA14)

- Funding to pay for travel so that they can get together This has been HUGE (discussed above)

One fifth of participants offered the following types of observations on what worked to make the horizontal mentoring alliances such a successful initiative:

- Localism and individualized mentoring to address specific circumstances; freedom to define for own group what works
- Horizontal mentoring, lack of hierarchy, flat structure that is inclusive
- Regular ongoing communication between Alliance members for group cohesion; regularly scheduled phone, Skype meetings every two weeks kept group members accountable, connected
- Being made to eat together in order to get reimbursement: seemed silly at the time, but BRILLIANT in practice; eating together broke the ice, really got people talking, bonding
- Delicate balance between homogeneity and heterogeneity of the group

In general, participants' observations on "what works" speaks to the ways in which the PIs originally intended and structured the alliances to operate and that these intentions and structures were effective. That is, horizontal mentoring implemented in the manner proposed was effective. Given participants' formative feedback regarding their wants, unmet needs and advice to the initiative should suffice for implementing and improving future iterations of such a mentoring initiative.

I think the way it's designed currently has some unique benefits. If you talk normally about mentoring and you talking about the traditional, vertical "top down" approach, that has benefit, lots of benefits. But not the same kind of benefits that we have in this horizontal approach. Because so much mentoring happens in that vertical way it's easy to see what the benefits are, and not to see what you're missing. And when you do it in this horizontal way you see, "Oh, there's all these other outcomes that we didn't even realize could be attained." So I think that's one reason is that is really just a *different* way. I also think another typical mentoring approach is within a discipline, like organic chemists talk to each other lots and lots and lots about all kinds of things organic chemists are interested in. And that has its benefit, but this approach, because it is cross-disciplinary, allows us to have *totally* different conversations. We tend to just get into our little sub-disciplinary holes and live in those little boxes and we're very comfortable with the things that we are used to and are interested in.... But when you get out and you're not talking about those things, you suddenly realize, "Wow! There are all of these other things to talk about that are broadly applicable." (Summative interview)

Finally, at the end of summative interviews, the external evaluator asked participants to summarize their participation in the initiative and identify what was important the NSF learn from this initiative. Often, these "Tell the NSF" comments serve as overall evaluations of the initiative, highlighting the principal impetus of the initiative NSF ADVANCE program—the advancement of women science faculty—and significant outcomes of the Horizontal Mentoring Alliances.

Sixty-five percent of alliance participants would have the NSF know that this initiative was extremely valuable:

It's definitely worth the NSF's money and time and effort. And the people who were involved, it's worth the time and effort. (Summative interview)

I think the biggest change would be those ideas that I've gotten from the other people. They haven't necessarily been ideas helping me be a better researcher, or a better scientist, or a better whatever, but, "It's okay to pursue this interest in teaching teachers," for example. I think that it has made me appreciate my own institution, seeing how [my institution] stands with respect to other institutions in terms of what it offers, what opportunities that it has allowed, and the way it's encouraged me. I think that's always a good thing. For those who, in comparison, found that they did not have the best conditions for teaching and research, some were able to make some changes at their institutions. I don't know if it's made me a better teacher. [Long pause.] It's really hard to answer that question.... If I had to stand there and say why this is a great program? The relative isolation and the fear of any kind of repercussions if you complained to the wrong person within an institution. If you express any kind of feelings of

inadequacy within the context of your own institution, that can all backfire and you really have nobody to talk to about certain things. People who are not in academics don't understand what it's like to be in academics. They think that we teach one course a day. I mean, "How hard can that be?" Then there's a sense that we're all just lollygagging around, and reading, and exploring ideas.... When, really, we're working our butts off to get this graded, to get a lecture ready, to deal with students who are having issues. Nobody else understands that but your peers. (Summative interview)

I feel incredibly positive about it. I mean, I have no doubt that, sort of, the steps and the direction I'm going in have really been enabled by the alliance. I didn't, and it could be just because of my particular stage, I felt fine previously...I wasn't in any dire shape. I wasn't having a huge conflict with a colleague or stymied with promotion. I mean, I had problems. Like I was being underpaid. But none of those things were totally getting to me. So, I wasn't under a rock (laughs), but I just feel like I'm probably getting to the next stage, or goal, much faster as a consequence of this alliance.... What I would tell the NSF is that this really addresses, I think, the issues of why we *aren't* seeing women in senior leadership. That there's networking that's required to get to that next stage and those networks are *not* in place for senior women, and need to be developed and nurtured if they want to really see women going on to more senior positions. Just having the time to discuss those issues, talk about nominating other women...I really do believe that that's one of the reasons, one of the primary reasons, we don't see women higher up. (Summative interview)

What I would say is, first, in some sense we started with this as the sense of isolation. I mean, my discipline in particular, we're a small department in liberal arts colleges. Not generally as small as three, but can be maybe five. And the numbers of women faculty in my discipline are not high. I don't remember what the numbers are now in terms of percentage of women faculty in liberal arts colleges at other places...but if you have one in a faculty of three then you're already at 33% [laughs] versus one in a research university where the most common number of women faculty in my discipline in any department is one, followed by two. There's just not a lot of us in the field.... I didn't ever have any interest in leaving my discipline or leaving my institution and doing something else. But having a cohort of folks that I can go to that's going to give me advice that somebody from outside is giving you a different perspective...it builds confidence. It's something that is really intangible but makes such a big difference in terms of satisfaction in your job. I think that was very valuable in terms of feeling like I'm doing something that I really love—which I am—but when I get really tired or feel like I'm going to pull my hair out, it's very useful to have a support group in some sense, that's outside your own campus.... (Summative interview)

I think [this kind of mentoring] isn't seen as being a regular part of the professional realm. It's seen as being something different. And it is something different. And it's incredibly valuable! And we have experienced it. Others might poo-poo the idea, unless they happen to experience it themselves. It's just that because it's different and because it's not part of the typical mainstream profession it seems like it needs some greater backing or support to give it legitimacy. (Summative interview)

I think one of the real contributions of the project is an endorsement of horizontal mentoring. I have no idea if the project, whether this is a completely unique idea here or if it's been borrowed and transferred from another work environment. Certainly it was the first time I've

been introduced to the idea of horizontal mentoring. I found it very valuable personally, and so I think that that idea has traction beyond the project. (Summative interview)

About one third of participants stated that money, itself, could not buy the gains they took away from participating in the initiative. Such “soft gains,” in fact, characterize the large majority of benefits reported by participants.

I think the biggest change would be those ideas that I’ve gotten from the other people. They haven’t necessarily been ideas helping me be a better researcher, or a better scientist, or a better whatever, but, “It’s okay to pursue this interest in teaching teachers,” for example. I think that it has made me appreciate my own institution, seeing how [my institution] stands with respect to other institutions in terms of what it offers, what opportunities that it has allowed, and the way it’s encouraged me. I think that’s always a good thing. For those who, in comparison, found that they did not have the best conditions for teaching and research, some were able to make some changes at their institutions. I don’t know if it’s made me a better teacher. [Long pause.] It’s really hard to answer that question.... If I had to stand there and say why this is a great program? The relative isolation and the fear of any kind of repercussions if you complained to the wrong person within an institution. If you express any kind of feelings of inadequacy within the context of your own institution, that can all backfire and you really have nobody to talk to about certain things. People who are not in academics don’t understand what it’s like to be in academics. They think that we teach one course a day. I mean, “How hard can that be?” Then there’s a sense that we’re all just lollygagging around, and reading, and exploring ideas.... When, really, we’re working our butts off to get this graded, to get a lecture ready, to deal with students who are having issues. Nobody else understands that but your peers. (Summative interview)

I would say thank you very much for supporting this ability to network with other women. It’s allowed me to feel far less isolated and alone. It’s allowed me to experience many resonant phenomena and come up with new ways that I can deal with issues that present themselves, and new ways that I can provide suggestions for my younger colleagues and my students when they go out and might face similar issues. I think the support and creativity that’s fostered by this horizontal mentoring alliance will do much to support our field. (Summative interview)

I think that it’s one of the most useful professional development activities that I’ve ever participated in. And, as I said, I do this kind of thing. I know what I’m talking about. (Summative interview)

The financial support to get people to places where they can get together, for small schools any release from the financial burden of attending meetings.... If there were meeting funds, or travel funds that people could apply for to create small working groups that would pay for a night in a hotel and transportation for half a dozen people to get together.... The benefits to all parties involved are far beyond the dollars that you put into it. How to make that opportunity available to people with the blessing of NSF, gives you permission to step out of your life and your department. To say to my department chair, “I have to go on an NSF trip this weekend. I can’t do x and the other thing,” is a blessing from above that every department head will listen to.... Call them summit meetings, call them retreats, call them whatever you want to call them...call it a meeting. They’ll like it better. To just put five people in a room for an afternoon or two days, the value of that is well beyond the dollars that are spent. The blessing from above is essential to

that because I cannot see any person in their right mind, at an R-1 institution, saying, "I'm going to go off for the weekend to meet with the girls." And it's such a valuable use of time. To have the NSF blessing of a summit meeting of six people, where there's not necessarily an agenda required, or maybe there are two talking points that need to be covered. A brainstorming session or a think tank. Call it whatever you want to that makes people sit up and go, "Oh, well that must be important." Pull six different people out of six different institutions and sit them in a room and let them get to know each other. That will pay off in such huge ways, but I don't know how you can sell that to any administrator. I just don't know how to sell that and if you could sell it to NSF and NSF would bless it, then your department would allow it. But, without the NSF blessing the department is never going to say that's a good use of your time. So it's really a twisted up knot [laughs]. And money couldn't buy...yeah, they spent how much money to send me to how many meetings and sit in hotel lobbies for how many hours? But the cost of that is small compared to the ultimate value. (Summative interview)

For one thing, it opened up my eyes to things that I never realized were impediments to either my career or to my junior faculty, and so I think having these types of programs makes for a healthier climate overall. I think ultimately that's what you want. You want not just necessarily for women to succeed, but for everyone to feel like they can contribute what they can, and people are not going to be happy in an institution that doesn't value you. These initiatives, like this, just make it so that the positive things that can come out of it become evident. It may not be obvious to you because you're so wrapped up in your own world, in your own institution, because you're, you know, trying to be everything to everyone. You need someone from the outside sometimes. You need some fresh blood, and undergraduate institutions just don't have that much influx. You know, like I said, sometimes people are there for years and you don't hire new people, so you kind of have the same story kind of going over, the same song going through your head. (Summative interview)

One participant noted that supporting senior women science faculty is important since they serve as role models to their students. She felt this was particularly true for women science faculty of color and students of color in science, technology, engineering and mathematics (STEM) majors.

I would say that it's important to have women at the senior ranks, that can function at a high level, both in teaching and scholarship, and service, and that I think that the way to accomplish that is to make sure that, I think that it's important to have faculty at other institutions that can support and mentor you in ways that help you achieve that endeavor. I also think that for us to be good role models for junior faculty members that we have to have a pretty smooth running machine, and sometimes we fall off the track because there aren't many women in chemistry, and if we want more women in chemistry then you've got to have that sustainability..... I think once you're tenured doesn't mean the mentoring should stop because there are different phases that you go through, even post-tenure. You know, in terms of, "Now you're expected to do different things." You're expected to take on more service, maybe you're expected to help change the curriculum. How do you approach those things?.... it's also important to have somebody as a role model. Seeing female faculty members that have reached full professor is no small thing. It's not the same thing. It's like if you want minorities to be in chemistry you need to have a face that they can recognize. They see themselves being that someday. I mean, I even see it in having a Black female chemist [at our institution]. I can't tell you how many Black students are in her office all the time, because they see her as a role model. It doesn't matter if I'm an advocate for minorities, they don't see my face as theirs. And it's important to have her

there because more kids are going to relate to her. I think that's true even—not just for undergraduates—but I think for faculty here. I mean, I know I was offered a job 20 years ago. There were 50 faculty there. I'm the only woman and I'm thinking, "Nah, I don't think so!" I think it's important to have a role model. Yes, I've been mentored by men. I would agree that men can mentor, but it's not...they don't face some of the issues.... Like I don't know when we talked about raising your children and how you're expected to raise the children, and do research, and do teaching, and do all this. I'm not sure our male colleagues, not all of them would really understand those kinds of challenges. So is that role modeling? I think you need a role model, it's not about mentoring. Mentoring and role modeling are different. (Summative interview)

One fifth of participants said that the initiative was effective in that alliance members reported gaining real practical and applied understanding of what leadership is about and, as such, was important in supporting the advancement of women in leadership roles and participation had helped to advance her career positively.

I feel incredibly positive about it. I mean, I have no doubt that, sort of, the steps and the direction I'm going in have really been enabled by the alliance.... I'm probably getting to the next stage, or goal, much faster as a consequence of this alliance.... What I would tell the NSF is that this really addresses, I think, the issues of why we *aren't* seeing women in senior leadership. That there's networking that's required to get to that next stage and those networks are *not* in place for senior women and need to be developed and nurtured if they want to really see women going on to more senior positions. (Summative interview)

That this is a very, very valuable experience and it's a way to provide an opportunity for more people to "go for it." You know, it's made me more productive. I'm not sure about my colleagues, but I know we're more productive, more assertive, more confident in ourselves. I just found the whole thing a very valuable experience. If there was a way for more people to have this opportunity I think it would be a benefit, probably to the academic world in general. Just making us all more self-conscious people..... The whole culture of "You can't do anything else because you're a scientist. If you're not doing science 24 hours a day, seven days a week, then you're not legitimate." And I did run into that, that I shouldn't participate in the college theater because I'm supposed to be doing research. And this was coming from the Provost who was a workaholic. He was still an active participating scientist while he served as full-time Provost at the college. So it was kind of hard to tell him no, because he was doing it all. But most of us couldn't operate like that. I needed my private time and my private time was working in the theater.... We don't have to do it all and we need time for ourselves. I was laughing at a student in class this morning because we did presentations yesterday and one of the comments they made about him was the hair clip. And he said, "Yeah, but I haven't had time to get a haircut!" I just laughed because here it was, this whole thing of we don't have time to do all these personal things during the day. We have to do it when we leave school, for example, getting a haircut. You never see an administrator that needs a haircut! I just howled because I was sitting there at the time, needing a haircut! (Summative interview)

But it's really been through this group that I feel like I have gained a broader knowledge base about what leadership means, what it can look like, how do you do it, kind of thing. And so, I think, if they ever, ever, want women to be in leadership positions they absolutely have to

provide these kinds of opportunities because we're not getting it other places. (Summative interview)

One of our major issues where we've been really helpful to each other is about research. We're all quite far from our graduate school research. And this came out of our very first meeting. Everybody kind of introduced themselves and talked about what they did, what kind of research they did, what kind of family situation they were in, and it became clear in the course of that conversation that everybody was having issues about, "I'm not doing the kind of research I was doing in graduate school, is that okay? Should I make an effort to go back to that? Should I try to do something else?" Usually people were doing something else, but they didn't think of it as research because it wasn't the kind of research they were doing in graduate school. So, does curriculum development count, or does my work on gender count? Everybody's issue was a little bit different, but they were all basically clustered around that. So we agreed to have our next meeting...and we focused on that.... We spent a whole afternoon going over everybody's proposals, listening carefully to each other and talking about it. It was just unbelievably useful. Each of us, our decisions were different. People decided on different things. But everyone went away with new ideas, and kind of new energy, and some concrete things. I was trying to decide whether I wanted to continue working on gender and science, or go back and do some more traditional research. And they said, "If you want to do traditional research, do it!" I ended up, very shortly after that, arranging a sabbatical where I was learning some new things, a different field but going back to solving equations, which made me very happy. Another woman was interested in doing something in energy and I said, "I know a guy at a [national research laboratory]. I'll give you his email address. And she's going there in July to do a sabbatical there. It's just classic networking..... We were all kind of agonizing about this and being embarrassed because, "Well, I've got this lab that I haven't been in for years and it's making me feel really guilty, but I'm not really interested in that anymore." It was all versions of the same thing but because we all understood it, we could really be helpful to each other. So that primary objective of helping women towards their professional advancement really has really been met by this initiative. (Summative interview)

One participant would have the NSF know that it is precisely this type of initiative that, being effective and measured by both soft and hard gains, will work to change the very issues of interest to the NSF ADVANCE program: promoting the advancement and diversity of women science faculty.

The NSF has long acknowledged that there are benefits to research that go beyond narrowly defined intellectual milestones being reached, and they've always talked about the social impact of research, not always, but for the many years that I've seen grants reviewed. And so these principally socially impactful grants are not weird and special, they're really part of the universe of grants, and part of the goals of any kind of grant that they give. It's really heartening that the NSF has had this program where they've acknowledged that research comes from human beings, with human values and human needs, and people who have genders, and who have races, and that this is not just sort of a trivial aspect of the people who are doing the research, but this is an absolutely essential component to anyone who does research. They all have gender, they all have race, and they all have life situations particular to gender. So, the fact that the NSF acknowledges this thing that most people find absolutely, stunningly obvious, but scientists have this way of saying, "Well it doesn't matter. We're all brains in jars," is very heartening. It does credit to the NSF that they acknowledge that people who do research are

human, and that they need all kinds of supports that are beyond just a budget line for material and equipment in the lab. This is one of those great leaps forward, where they've really been visionary. This is what scientists need to keep doing good science. And in this case, people who teach in small colleges need to both keep teaching and keep turning out good science on the small college level. And, we want to be sure that those people don't fade away and disappear, and that the pendulum doesn't swing back and we missed our opportunity. White guys, who have a wife at home, who are doing all the science—we're really sure we don't want to go back to that. So we're going to ensure the health of the infrastructure, the human infrastructure, by keeping a program like this alive. It's absolutely essential to keep telling people, "You're people. We know you have human issues, And part of our funding mission is to help you resolve those issues and keep doing what you do well, which is produce scientists, in our case as a small college, produce amazing students who go on to grad school and enable things to get done. There's a lot to be had from the softer measures that come out of this type of an initiative that are extremely important, in terms of a professional development point of view. It has tremendous payback to the institution, well beyond the investment. Any little thing you can do to be family friendly, to be, o give people a break if they need a family leave or something...that pays back like ten-fold. If the costs of hiring a new person are inestimable, the cost of me retiring too early because I'm burned-out and forcing my school to search for a startup, you know, that's terrible. Replacing an experienced professor with a brand new one ...years, even decades before the experienced professor is maybe going to wind down and retire, that is just so costly for everyone concerned. Should you actually help save a woman, a woman of color in this job, you've totally changed the world. Again, I want to say that is where we need to be looking...to change the world in that way. (Summative interview)

Summary and Conclusions

Members were primarily motivated to participate in the Horizontal Mentoring Alliance as a means to network and receive advice from other senior women science faculty. Several, however, mentioned other reasons to participate, including the desire to mentor women faculty, as well as the opportunity to extend their professional circle, while also reaching beyond the commonly-felt isolation of working at rural liberal arts colleges.

Overall, just under half of participants (45%) reported that they are happy with the career and institutional context and another 35% said they were very happy with their job. They appreciated the liberal arts context and working closely with students. However, two members were exploring the option of leaving their current position, and looked to their alliance for good advice on how they might move their career forward. Eighty percent of participants stated, "I am so much better off now than before joining the alliance" and 60% said that they had "received many more benefits than I expected." Given that participants reported no substantial changes at their institutions and departments during the time of the initiative, this gain is an important finding.

Nearly three-quarters of participants noted that no formal mentoring program existed when they were hired by their institution. Just over half said that a mentoring program had been recently established at their institutions. A couple alliance members commented on an institutional culture that discouraged mentoring of any kind, considering it improper interference in others'

personal and professional lives. Several individuals had experienced informal mentoring with varied degrees of success. Despite heavily male-dominated institutions, several also recalled, and were grateful for, colleagues who made a concerted effort to help them early on in their academic careers. In summative, interviews, a majority of participants emphasized the importance of receiving good mentoring, at all stages of one's career. They noted, again, the particular gap in effective mentoring for senior women science faculty: in all, 80% of participants observed a tremendous need for mentoring for senior faculty members.

Participants made comparisons between working at a liberal arts college and a large research university. Most argued that the liberal arts context demanded more work in more and unrelated areas than expectations for faculty at large research universities. Too, a relatively common theme was the multiple ways in which liberal arts colleges tended toward isolation: they were located in remote locations; women faculty members were a definite minority, and socioeconomic status was fairly narrowly represented. Some expressed frustration at the limited opportunities for professional advancement: there simply weren't that many positions that came open and administrative positions were generally viewed as conferring negative status on women.

About half of participants commented that their institutions were "a cultural backwater," and though their male colleagues were credited with being supportive, in general, the quality of support was judged to be unenthusiastic, overall. Most male faculty colleagues didn't say much about anything one way or another, and they were characterized as largely oblivious to any of the issues that women faced as the (usually) lone female in their department. Participants noted that decision-making practices still tended toward "a good ol' boys" club, occurring "on the basketball court," "in the gym" or "in the smoky faculty lounge over donuts and coffee," without their input. Only a couple alliance participants said that women served in senior administrative positions at these male-dominated institutions.

A majority of participants said that their departments were aware of their participation in the Horizontal Mentoring Alliances. However, several pointed out that they were keeping their involvement "low profile." While a few mentioned that their department chairs or other colleagues and administrators were curious about their work with the initiative and asked questions, as noted previously, their male peers generally showed little or no interest in any aspect of their professional work.

Alliance members offered only a small number of comments specifically related to gender issues that were seen as problematic, despite the fact that the very large majority of Alliance participants were the first woman to be hired in their department. A few commented that women tend to be less confident than their male colleagues. A few also described years of being the only role model for women students in their department or of being the "token mom trotted out

at events.” A couple participants noted ways in which women tended to cope with being the lone woman in science: working harder and being more considerate and conciliatory towards their colleagues.

Participants said that they were in fairly regular communication with other members by phone and email. Some also mentioned using electronic networking and conferencing software, including Sakai, whiteboards, Merratech and Skype. Almost all described their first meeting as “talking non-stop all weekend.” They reviewed CVs, established short- and long-term professional goals, and discussed teaching load and equity. Initial face-to-face meetings enabled Alliance members to establish the bonds of trust and friendship that carried over and enabled future support given at a distance.

Alliance members strongly emphasized the benefits and outcomes they had taken away from participating in the Horizontal Mentoring Alliance. Indeed, participants’ positive observations far outnumbered any other category of comments. Alliance members detailed a wide range of gains, but most commonly described the benefits of: sharing and receiving advice and support among a group of peers; increased confidence to speak up for oneself and accept due recognition for professional work and contributions; permission to focus on one’s professional goals and development; making genuine friendships that would last beyond the life of the initiative; the transfer of gains and lessons learned to their own institutions, departments and students; and, of course, relief of their isolation. Smaller numbers of alliance participants offered fewer numbers of comments on a variety of gains, such as opportunities for professional collaboration and the opportunity to expand professional interests, among others. In strong contrast, participants offered only a handful of comments that indicated a gain had not been made, or that the gain was “mixed,” or qualified in some manner.

Alliance members offered very few observations regarding difficulties encountered in participating in the initiative. Problems were primarily due to time, geography or group cohesion, though technology issues posed difficulties for a few.

Alliance members offered similarly few observations regarding their wants, unmet needs and advice for improving future iterations of the Horizontal Mentoring Alliances initiative. Primarily, participants recommended providing more direction at the start to better define alliance members’ roles and suggested topics for exploration. Being “task oriented,” participants often struggled with the open-endedness of meetings, but ultimately cited the organic, unstructured time, as being the time in which the benefits of horizontal, peer mentoring occurred.

Alliance members saw the Horizontal Mentoring Alliance mentoring model as highly replicable in a variety of contexts, as well as for any group that finds itself marginalized. Similar mutual peer mentoring alliances could well be applied to research universities and master’s granting

institutions, to community colleges, among other contexts. Participants expressed the view that not only did senior women science faculty benefit from this type of initiative, but so would women at any stage or position in their academic career. While some participants expressed the view that men at liberal arts colleges might benefit from mutual mentoring, generally, speaking, it was believed that men would not benefit from participation in the same ways that women did.

Overall, results from the analysis of the baseline and summative qualitative interviews with participants indicate that the Horizontal Mentoring Alliances initiative has been highly successful in meeting its objectives and in answering questions to the proposed research questions on replicability and sustainability. From alliance members' observations, it is clear that the initiative has provided participants opportunities to: exchange experiences and ideas with and receive advice from and network with other senior women science faculty in liberal arts institutions; engage in career development discussions aimed at enhancing leadership, visibility, and recognition on their campuses and in the broader academic community, and, ultimately, led to the personal and professional advancement of senior women science faculty—achieving the goals of the NSF ADVANCE program.

APPENDICES

Appendix A

Baseline and Summative Interview Protocols

NSF PAID ADVANCE Horizontal Mentoring Alliance

Baseline Interview Protocol

August 2008

Goals: This study is an external evaluation of the NSF PAID ADVANCE initiative, "Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Scientists at Liberal Arts Institutions." This initiative is designed to provide alliance members an opportunity to: network with senior women science faculty in liberal arts institutions; to participate in career development discussions and workshops aimed at enhancing leadership, visibility, and recognition on campus and in the academic community; and to develop mentoring paradigms that can be used on their own campuses with students, junior female faculty colleagues, and other senior female faculty colleagues, among other benefits. The goal of the evaluation is to determine the extent to which this initiative is meeting its objectives.

To begin, establish:

- Institution and length of time working at institution
- Current position and length of time working at current position

Initial career objectives/experiences; Current institutional context

When you started college, what were your career aspirations? What were the main influences on your career choices (important female role models)? Did you always intend to go to graduate school and work in academe? Did you consider pursuing a career at an R1 institution/university? Industry? What attracted you to work at a liberal arts college? How have your career expectations matched your experience? Are you happy with your choice? Mixed feelings? Why?

What difficulties did you face as a woman at a LAC? What's been most challenging about working at a LAC? Most rewarding?

Check/listen for issues of:

- Gender?
- Two-body problem?
- Smallness (small departments, fewer resources, fewer options to solve difficulties, governance, greater time, teaching, service demands)?
- Geographic isolation?
- R1 vs. PUI: status as second class citizen vs. R1 researchers?

When you were first hired, did the department provide good help in getting you started? Did you have any mentors who helped you? Did you ask for mentoring? Was it offered? Did it exist?

How have your needs/expectations for mentoring changed over time? Has faculty mentoring as a departmental/institutional objective changed over time? Do you currently have mentors at your own institution that you draw on regularly (or time to time)? In own or outside dept?

What would you say is the representation of senior women at your institution? Are they in positions of leadership? President? Chancellors? Provosts? Deans? Chairs?

Do you know if your institution has instituted a specific mission statement that is aimed at increasing women's representation?

Participation in the horizontal mentoring alliance

What attracted you to participate in the horizontal mentoring alliance? Were you struggling with issues that made participating in the horizontal mentoring alliance attractive or that you thought this type of mentoring would ameliorate?

Check/listen for:

- issues of isolation within the institution/department
- other senior women in depts. (rank/position)
- career issues within LAC?
- career change, i.e., to another LAC?

Structural issues of alliances

Status/Rank of alliance members

Are there benefits to having a broad range of rank/status present in each alliance?

Are there difficulties to having a broad range of rank/status present in each alliance?

Value of a horizontal vs. vertical structure of mentoring and its impact on your career?

Geographic structure

Are members in your alliance close geographically?

How has geographic proximity/distance helped/hindered alliance participation?

What are the benefits of having someone at a distance vs. someone at your own institution?

Check/listen for: anonymity, safety, etc.

What are the benefits of a horizontal vs. vertical mentoring structure?

Check/listen for: too few on women on own campus at similar level, peer mentoring, appreciation of common issues, etc., ongoing mentoring vs. “one-shot” workshop, etc.

Communication

How often do you communicate with other alliance members? Planned? Agenda for each meeting? Unplanned/spontaneous?

Greater interaction with some alliance members more than others? Why?

How have you communicated? Email? Phone? Use of web cam, whiteboard, scype? SAKAI?

Difficulties with communication? Time zone differences? What to discuss/work on that’s mutually relevant?

What topics/issues are important/have come up/are discussed by your alliance? What percent of time on what topics? Different issues for different individuals?

Check/listen for:

- advice of different types (i.e., being a dept. chair, balancing stress-personal and professional lives, leadership, dealing with difficult people in dept./on campus, etc.
- issues of: teaching expectations in the context of LACs, staying current with pedagogy, what counts for promotion, balancing teaching with research, with service work, grantsmanship, career planning, etc.

In your opinion, which career challenges facing faculty at liberal arts institutions are most effectively addressed through electronic communications? What is best addressed by in-person communication?

Benefits of participating in the alliance

How many times has your alliance met?

What areas of need are met by participating in the alliance? How does the mentoring you receive in the alliance differ from mentoring you’ve received in the past? What have you found to be the benefits of the alliance so far?

Check/listen for:

- benefits of peer mentoring? Sharing of ideas, experiences, and expertise?
- value of female over a male mentor?

- Increased interaction with other women from LACs, Beyond particular alliance members?

What changes have you noted in yourself as a result of participating in the alliance?

Check/listen for:

- empowerment to accept accolades, appropriate credit
- development and articulation of short- and long-range career goals and the formulation of action plans to attain the stated professional goals?
- encouragement/support to take action? To NOT take action?

What changes have you noted in alliance interaction itself over time?

Changing nature of relationships, i.e., professional to more personal? Other?

What are some of the outcomes of participation?

Check/listen for:

- Awards, promotions, new committees/professional involvement, etc. empowerment to accept accolades, appropriate credit

Has the mentoring alliance enabled you to address any of the unique challenges present at liberal arts institutions, i.e., strong expectations of service, emphasis on teaching, small departments with few colleagues in one's area of specialization, etc.? If so, which challenges were most effectively addressed by the alliance?

Has the horizontal mentoring alliance provided effective strategies for addressing any of the unique leadership opportunities and career challenges present at liberal arts institutions? How?

What are your goals? i.e., beyond full professor? For the future? Has the horizontal mentoring alliance expanded your horizons, thoughts about what you might like to do/achieve? Professionally? Personally?

Have the benefits of the horizontal mentoring alliance extended beyond professional gains? Been useful in other areas/contexts of your life?

Plans for future alliance activities

Future meetings?

Bringing in consultant/expert of some type?

Workshops?

Powerpoints that can be shared between alliances? For future dissemination?

Institutional support/impacts

Do others (especially other senior or ranking members at your institution know that you are participating in this alliance? Have they commented about it? Positively? Negatively?

As a result of being involved in the alliance, have you done something at your home campus (i.e., more mentoring—and of whom)? Sharing (formally or informally) information in depts., among colleagues? (Meetings, presentations, conversations, etc.)

Because of your involvement in the alliance, are there any activities that have benefited (or will benefit) other individuals, the department, or the broader campus community?

Replicability/Sustainability

Do you think the horizontal mentoring alliance is a good strategy for women science faculty in LACs? Why so?

What are the challenges to sustaining this type of mentoring?

Listen/check for: issues of time, cost of travel, too distant from alliance member's context to help, etc.

What are the challenges to replicating this type of mentoring structure?

Listen/check for: too few women, issues of time, cost of travel, etc.

Summative

What about the alliance is working? What about the alliance is not working? What is missing?

So far, what would you say has been the impact of the horizontal mentoring approach on your career?

In your opinion, what's the optimal time of participating in an alliance? Ongoing? Beginning, middle, end?

What advice would members of the alliance give to women who are following the same path?

One issue that the NSF is particularly interested in is how the structural strategy of a horizontal mentoring alliance fulfills needs that cannot be met by other types of mentoring strategies. What, in your opinion, is unique about the horizontal mentoring alliance and what it provides that you can't get otherwise? (Types of mentoring, specific foci to different mentoring initiatives, ongoing mentoring vs. "one-shot" workshop, etc.)

Does the horizontal mentoring strategy meet needs for and/or operate differently for women faculty at liberal arts colleges, as compared to women faculty at R1 institutions?

Another issue that's important to the NSF is to understand ways in which mentoring, itself, operates differently at R1 institutions/universities vs. LACs. How would you answer this question?

Other comments/suggestions?

Thank you for your willingness to be interviewed!

NSF PAID ADVANCE Horizontal Mentoring Alliance

Summative Interview Protocol

March 2010

Goals: This study is an external evaluation of the NSF PAID ADVANCE initiative, "Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Scientists at Liberal Arts Institutions." This initiative is designed to provide alliance members an opportunity to: network with senior women science faculty in liberal arts institutions; to participate in career development discussions and workshops aimed at enhancing leadership, visibility, and recognition on campus and in the academic community; and to develop mentoring paradigms that can be used on their own campuses with students, junior female faculty colleagues, and other senior female faculty colleagues, among other benefits. The goal of the evaluation is to determine the extent to which this initiative is meeting its objectives.

Benefits of participating in the alliance

What are some of the most significant outcomes of your participation in your alliance?

Look for both professional and personal impacts

Were these outcomes ones that you expected or were seeking when you joined?

Were there outcomes that you anticipated but never realized?

What changes have you noted in yourself as a result of participating in the alliance?

What changes have you noted in alliance interaction itself over time?

Changing nature of relationships, i.e., professional to more personal? Other?

Has the mentoring alliance enabled you to address any of the unique challenges present at liberal arts institutions, i.e., strong expectations of service, emphasis on teaching, small departments with few colleagues in one's area of specialization, etc.? If so, which challenges were most effectively addressed by the alliance?

Has the horizontal mentoring alliance provided effective strategies for addressing any of the unique leadership opportunities and career challenges present at liberal arts institutions? How?

Have you changed/clarified/reinforced your professional goals as a result of your participation in this project? What aspects of the alliance either helped or hindered your professional development?

Have the benefits of the horizontal mentoring alliance extended beyond professional gains?
Been useful in other areas/contexts of your life?

Network gatherings of alliances

If you were able to attend either of the gatherings of the chemistry alliances at the New Orleans and/or Salt Lake City ACS meetings, do you find those gatherings useful? Would you have liked to interact more or in different ways?

If you will be attending the summit meeting in June, what do you hope to gain from that experience?

Institutional support/impacts

Do others (especially other senior faculty or administrative members at your institution know that you are participating in this alliance? Have they commented about it? Positively? Negatively?

As a result of being involved in the alliance, have you done something at your home campus or beyond (i.e., more mentoring—and of whom; leading policy change, organizing conversations about campus issues, giving presentations at conferences about your experiences, etc.) to address the professional development, success, visibility, and/or recognition of women faculty (particularly STEM faculty)?

Because of your involvement in the alliance, are there any activities that have benefited (or will benefit) other individuals, the department, the broader campus community, or the overall higher education landscape?

Replicability/Sustainability

Do you think the horizontal mentoring alliance approach would be an effective strategy for other women science faculty in LACs? Why or why not?

What are the challenges to sustaining this type of mentoring? How might those be addressed?

Summative

If you feel that your alliance participation was a successful experience, what elements of the alliance or the overall project contributed to that success? If you feel that your alliance was less than successful, can you identify any specific reasons why the experience was not beneficial?

One issue that the NSF is particularly interested in is how the structural strategy of a horizontal mentoring alliance fulfills needs that cannot be met by other types of mentoring strategies. Now that you have experienced several years with your alliance, what, in your opinion, is unique about the horizontal mentoring alliance and what can it provide that you can't get otherwise? (Types of mentoring, specific foci to different mentoring initiatives, ongoing mentoring vs. "one-shot" workshop, etc.)

Are there different needs for women faculty at liberal arts colleges, as compared to women faculty at R1 institutions that a horizontal mentoring strategy can best meet?

Are there any final comments that you'd like to make about your participation in this project?

Have I missed anything important? Anything you'd like to add?

Thank you for your willingness to be interviewed!

Appendix B

Table 15: Gains not made

Table 16: Mixed or qualified gains

Table 17: Gains not made—absence of gain not due to the Horizontal Mentoring Alliances

Table 15. Baseline and summative observations on gains not made from participating in the Horizontal Mentoring Alliances initiative.

Gains NOT made from participation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
NO transfer to department/ institution: Did NOT hold a book club event, Could not find a good book Didn't want to waste people's time Thought it would feel like "homework" to participants #	0	0	4	4	4	4
As an older member, she has mentored juniors lots Hasn't received much mentoring herself	1	1	2	3	3	4
NO transfer to department regarding gender equity issues Other activities Simply NO time to press the issue herself Already maxed out #	0	0	3	3	3	3
HMA participation has NOT helped regarding issues particular to LACs, i.e., high service expectations, small departments	1	1	2	2	2	3
Does not feel that she has gained much from participating Personal achievements are due to her own strong effort #	0	0	1	2	1	2
NO Transfer to personal life	1	1	1	1	1	2
Has NOT gotten advice she thought she would regarding a particular position	1	1	0	0	1	1
Has NOT opened horizons to new career possibilities	1	1	0	0	1	1
NO benefit from determining, listing short-, long-term goals #	0	0	1	1	1	1
NO benefit in terms of getting away from own institution, taking time out #	0	0	1	1	1	1
NO transfer to department/ institution: NO conversations with senior administration #	0	0	1	1	1	1

NO transfer to department/ institution: Went to assistant dean to argue for mentoring for associate faculty member, but did not get any response, nothing doing #	0	0	1	1	1	1
NO transfer to department/ institution yet regarding renewed interest in research Too early Anticipates she will bring back to institution in the future #	0	0	1	1	1	1
NO transfer to department/ institution: Organized discussion, but nothing came of it, nothing ongoing #	0	0	1	1	1	1
TOTAL	4	5	10	21	12	26

Table 16. Baseline and summary observations on qualified or "mixed" gains from participating in the Horizontal Mentoring Alliances initiative.

Qualified, or “Mixed” Gains from Participation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
Hasn't felt much benefit overall Too soon in the Alliance	4	4	0	0	4	4
Didn't realize how much joy had been sucked out of her until she started talking with other women	1	1	1	2	2	3
Made a few gains, but overall not a lot Has good collegial relationships at own institution Wasn't feeling too bad off to begin with #	0	0	2	2	2	2
Reached out for professional collaboration with other alliance member Didn't reciprocate Faded	1	1	1	1	2	2
Somewhat disappointed that she was oldest in group Hoping for older women	1	1	1	1	2	2
Still hard to say no to the dean even if possible Isn't that brave yet #	0	0	2	2	2	2
Understands her situation better but doesn't feel much alleviation of issues #	0	0	2	2	2	2
Did not establish short- or long-term goals Personal crisis prohibited such Accomplished a lot despite not setting forth goals Life happens #	0	0	1	1	1	1
Did not gain push in research that she thought she would, but did focus, make progress in other areas of career advancement, particularly service and senior admin work #	0	0	1	1	1	1
Has made some progress on accomplishing short and long term goals Hasn't made as much progress as she would like #	0	0	1	1	1	1
Has made some progress on accomplishing short and long term goals She herself is uncertain, doesn't really know #	0	0	1	1	1	1
Lukewarm re participation Was fine #	0	0	1	1	1	1

MIXED Transfer to department, institution Has brought discussion re high teaching load to administration, Administration willing to listen but not in a position to change much at this time due to downturn in econ #	0	0	1	1	1	1
MIXED Transfer to department, institution Trying to raise awareness Change is slow #	0	0	1	1	1	1
Still gaining self-confidence, learning to speak up for self, ask for what she wants Better than before though #	0	0	1	1	1	1
Change in personal goals has been somewhat influenced by group members, but mostly influenced by own institution #	0	0	1	1	1	1
TOTAL	6	7	12	19	15	26

Table 17. Baseline and summary observations of gains not gain—absence of gain not due to Horizontal Mentoring Alliances.

No gain, but lack of gain NOT related to participation	Baseline interview SOURCES (N=11)	Baseline interview OBS	Summative interview SOURCES (N=20)	Summative interview OBS	Total SOURCES (N=20)	Total OBS
NO benefit in terms of relief of isolation But has multiple opportunities for collaboration, socialization with other women, faculty at own institution Very collegial #	0	0	2	3	2	3
NO transfer to department, institution Progressive institution so not much to bring back from other lessons learned Rather this institution has served as good model for others Gains are relative to the institution #	0	0	3	3	3	3
NO benefit Already very able to say NO (But doesn't!) #	0	0	2	2	2	2
NO transfer In effort to mentor women on her own campus Already doing this, very involved #	0	0	2	2	2	2
Did not get much relief from having too many hats But unusual demand in prepping for classes ALL new text books #	0	0	1	1	1	1
Did not make gains in forming external collaborations But she did NOT want to Works independently purposely #	0	0	1	1	1	1
Did not make gains in terms of learning to balance work and personal life But not an issue for her to start with #	0	0	1	1	1	1
Gains in determining short, long term goals influenced by sabbatical, not by participation in the alliance Simply a matter of timing #	0	0	1	1	1	1
Has not achieved goal of getting an endowed chair, professorship Department is discussing, dragging feet #	0	0	1	1	1	1
Has not taken away a lot of gains But then again she didn't have a lot of the issues other Alliance members faced #	0	0	1	1	1	1
NO benefit from resources provided by Alliance, Simply too busy to look at them #	0	0	1	1	1	1
NO benefit in terms of better work-life balance, But already has balance, already good at setting these boundaries, leaving work at work, not	0	0	1	1	1	1

working too much #						
NO benefit in terms of relief of isolation Socializes with other women quite a bit Important to her #	0	0	1	1	1	1
NO transfer to department, institution Already lots of mentoring opps including a monthly meeting for women #	0	0	1	1	1	1
TOTAL	0	0	9	20	9	20