Annual Report 2015
This document contains text extracted from our web-based annual report to the National Science Foundation, submitted 4/1/15

LANGUAGE
PLASTICITY

genes brain cognition computation

A National Science Foundation IGERT Ph.D. training program at the University of Connecticut
PART 1: PROJECT SUMMARY

IA. Project characteristics (not included in this extract; NSF-specific details)

1B. Research achievements (list 3, limit of 1000 characters each)
1. A collaboration spanning neuroscience & clinical psychology continues to investigate candidate genes implicated in language & autism (ASD). Both genes may impact development of domains supporting language (mutations associate with acoustic processing & working memory impairments). As reported last year, (fellows) Castelluccio, Rendall, & (associate) Truong linked a CNTNAP2 mouse knockout (KO) model to ASD phenotypic human data, prompted by faculty work (Eigsti & Fein, 2013) linking better pitch discrimination to worse temporal processing & language delays in ASD. Our KO studies revealed a parallel profile (heightened pitch, impaired temporal processing), motivating examination of socio-communicative abilities in CNTNAP2 mice. A manuscript & NIH grant proposal are under review. Subsequent work examines language-relevant behavioral deficits in Dyx1c1 KO mice, where learning & memory deficits arise with intact auditory processing (Rendall et al., in press).

2. A new collaboration (funded by CIIF) was launched with IGERT trainee Richie, Landi (DEV), Lillo-Martín (LING) investigates whether processing of prosodic information (the “rhythm” of language) is influenced by language modality. We are comparing EEG/ERP responses of users of sign and spoken languages while viewing or listening to the same set of sentences. We have collected data from 20 Deaf native signers at Gallaudet University and are in the process of collecting English-speaker data at UConn. These results have the potential to be the first that use the same materials across both modalities, and also address a level of linguistic structure that is generally thought to be strongly tied to the peripheral sensorimotor areas that interface with the linguistic signal (i.e., vision for sign languages and audition for spoken languages). Such similarities in the ERP signature (the Closure Positive Shift) across sign and spoken languages would indicate that prosodic processing is amodal.

3. Fellow Kacie Wittke, advised by Tammie Spaulding in SLHS, has started a collaboration between UConn (including Letty Naigles in Developmental) and the MIND institute at UC Davis, funded with a CIIF award. She is transcribing linguistic data from archival videos of play sessions between children with Autism and caregivers. Wittke's backgorund in speech pathology and Naigles's background in developmental methods and linguistics provide the perfect combination to better use this data to assess the possibility of overlap between Specific Language Impairment and Autism Spectrum Disorders. Such a finding would have important implications for basic science understanding of the relationship between language, cognition, and affective behavior.

IC. Education achievements (list 3, limit of 1000 characters each)
1. Our January intercession courses, "J-Term Primers", were a success again this year. Courses included (1) fMRI fundamentals, (2) Compositional Semantics (an area of theoretical linguistics not covered in a Foundations course), (3) Generative Phonology (another area not covered in detail in a Foundations course), (4) Computational linguistics, (5) Review of Foundations 3 [Neurodevelopment], and (6) Using the PsychoPy open source experimental control platform. There were also two panels: one on Sign Language Research brought in local and external experts from a variety of fields (linguistics, psychology, education, neuropsychology), and another on nativist vs. empiricist approaches to language acquisition introduced students to the latest stages of this long-running theoretical debate by proponents of each approach who are among the IGERT faculty.

2. Breadth mentorship continues to promote integrative, multidisciplinary education and research among our trainees and faculty. Students meet with breadth mentors anywhere from weekly to just a few times per semester, and activities range from readings and discussion to research collaboration / lab rotations. Trainees and faculty value the structure and flexibility this model provides.

3. Foundations 2 (Psycholinguistics and Linguistic Structure) was completely revamped given trainee and faculty assessment that the formal linguistics content was insufficient. The focus now is primarily...
on formal linguistics and psycholinguistics from in the linguistic tradition to language acquisition. Students work in teams with real data on weekly problem sets. More senior students who have taken the course previously volunteered to set up extra student-led tutorial sessions. The consensus is that this new structure is achieving our original aims.

### 1D. Trainee achievements (max 3, limit of 1000 characters each)

1. Approximately three dozen projects involving IGERT fellows and/or associates have been launched. All of these are interdisciplinary (they include students and/or faculty from at least 2 of our 7 programs). Many involve 2 or 3 students. These range from mouse models of autism to human genomics of language to comparative population (brain injured vs. not) investigations of language motivated by theoretical linguistics (see research achievements). Many of these projects have been enabled in crucial ways by pilot funding from the competitive innovation incentive fund.

2. We are succeeding in cross-training students from multiple areas. For example, students in from all programs have sought (and received) training in electrophysiological methods used by auditory neuroscientists in SLHS (Skoe lab -- advanced ABR techniques) and cognitive neuroscientists in Psychology, Linguistics and SLHS (EEG/ERP methods). In the latter case, the students receive unusually broad training since the training faculty work in very diverse areas. A new MRI center is opening at UConn in April, and we are organizing multiple courses and apprenticeship programs to jumpstart our students' training with MRI, TMS (transcranial magnetic stimulation), and EEG, including simultaneous MRI+TMS and MRI+EEG. Training in theoretical linguistics for all trainees is leading to enriched sophistication of questions asked in many collaborative projects.

### 1E. Barriers to implementation (max 3, limit of 1000 characters each)

1. **FACULTY TIME.**
   - **CHALLENGE:** IGERT faculty do not have enough time (a) to develop new collaborations inspired by our language plasticity themes, nor (b) to "cross-train" deeply, as we need them to achieve our goal of transforming faculty members' ability to engage in cross-disciplinary research.
   - **RESPONSE:** We reported last year that in response to our advisory panel's recommendation that we find a way to secure course releases for faculty for research and/or cross-training time, we negotiated "at-cost" course buyout arrangements with all participating programs. Faculty who do lab rotations or actively take courses can qualify for these buyouts, paid for with our unrestricted funds from our university. Unfortunately, two departments have opted out of this formal arrangement because of concerns about university policies for buy-outs. PI Magnuson has initiated negotiations with the dean's office for clarification and formal permission for at-cost buyouts.

2. **ACCOMMODATIONS FOR DEAF INDIVIDUALS**
   - **CHALLENGE:** A strength of our program is our potential for training Deaf scientists, given faculty with near-native fluency in ASL and active sign language research programs. Last year, we were able to recruit an outstanding new fellow, Erica Israel, who happens to be Deaf. Despite our best attempts to lay groundwork for appropriate accommodations for all aspects of Erica's training (interpreting for courses, colloquia, and university-based social events), our Center for Students with Disabilities was unable to provide competent interpreters for all events. Erica and her advisor (Coppola) were wasting hours every week trying to arrange interpreting or informing the CSD that interpreters were not able to keep up with the technical content of courses or talks.
   - **RESPONSE:** Coppola, Lillo-Martin, Naigles and (to a lesser extent) Magnuson devoted substantial time to seeking remedies for the problems and educating university administrators and staff about Deaf accommodations and the ADA. This eventually succeeded, and a small cadre of excellent freelance interpreters was identified. Given our geographic location, many of them are traveling as many as 100 miles for these assignments. To grow the pool, Coppola, fellow Gagne (a former
professional interpreter), and some of our core interpreters have begun organizing workshops for interpreters on how to get up to speed on the technical terms of our courses and research. We have also tried to educate our faculty and students as to how to facilitate interpreting (e.g., by providing slides in advance and careful pacing). The university has also stepped up its efforts, and is conducting a national search for an interpreting coordinator who will devote full effort to finding and training interpreters.

**IF. Outreach activities**

1. **2/25/15,** Eigsti, Outreach to clinicians, CT Neuropsychology Associates. Dr. Inge-Marie Eigsti spoke to a group of neuropsychologists about the latest basic research in multiple areas related to brain and language.


3. Fall, Spring, ongoing, *Lindsey, Brain Injury Alliance of Connecticut Support Group. Fellow Andre *Lindsey and faculty Pradeep Ramanathan co-facilitate this support group for participants in their research on the impact of traumatic brain injury on language and their families.

4. Ongoing, Fellow Julia *Drouin was motivated by her involvement with the research digest effort to start her own website and blog to share her research and thoughts with colleagues and the general public: [http://www.juliadrouin.com/](http://www.juliadrouin.com/)

5. 10/3/14, *Sawi, Founding of conference for students from underrepresented groups. Fellow *Sawi was co-founder of 1st annual Technology, Engineering, and Science Latinos Symposium (TESLa-S), with research presentations and professional development workshops about Grad School in STEM, opportunities in industry and undergrad research.


7. Ongoing, *Israel. Improving access for Deaf scientists, staff, students, and community members at the University of Connecticut. Fellow Erica *Israel is Deaf. She & faculty Coppola (especially), Lillo-Martin, Naigles and Magnuson have had to work with our Ctr for Students with Disabilities to fix many problems with Deaf access. Result:UConn will hire an interpreting coordinator

8. Ongoing. Language interventions for cochlear implant users. Fellow *Tichko and affiliated postdoc Hall are investigating possible therapeutic implications of basic research they learned about in IGERT courses that could improve language development in children with cochlear implants.

9. Ongoing. Louis Stokes Alliance for Minority Participation (LSAMP) Graduate Student Panel. Fellow *Sawi served on this panel, which has held multiple sessions for undergraduates from underrepresented groups on research, PhD and industry opportunities, etc.

10. Ongoing. Manos Unidas: providing education for Deaf individuals in Nicaragua. IGERT faculty member Marie Coppola, who researches home sign and Nicaraguan sign language, continues to work through her foundation, Manos Unidas, to boost educational opportunities for Deaf individuals in urban and rural Nicaragua.

11. Ongoing. Fellow *Sawi mentors students from underrepresented groups via the McNair Program.

12. 11/20/14, American Speech and Hearing Association. Dr. Inge-Marie Eigsti gave a plenary presentation to speech pathologists and audiologists about recent advances in autism research and how that research informs understanding of language development in general.

13. 11/7/14, Presentation about Manos Unidas to students at Pomfret School in Pomfret, CT. Prof. Marie Coppola: "Manos Unidas: Facing challenges to language access and education for deaf Nicaraguans", regarding her research and her foundation, Manos Unidas, which provides education for Deaf Nicaraguans.
14. 7/14/14, Presentation of research and our IGERT program for STEM Honors Series. IGERT faculty member R. Holly Fitch gave a talk on her behavioral neuroscience and genetics work, with particular emphasis on research that is part of our IGERT efforts.


16. 2/27/15, UConn Louis Stokes Alliance for Minority Participation (LSAMP)/McNair. Dr. Letitia Naigles made a presentation to LSAMP/McNair scholars (students from underrepresented groups) on language creativity and language development in typical children and children with autism, and also described our IGERT training program.

17. 11/15/14, University of Connecticut Asian American Cultural Center, Talk delivered at "Identifying the Missing Power of Asian Americans in Connecticut (IMPAACT)" leadership conference. Fellow *Sawi spoke at this leadership meeting for undergraduate and graduate students.

18. Ongoing, undergraduate mentoring. Approximately half of IGERT trainees are mentoring undergraduate students in research.

**1G: Remarkable achievements / discoveries to submit as "NSF Highlights"**

None submitted.

**PART 2: Participants**

*Abbreviations: LING = Linguistics, PNB = Physiology & Neurobiology; SLHS = Speech, Language & Hearing Sciences
Psychology: BNS = Behavioral Neuroscience, CLIN = Clinical, DEV = Developmental, PAC=Perception-Action-Cognition*

**Faculty**

1. Allopenna, Paul – Program Coordinator
2. Fitch, R. Holly - BNS
3. Read, Heather - BNS
4. Loturco, Joseph – PNB/BNS
5. Eigsti, Inge-Marie - CLIN
6. Fein, Deborah - CLIN
7. Bortfeld, Heather - DEV/Haskins Labs
8. Coppola, Marie – DEV/LING
9. Landi, Nicole - DEV/Haskins Labs
10. Naigles, Letitia - DEV
11. Sheya, Adam – DEV
12. Boscovic, Zeljko -- LING
13. Calabrese, Andrea - LING
14. Lillo-Martin, Diane - LING/Haskins
15. Snyder, William – LING/Haskins Labs
16. Sprouse, Jon - LING
17. Altmann, Gerry – PAC
18. Large, Edward - PAC
19. Magnuson, Jim – PAC/Haskins Labs
20. Pugh, Ken - PAC/Haskins Labs
21. Rueckl, Jay - PAC/Haskins Labs
22. Tabor, Whitney - PAC/Haskins Labs
23. Yee, Eiling – PAC
24. Coelho, Carl - SLHS
25. Grela, Bernard - SLHS/Haskins Labs
26. Myers, Emily - SLHS/PAC/Haskins
27. Skoe, Erika - SLHS
28. Spaulding, Tammie - SLHS
29. Theodore, Rachel - SLHS
30. Grigorenko, Elena – Haskins Labs/Yale Child Study Center
**IGERT Students**

*Shaded = incoming student; * = Fellow; Year 0 = incoming student; G = graduated; + = not completing full program*

<table>
<thead>
<tr>
<th>Trainee</th>
<th>Program</th>
<th>PhD Year</th>
<th>IGERT Year</th>
<th>Advisor</th>
<th>Breadth mentor(s)</th>
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<td>1. Nora Alpers</td>
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<td>2. Karina Bertolini</td>
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<td>3. Emily Carrigan</td>
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<td>6. Nicole Cruse*</td>
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<td>7. Charles Davis</td>
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<td>8. Julia Drouin*</td>
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<td>10. Pamela Fuhrmeister*</td>
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<td>19. Andre Lindsey*</td>
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<td>20. Illiana Meza- Gonzalez*</td>
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<td>21. Nick Monto</td>
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<td>25. Amanda Rendall*</td>
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<td>27. Kayleigh Ryherd</td>
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<td>32. Laura Snider*</td>
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**ALUMNI**

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<th>38. Anthony Goodwin</th>
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<td>39. Sergey Kornilov</td>
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6
3. PROJECT FEATURES

3A. Trainee preparation in multidisciplinary/interdisciplinary research (briefly describe up to three of the promising practices for preparing IGERT trainees to conduct collaborative research that transcends traditional disciplinary boundaries)

1. PRACTICE: Our weekly brownbags are a simple but effective mechanism. These bring us together, expose us to each other's research, and naturally lead to further collaborations. This year, we have transformed this meeting completely. It is no longer a traditional, 45 minutes plus questions academic talk. The students have completely taken control, and with the new format, one student is the presenter and a student from another PhD program is the discussant, who introduces the presenter and leads discussion. Talks are 30 minutes with 30 minutes for discussion of content and talk mechanics (with student questions first). This has been very successful, and students still have within-program talk series for traditional, longer talks (and many IGERT participants attend multiple program talk series). These changes have led to more student talks, more discussion of how to communicate across disciplinary boundaries, and a boost in student morale regarding the talk series; it is now truly theirs. MEASURE: Group feedback.

2. PRACTICE: Our Foundations courses culminate in team-based research projects and/or grant proposals (for internal or external funds). These team-based efforts have pushed students to design projects related to our IGERT goals, and to discover ways to bridge their home disciplines and those of other trainees. Several of these projects have led to active research programs. For example, three of four teams of first year trainees from Foundations 1 this past fall are implementing their research plans as team-based collaborations. MEASURE: Count of student-initiated, team-based collaborations.

3. PRACTICE: Our Breadth Mentorship component continues to be successful in aiding our education and research aims. We explicitly opted against a formal lab rotation mechanism because students in some participating programs have heavy coursework or laboratory time constraints. Instead, trainees must identify a breadth mentor and meet with him/her on a regular but informal basis to discuss connections between their respective fields. Being required to do this has led most Fellows to launch a new collaboration including their breadth mentors, (often) their primary advisors, and (often) other relevant faculty and trainees. MEASURE: Informal surveys.

Mark the following components of multidisciplinary/interdisciplinary research preparation that apply to the majority of IGERT trainees involved in your project during this reporting period.

- Trainees undertook formal coursework/training in research methods, practices, and instrumentation in their primary discipline equivalent to traditional graduate students.
- Trainees had practical, hands-on laboratory and/or field experience in conducting research across the breadth of disciplines in the IGERT program.
- Trainees undertook formal coursework/training across the breadth of disciplines encompassed by the IGERT project.
- Trainees undertook formal coursework/training in both the ethical conduct of research and ethical conduct related to the themes encompassed by your IGERT project.
- Other: less formal ‘breadth mentorship’ meetings.

3B. Trainee preparation in professional skills (Briefly describe up to three formal training activities [e.g. coursework, workshop, professional speaker] for preparing IGERT trainees to effectively communicate science to general audiences.)

1. W In the fall, we conducted an internal retreat, where trainees who participated in workshops last year by Dr. Simsarian (our innovation consultant) led brainstorming, communication, and team building exercises they learned in the workshops. In a key exercise, random pairs of trainees and/or faculty talked for 5 minutes about possible collaborations; each person then wrote a short post-it note about the project and assigned it a score based on their interest in pursuing it. Everyone then joined groups
related to the highest rated possibilities and developed an informal collaboration proposal that they presented to the group. This required groups to communicate about sometimes complex, multidisciplinary techniques and theories to the full group. While only two of the projects have led to actual collaborations, the exercise was very useful both for practice in brainstorming and practice in presenting multidisciplinary research ideas to a diverse audience.

2. IGERT trainees and a few faculty, led by fellow *Sawi, continue to work on a Brain & Language Research Digest for policy makers. This was suggested by our State Legislator, Gregg Haddad. This turned out to be a harder project than any of us imagined, but it has forced us to learn how to write for non-scientific audiences.

3. All trainees were encouraged to develop personal websites to showcase their research for scientific and non-scientific audiences. Many trainees have developed basic, traditional websites. One fellow, Julia Drouin, was inspired to develop a more comprehensive site where she intends to describe research to non-researchers, and a blog aimed at helping undergraduates prepare for graduate school. We will aim this year to have more students develop such sites and/or to develop similar content for our program's website.

Mark the following components of professional skills development that apply to the majority of IGERT trainees involved in your project during this reporting period.

- Trainees undertook coursework/training that included regular faculty critique of and feedback on professional writing.
- Trainees authored, submitted, or published research papers in refereed journals.
- Trainees undertook coursework/training (e.g., brown bags, seminars) that included regular critique of and feedback on professional speaking/presentation skills.
- Trainees made presentations at academic/scientific professional conferences or meetings.
- Trainees presented results from their IGERT project to professional, nonacademic audiences (e.g., industry, government).
- Trainees undertook coursework/training to develop media-based or information technology-based communication skills.
- Trainees produced multimedia materials, Web sites, or other cyber-enabled tools to communicate the results of their IGERT activities to external audiences.
- Trainees used multimedia materials, Web sites, or other cyber-enabled tools as part of their interdisciplinary scientific training and collaboration.
- Trainees received training in team-building and project management skills.
- Trainees received training in effective time and task management.
- Trainees participated as members of teams engaged in joint research, education, and/or outreach efforts.
- Other: J-Term Primer sessions on professional development and non-academic careers.

3C. Trainee preparation for STEM careers (Mark the following components that apply to the majority of IGERT trainees involved in your project during this reporting period)

- Trainees received training or instruction (e.g., courses, workshops) in effective teaching practices.
- Trainees developed and presented course and/or curriculum materials.
- Trainees served as mentors to others (e.g., graduate students, undergraduates, laboratory technicians).
- Trainees received training/mentoring in grant proposal preparation.
- Trainees authored/coauthored and submitted grant proposals.
- Trainees received training/instruction on the interaction between academic research and industrial technical requirements.
☐ Trainees received training/instruction for applying their research to address public policy concerns or issues.
☐ Trainees had internships (off-campus, research, educational, and/or work experiences) in nonacademic settings (e.g., industry, government).
☐ Trainees had professional interactions other than internships with nonacademic employers (e.g. industry, government) in order to learn about career opportunities and requirements.
☑ Trainees communicated, worked, or collaborated with scientists of other nationalities.

3c. Trainee Preparation for STEM Careers

Mark the following components that apply to the majority of IGERT trainees involved in your project during this reporting period.
(Mark all that apply)

☐ Trainees received training or instruction (e.g., courses, workshops) in effective teaching practices.
☑ Trainees developed and presented course and/or curriculum materials.
☑ Trainees served as mentors to others (e.g., graduate students, undergraduates, laboratory technicians).
☑ Trainees received training/mentoring in grant proposal preparation.
☑ Trainees authored/coauthored and submitted grant proposals.
☐ Trainees received training/instruction on the interaction between academic research and industrial technical requirements.
☑ Trainees received training/instruction for applying their research to address public policy concerns or issues.
☐ Trainees had internships (off-campus, research, educational, and/or work experiences) in nonacademic settings (e.g., industry, government).
☐ Trainees had professional interactions other than internships with nonacademic employers (e.g. industry, government) in order to learn about career opportunities and requirements.
☑ Trainees communicated, worked, or collaborated with scientists of other nationalities.
☐ Other preparation for careers in academia.

Please specify: A former postdoc who is now a data scientist.

☐ Other preparation for nonacademic careers (e.g., industry, government).

Please specify: [Enter your response here].

☐ No components of Trainee Preparation for STEM Careers applied during this reporting period.

3D. Tactics for recruitment and broadening participation (One purpose of IGERT is to create a program strategy and a plan for recruiting, mentoring, retaining, and graduating U.S. graduate students that includes efforts aimed at members of groups underrepresented in science and engineering. With these goals in mind, please respond to the following questions for this reporting period.)

Do you have an overall, active plan with a specific set of goals and timelines for the recruitment and retention of trainees, including specifics for broadening participation of groups underrepresented in science and engineering?
☑ Yes

Regardless of your response to the previous question, please describe up to three of the promising tactics and results for recruiting qualified trainees to your IGERT project during this reporting period.

1. TACTIC: In our promotional materials (website, brochures, posters, emails to colleagues and student groups at a variety of institutions, but especially historically minority serving institutions) we have
emphasized our commitment to mentoring all students, but with special attention to the needs of students from underrepresented groups including students with disabilities. We have also stressed the diversity commitment of the UConn Graduate School and the support and mentoring programs it offers to diversity students. Members of our faculty have visited programs serving underrepresented students for recruitment purposes. RESULT: Our communication efforts have paid off. Most of our participating PhD programs observed marked increases in the numbers of applications from members of underrepresented groups over the years of the IGERT program. Seven of 20 fellows (35%) are from underrepresented groups, and 9 are women (45%). Among our associates, 2/13 are from underrepresented groups (15%) and 9/13 (69%) are women. Overall, among 33 current participants, 9 are from underrepresented groups (27%) and 18 (55%) are women. These enrollments compare favorably to national statistics in our respective fields.

2. TACTIC: We invited our strongest applicants to visit our campus, with special attention given to communication with members of underrepresented groups before, during, and after their visits. Because we had a Deaf prospective student visiting, we held an informational session ahead of the visit to go over communication and accessibility; and we arranged for the highest quality ASL interpreting possible. We told all students about our emphasis on mentoring, and discussed the mechanisms within our program and the UConn Graduate School to address particular needs of students from underrepresented groups, including a visit to the different Cultural Centers. In addition, we arranged meetings between applicants from underrepresented groups and the diversity officer from our graduate school. RESULT: Last year, we were remarkably successful at recruiting members of underrepresented groups: 5 of 8 new fellows in the fall come from underrepresented groups, and 4 of 8 are women. However, this year, since the deadline for our annual report is before the April 15 decision deadline for graduate admission decisions, we do not yet know whether candidates from underrepresented groups will accept our offers.

3. TACTIC: We emphasize the need for strong mentorship by primary advisors and breadth mentors. This is applicable to all students, but mentorship for underrepresented students is a particular emphasis. We held two special meetings on mentoring, led by the Graduate School's Diversity officer, one during J-Term and the other during Talk Shop. These meetings stress awareness by mentors (both faculty members and students); the role each student will play as a mentor when s/he completes the program; and resources for students, particularly for those from underrepresented groups. One of our new fellows is a Deaf student, and members of the IGERT faculty had multiple meetings with administration to elevate the quality of ASL interpreting to the standards needed for the program. RESULT: We conduct individual student meetings that indicate a high degree of satisfaction with the program, and very high self-ratings of course and research progress, indicating high student satisfaction, including students from under-represented groups. We have enhanced communication between students, illustrating the types of care that should be taken to be inclusive of all students. We succeeded in upgrading the interpreting services provided for our Deaf student, raising awareness by the administration to the point of their agreeing to hire a full-time, on-site interpreter coordinator for her needs and those of other Deaf students, faculty, and visitors.
Please describe the extent to which each of the following practices have been productive for recruiting trainees overall to your IGERT project during this reporting period.

<table>
<thead>
<tr>
<th>RECRUITING PRACTICE</th>
<th>PRODUCTIVE</th>
<th>SOMEWHAT PRODUCTIVE</th>
<th>NOT PRODUCTIVE</th>
<th>NA</th>
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<tbody>
<tr>
<td>Relationships with NSF programs that can provide an undergraduate pool of potential IGERT trainees (e.g., REUs, NSF Centers)</td>
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<td>Relationships with faculty and programs at other academic institutions</td>
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<td>Use of recruiting resources on your campus (e.g., career service office, graduate studies office)</td>
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<td>Collaboration with other IGERT projects on recruitment</td>
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<tr>
<td>Use of professional meetings, conferences, associations to communicate with, reach out to, and market to potential IGERT Trainees</td>
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<tr>
<td>Other</td>
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<tr>
<td>Please specify: Website (igert.cogsci.uconn.e)</td>
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</table>

Please describe the extent to which each of the following practices have been productive for recruiting underrepresented minority and women trainees to your IGERT project during this reporting period.

<table>
<thead>
<tr>
<th>RECRUITING PRACTICE</th>
<th>UNDERREPRESENTED MINORITIES</th>
<th>WOMEN</th>
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</thead>
<tbody>
<tr>
<td>Relationships with NSF programs that specifically focus on broadening participation of underrepresented minorities or women in STEM (e.g., LSAMP, AGER, TCUP, or ADVANCE)</td>
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<tr>
<td>Use of resources on your campus (e.g., academic advancement programs, offices for campus diversity, or minority and women’s student groups)</td>
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<td>Interaction with professional associations, organizations, or committees serving underrepresented minority communities or women (e.g., National Action Council for Minorities in Engineering, Society of Women Engineers, committees in professional societies focused on minority communities and women)</td>
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<td>Bridge programs for entering graduate students</td>
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<td>Mentoring or advising arrangements that take advantage of underrepresented minorities or women faculty or graduate students on campus</td>
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<tr>
<td>Relationships with faculty and programs at minority-serving academic institutions (e.g., historically black colleges and universities, Hispanic-serving institutions, or tribal colleges)</td>
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<tr>
<td>Collaboration with other IGERT projects on recruitment</td>
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<td>Other</td>
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3E. International opportunities

PART 1: Briefly describe up to three training experiences or components that provided exceptional "added value" for preparing IGERT trainees to be successful in international/global science and engineering. NOTE: This can include U.S.-based experiences.

Training experiences/components:

1. We continue to lay the groundwork for international experiences for our trainees. Several are likely to participate next year in research internships with partners identified in our original proposal. We discovered that the greatest barriers to participation were (a) uncertainty about how to arrange an internship and (b) faculty buy-in (faculty are reluctant to recommend internships before students complete coursework, for example). To address these issues, we are (1) assembling more details about research opportunities at international sites (facilities, participating scientists) and planning "face time" with partners either when they visit the US (see next item) or teleconferences, and (2) planning a workshop for faculty and students to de-mystify the possibilities (this event was cancelled this winter due a blizzard, but will be rescheduled in early summer or early fall).

2. We organized an in-person workshop with one of our international partners, Manuel Malmierca, M.D., Ph.D., from the Universidad de Salamanca, when he was in the US for a conference. Dr. Malmierca gave an overview of his research ("Cortical Feedback for Adaptations to Sounds") as a colloquium talk, which was followed by an informal workshop for IGERT students and faculty to ask questions and discuss the mechanisms and implications of this dynamic modulation of sound perception, which was followed by a light dinner reception (all costs paid by UConn, not our IGERT). This personal connection greatly increased student interest in research internships at Salamanca in particular, and seems likely to lead to multiple student visits in the next two years.

3. Our first fellow international experience is happening right now. Fellow Deanna Gagne is conducting fieldwork in Nicaragua on "home sign" (gestural communication systems that emerge in homes with Deaf children) and the continuing development of Nicaraguan Sign Language. The visit was facilitated by her advisor, Prof. Marie Coppola, who initially accompanied Deanna to Nicaragua and introduced her to educators, researchers, and private citizens who are facilitating her research. Deanna will give at least one presentation about her experience to the rest of the trainees when she returns.
Briefly describe up to three research or educational achievements resulting from the international component. Each achievement may involve a single trainee or a group of trainees.

1. Fellow Oliver Sawi has played an active role in an international collaboration involving Co-PI Pugh and scientists at UCSF (Dr. Fumiko Hoeft's lab) and our international partner, the BCBL in Spain (via Dr. Manuel Carreiras). The project explores linguistic, cognitive and neural impacts of dual-language immersion programs in schools in San Francisco (English/Chinese) and Spain (Basque/Spanish).

3F. Partnerships/collaborations

![Partnerships/Collaborations](image)

4. EVALUATION AND IMPACTS

4A. Project evaluation

Assessment was conducted again by Mariko Chang, PhD.

Please describe a key insight, and your response to it, if any, that has been identified through assessment and evaluation during this reporting period.

1. **INSIGHT/LEARNING.** An external evaluation report was provided at the end of Fall 2014. Utilizing data from interviews and online surveys of student and faculty, the external evaluation several key strengths and weaknesses. The weaknesses included (a) more cultural support for students from underrepresented groups; (b) desire for more informal social settings for faculty/student interaction; (c) more information for non-academic career paths.

   **RESPONSE:** To the three key weaknesses above, we responded with (a) sessions for all students and faculty with the UConn Graduate School Diversity Office on mentoring and microaggressions, as well as increased effort and activity by a new Diversity Committee with several student members; (b) increased social events; and (c) during our "January Term Primers", we had information sessions with a former postdoc working in industry and a junior faculty member who interviewed for several jobs in industry before deciding to stay in academia.
5. PUBLICATIONS/PRESENTATIONS

- 67 publications in refereed journals
- 1 book
- 15 book chapters
- 10 conference publications
- 105 other conference presentations allowed in annual report
- 40 conference presentations not allowed in annual report (April-May 2014; report is due April 1, but is expected to cover June 1, 2014 to May 31, 2015).
- 1 patent

* indicates IGERT trainee supported through NSF fellowship

Publications in refereed journals (67)


16


Books (1)

Book chapters (5)

Conference publications (2)

Conference presentations allowed to be in report (105)
symposium ‘The role of culture and language for Numerical Cognition,’ Cognitive Science Society, Quebec City, Canada.


22. Boskovic, Z. (2014, November). Deducing the Subject Condition, the Adjunct Condition, the that-trace effect and tucking in from labeling. Paper presented at the International Workshop in Linguistics, Dokkyo University, Tokyo, Japan.


94. Sprouse, J. (2015, March). It is time to get serious about gradience. Invited speaker at FLYM 2, Eckerd College, St. Petersburg, FL.


**Conference presentations from April-May 2014 that were not allowed in annual report (40)**


Patent (1)