ACTIVITIES REPORT FOR: David Kleinschmidt

1. Background Information

Department: Brain and Cognitive Sciences
Degree sought: Doctoral Degree
Degree Start Date: 09/2010
Research interest/topic: Perception of speech and other complex stimuli
Keywords: Speech, perception, modeling, neuroscience
Research Advisor 1: T Florian Jaeger
Telephone: 5852763611
Email: fjaeger@mail.bcs.rochester.edu

Research Advisor 2:
Telephone:
Email:

Research Advisor 3:
Telephone:
Email:

2. Skills

Research Skills
Engaged in practical (i.e. hands-on laboratory and/or field experience) in conducting research.

Courses/seminars taken in major discipline: 0
Courses/seminars taken outside of major discipline: 0
Courses/seminars taken that specifically covered interdisciplinary topics related to GRFP project: 0

Professional Skills
Authored, submitted or published research paper(s) in refereed journals.
Made presentation(s) at academic/scientific professional conferences, meetings, or departmental seminars.
Produced multimedia materials, web sites, or other cyber-enabled tools to communicate the results of GRF activities to external audiences.
Received training in team-building and project management skills.
Received training in effective time and task management.

Career Skills
Served as a mentor to others (e.g., graduate students, undergraduates, laboratory technicians)

3. International Experience

Took part in any international experiences during this reporting period: No

4. Achievements

Had any achievements to report for this period: Yes

Achievement Type	Achievement Description
Publications	Pajak, B., Fine, A. B., Kleinschmidt, D. F., & Jaeger, T. F. (2016). Learning Additional Languages as Hierarchical Probabilistic Inference: Insights From First Language Processing. Language Learning, e-pub ahead of print. doi:10.1111/lang.12168
Publications	Kleinschmidt, D. F., & Jaeger, T. F. (2015). Re-examining selective adaptation: Fatiguing feature detectors, or distributional learning? Psychonomic Bulletin & Review, In press. doi:10.3758/s13423-015-0943-z
Publications	Kleinschmidt, D. F., Raizada, R., & Jaeger, T. F. (2015). Supervised and unsupervised learning in phonetic adaptation. In R. Dale, C. Jennings, P. Maglio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi (Eds.), Proceedings of the 37th Annual Conference of the Cognitive Science Society. Austin, TX: Cognitive Science Society.
Presentations	Kleinschmidt D.F., and Jaeger, T.F., What do you expect from an unfamiliar talker? Sociolinguistic and Variation in Language Processing (SVALP), Virginia Tech, Blacksburg, VA, April 1 2016, oral.
Presentations	Kleinschmidt, D. F., Raizada, R., & Jaeger, T. F. Supervised and unsupervised learning in phonetic adaptation. 37th Annual Conference of the Cognitive Science Society, Pasadena, CA, July 2015, Poster
Presentations	Kleinschmidt, D. F., Raizada, R., & Jaeger, T. F. Supervised and unsupervised learning in phonetic adaptation. CUNY Conference on Sentence Processing, Los Angeles, CA, March 2015, Poster

5. Career Plans

Expected Graduation Date: 08/2016
Type of employment pursued: 4 Year College/University - Tenure track faculty
Other:

6. Internships

Took part in any internship(s) lasting 1 month or more: No

7. Other Financial Support

Received any fellowships (other than GRFP), scholarships, or grants during the period: Yes

Fellowship Offer	Year Awarded	Source of Support
NIH F31 Ruth L. Kirschstein National Research Service Award (NRSA) Individual Pre-doctoral Fellowship	2015	NIH: NICHD

8. Stipend Feedback

Stipend comparison to stipends received at your organization: Greater Than Others

9. Additional Funding Opportunities

Have you received any Additioanl Funding Opportunity: No

10. Fellowship Year Summary

Fellowship Year Summary Uploaded: No

Fellowship Year Summary Text: In the past year, my work has continued to advance our understanding of human speech perception. In particular, I have built on my earlier theoretical work on how people rapidly adapt to an unfamiliar talker. The central idea of this work is your experience with other talkers helps you rapidly learn the particular idiosyncrasies of a new, unfamiliar talker. An vitally important part of this process is the implicit knowledge that listeners have about the range of variability that they should expect across different kinds of talkers. These beliefs are subjective and implicit, and are thus very hard to probe directly, but in the last year I've shown that this is possible by looking at how well people adapt to different accents and working backwards to their shared prior beliefs. I've presented this work as a talk at the workshop on Sociolinguistic Variation and Language Processing, and it has also been accepted for talks at two other conferences (LabPhon and CogSci).

My other major focus over the last year has been to better understand the neural mechanisms behind people's ability to rapidly adapt to different talkers. This work has theoretical and empirical components. Theoretically, I have developed connections between high-level computational models of how human listeners adapt, and low-level computational theories about how neural circuits adapt to changes in their environment. This work was published this year in Psychonomic Bulletin and Review. On the empirical side, I have collected and analyzed data on how the human brain adapts to differences between talkers, using fMRI and cutting-edge computational analyses. My preliminary results show that at least one part of the speech perception system codes acoustic input in a way that reflects learned, talker-specific statistical properties. This finding is a significant step in understanding the neural mechanisms of how listeners deal with variability across talkers.

Finally, the computational framework I developed during my GRFP for understanding how listeners cope with variability across talkers has already had broad and substantial impact. Since appearing in Psychological Review in early 2015, it has already been cited 45 times (according to Google Scholar).