Institute of Cognitive Science Newsletter - Winter 2015

Marie Banich Co-Principal Investigator for NIH Landmark Study on Substance Use and Adolescent Brain Development

(reprinted from CU Boulder News Center)

The National Institutes of Health (NIH) has selected researchers at the University of Colorado Boulder to take part in a landmark longitudinal study about the effects of substances including alcohol, tobacco and marijuana on developing adolescent brains.

CU-Boulder's Intermountain Neuroimaging Consortium will be one of 20 project sites to host aspects of the NIH's Adolescent Brain Cognitive Development (ABCD) study, which will follow approximately 10,000 children nationwide through late adolescence and track how exposure to substances beginning around age nine affects their brain structure, academic achievement, and cognitive skills.

"Adolescence is a time when the brain is quite sensitive to environmental influences, and the way the brain gets wired during this developmental period has lifelong implications," said Marie Banich, director of the Institute of Cognitive Science and a professor in the Department of Psychology and Neuroscience at CU-Boulder. "Our particular focus here at CU as part of this larger project will be to disentangle the genetic and environmental factors that contribute to the effects that drugs have on the developing brain."

CU-Boulder's slice of the project will focus on pairs of identical and fraternal twins, with researchers using a combination of neuroimaging and behavioral genetics to compare and contrast genetically similar individuals as their brains develop. The study may shed light on the extent to which some adolescents are predisposed to drug use, as well as the extent to which drug use itself reshapes the brain during critical time periods.

The researchers plan to use magnetic resonance imaging (MRI) techniques to image both the anatomy and function of participants' brains at a higher resolution than a patient typically receives during a medical procedure. By capturing pictures of brain activity in such detail, the researchers will be able to better capture the fine-grained processes that go into decision-making and emotional reactions, Banich said.

The study features a collaborative partnership between two CU-Boulder research institutes: the Institute of Cognitive Science and the Institute for Behavioral Genetics, which conducts world-renowned longitudinal twin studies in Colorado. Researchers from the CU Anschutz Medical Campus's School of Medicine will also assist with the study.

"This research represents a perfect example of how we can bring together different strengths at CU-Boulder," said John Hewitt, director of the Institute for Behavioral Genetics and a professor in the Department of Psychology at CU-Boulder. "With its large scope and sample size, this study has the resources to deliver real answers about the effects of drugs on the developing brain."

"CU-Boulder has a long history of doing this type of interdisciplinary research, which allows us to bring the right team of scientists together," said Banich. "This coupling is an example of the unique strength that CU-Boulder has in the biobehavioral sciences."

The results of the ABCD study, which is being funded by the National Institute for Drug Abuse, may eventually have wide-reaching policy implications for fields such as health, education, and law enforcement.

From the Director of the Institute

Dear Colleagues,

This semester will see us again interviewing candidates for a faculty position. I am grateful to Mike Mozer and Tor Wager who as co-chairs have been shepherding the search, along with the entire committee. They have focused on individuals whose work exemplifies the Institute's focus on computational approaches to cognition. This search is more senior-level, focusing on individuals at the advanced assistant professor or associate professor level. As usual, I am impressed with the quality of candidates that we can attract to interview at ICS. We will be having 4-5 candidates visiting us this semester, some of whom might most reasonably have a tenure home in Computer Science, others of whom are more suitable to Psychology & Neuroscience, and others of whom might plausibly be suitable for both of these departments. In addition, the candidates identified are also those who would make contacts with the other departments that make up the ICS community.

I would ask that you play an active role in our search process whether you are an ICS-rostered faculty, and ICS fellow, research associate or student. The future of the Institute hinges on us hiring younger exciting scholars who can both build on the strong foundation of ICS's intellectual history while at the same time taking it in new directions. There will be multiple opportunities to meet with our potential candidates, and I encourage you to sign up to do so. Also, of note, while some of the candidates' talks will be held at our usual time, Fridays at noon, others will be held on Tuesdays at noon to facilitate a relatively swift search process. I look forward to your participation as we work to take the Institute into the future.

All the best,

Marie Banich

Where's My Mind?

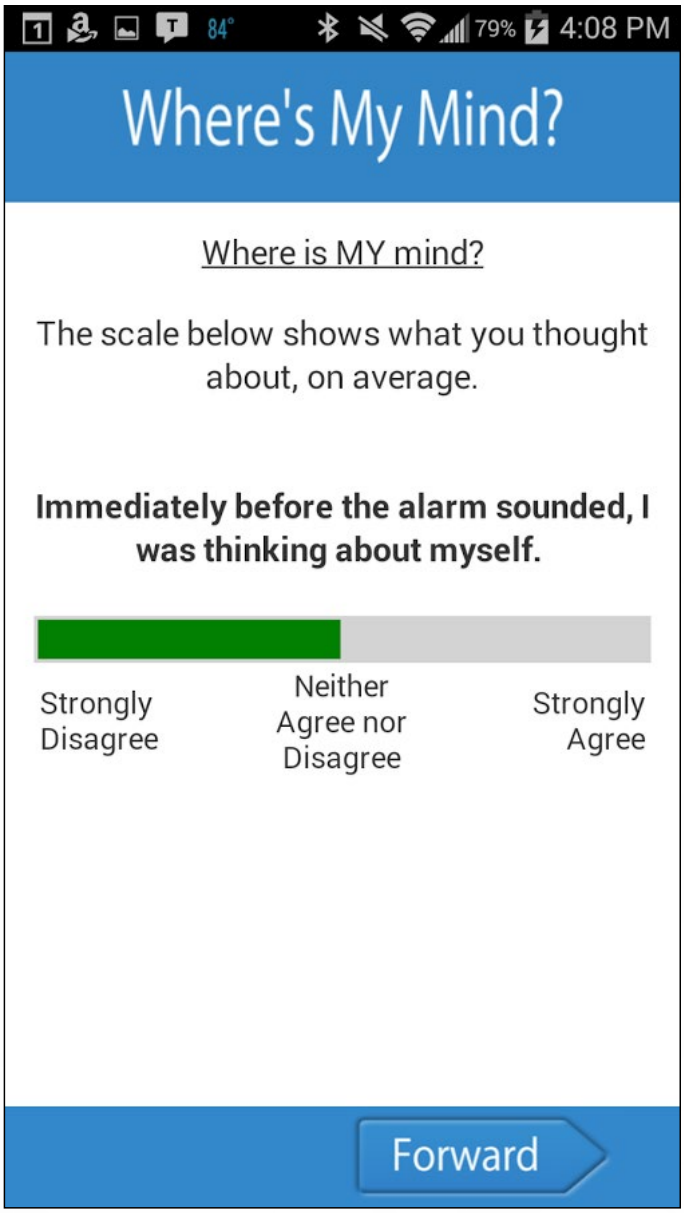
A New App for When Your Mind Wanders

ICS Research Associate Jessica Andrews-Hanna collaborated this year with Joanna Arch (Assistant Professor, Clinical, Psych & Neuro), and the ICS Van Vuuren Lab, including Sarel Van Vuren and Nattawut Ngampatipatpong, to develop a smartphone app called Where's My Mind? to study the psychology of mind-wandering. The app is CU Boulder's first university-supported research app, and was funded by a recent Science of Prospection grant from the Templeton Foundation awarded to Andrews-Hanna and Arch.

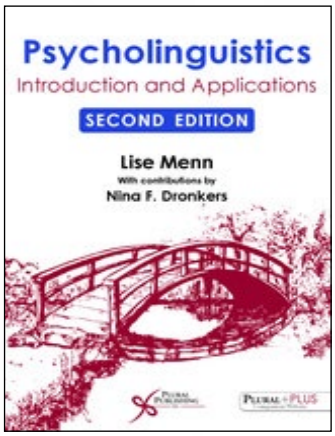
One goal of the app is to quantify what people think about in daily life, and create a large scientific database of mind-wandering to promote further research on this important understudied topic. Another goal is to explore the situations under which mind-wandering can be helpful versus harmful, and how this varies across people.

For some people, mind-wandering is a source of creativity and insight; for others, intrusive thoughts can lead to distress and unhappiness. Why? From the user's perspective, the app can give people insight into the nature of their own styles of thinking, and whether their thoughts are typical or atypical of others. It works by sending the user a push notification a few times each day, each time asking them to characterize the nature of their mood, ongoing activity, and thoughts just before receiving the notification (i.e. was their mind wandering or focused on the task at hand?, were their thoughts positive or negative?, focused on the past, present, or future?, etc.). Each time the user answers these questions, their anonymous data is stored in a database. After they respond to 40 push notifications, they can access their own data to see what kinds of thoughts are typical for them, and discover whether they tend to be in a better mood when mind-wandering versus being on-task, or vice versa. If they want, they can also compare their thoughts to the thoughts of the average user. The app is like a FitBit for the mind.

The development team is currently looking into ways to market the app and encourage users to help build a mind-wandering database. The Where's My Mind app is currently available for download in the Google Play Store: http://ow.ly/W5Fht



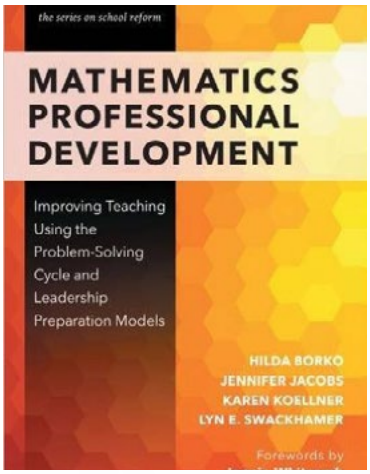
Psycholingusistics, Introduction and Applications



The second edition of *Psycholinguistics Introduction and Applications* by ICS Fellow Lise Menn, with contributions from Nina F. Dronkers, will be published late in 2015.

It is the first textbook in psycholinguistics created for working language professionals and students in speech-language pathology and language education, as well as for students in psychology and linguistics. The significantly revised brain chapter will contain current findings on brain structure and function, including the roles of newly delineated fiber tracts and language areas outside Broca's and Wernicke's areas. Fully-explained examples are taken from Spanish and other languages as well as English.

The Problem-Solving Cycle Model of Mathematics Professional Development



Together with Hilda Borko (Stanford University) and Karen Koellner (Hunter College), ICS Fellow Dr. Jennifer Jacobs developed and extensively researched the Problem-Solving Cycle, a model of professional development that engages mathematics teachers in continuous cycles of professional learning. Detailed information about the Problem-Solving Cycle is available at psc.stanford.edu and in their recently published book:

Borko, H., Jacobs, J., Koellner, K. & Swackhamer, L. (2015). *Mathematics Professional Development: Improving Teaching Using the Problem-Solving Cycle and Leadership Preparation Models*. Columbia University, NY: Teachers College Press.

Arias, Eden, and Fischer Publish Book on EDC Work

ICS Fellows Ernesto Arias (Professor Emeritus, Center for LifeLong Learning and Design (L3D)), Hal Eden (Associate Director, L3D), and Gerhard Fischer (Director, L3D) published their book this year in the Morgan & Claypool Lecture Series called *SYNTHESIS*. It is available in the Synthesis Digital Library of Engineering and Computer Science as one of the Synthesis Lectures on "Human-Centered Computing." Their chapter can be found here: http://ow.ly/W5pLm

The book looks at their L3D long-term research of the Envisionment and Discovery Collaboratory (EDC). It is a seminal contribution to the development of what is now known as tabletop technologies, but more importantly discusses the EDC's theoretical and practical implications in the areas of learning, design, planning, and social creativity. The book describes the artifacts and scenarios that were developed, with the goal of providing inspiration for human-centered informatics not focused on technologies in search of a purpose, but on the development of systems supporting stakeholders to explore personally meaningful problems.

Ernesto G. Arias

Hal Eden

Gerhard Fischer

ICS Welcomes Yoshinaga-Itano Lab

Christine Yoshinaga-Itano

The Marion Downs Center Research Program (under the direction of Christine Yoshinaga-Itano & Phillip Gilley) will move from the Department of Speech, Language & Hearing Science to ICS, CINC Building. Their research laboratory currently has two research grants from the Centers for Disease Control (Disability Research Dissemination Center, University of South Carolina) and one from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).

NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). This grant is part of a Rehabilitation Engineering Research Center (RERC) in the area of hearing awarded to Gallaudet University. The ICS lab's role in the research is the development of technology to validate the fitting of amplification in infants identified with hearing loss. The RERC research team, including Dr. Phillip Gilley (ICS) (PI), Dr. Tammy Fredrickson (SLHS), Dr. Kristin Uhler (UCDMC), and Dr. Sandra Gabbard (Marion Downs Center, Denver CO), has recently identified a neurophysiological EEG biomarker for speech discrimination in infants and is actively working to develop an automated protocol that can be used with children with normal hearing and those with hearing loss. They have developed a behavioral protocol using a conditioned head turn response to develop a speech discrimination test for infants and to investigate the hierarchy of difficulty of speech phoneme discrimination for infants with hearing and hearing loss and its relationship to later literacy and higher level language processes. Additionally, the ICS lab is collaborating with the LENA Foundation, a non-profit that has developed technology that records the auditory language environment of an infant/child's day and automatically calculates an estimate of the average number of adult words that the child was exposed to, the number of child vocalizations, the number of conversational turns, and an automatic vocalization analysis of the phoneme production of the child. The project is working with the LENA Foundation to develop additional automated analysis of the child and adult spoken language, such as measures of the child's syllables per utterance and an index of parent responsiveness. The LENA Foundation and the RERC team are working on automated parent reports delivered via cellphone or computer. While the ICS lab's role has been to assist in the development of strategies for interventions with children with disorders, LENA has developed the tools increasingly being used with infants and children with typical development and at-risk for developmental delays.

The Centers for Disease Control National Early Childhood Assessment Project: Deaf/Hard of Hearing (NECAP) is a project assisting 15 states in the development of systems capable of collecting longitudinal developmental assessments on their population of infants/children with hearing loss birth through three years of age, identified as a result of universal newborn hearing screening programs. The ICS Lab's project staff include: Dr. Allison Sedey, Dr. Mallene Wiggin, Clare Neville, Cynthia Hunnicutt, and Janet des Georges. Over the past 20 years since universal newborn hearing screening, Colorado data indicates that children with hearing loss, identified and enrolled into early intervention services by six months, have maintained language development within the normal range for the first seven years of life. However, replication of these results in other states has not been found. In contrast to the Colorado data, great variability of development has been reported across the United States. The ICS lab is attempting to identify the cognitive, auditory, linguistic, socio-economic, and social-emotional variables that impact these developmental outcomes.

The ICS lab's second CDC EHDI outcomes grant is analyzing the developmental data from over 1000 Colorado infants with hearing loss identified through universal newborn hearing screening since 1992. Additionally, they are gathering developmental outcome data from the Colorado children through 18 years of age to be able to describe the developmental trajectories over the last 20 years.

The ICS lab has an additional fourth project with UCDMC from Maternal and Child Health. This project is training doctoral students in the area of pediatrics, with specific emphasis on children with neurodevelopmental disorders such as autism.

Enhancing Education through Cognitive Psychology

Three members of the Center for Research on Training (Alice Healy, Matt Jones, and Mike Mozer) organized one of the symposia in Chicago last month (November 21) at the meeting of the Psychonomic Society. The following is the symposium title and abstract:

"Enhancing Education through Cognitive Psychology"

Education stands as one of the most promising domains of application for research in cognitive psychology. Recent work has begun to fulfill this promise by more tightly integrating these two fields. Research applying cognitive psychology to education has advanced dramatically in the last 10 years, driven by technical advances and increased emphasis on ecological validity. Specifically, the field has embraced in-classroom studies, active and self-directed learning, adaptive teaching methods, and quantitative modeling of learning. This symposium will cover some of the most exciting and influential examples of this research, including work on predicting long-term knowledge retention from short-term assessments, the relationship between test types and students' metacognitive strategies, interactions between perceptual and symbolic processing, adaptive instruction technology based on models of human learning, individual differences in concept representation, and the benefits of exploratory and errorful learning.

Mike Mozer

Alice Healy

Matt Jones

Alice Healy served as the session chair, Matt Jones was one of the speakers, and Mike Mozer gave the concluding remarks and hosted a final discussion. The other speakers were Elizabeth Bjork, Robert Goldstone, Todd Gureckis, Mark McDaniel, and Janet Metcalfe.

ICS Fellow Publications

Ashar, Y., Andrews-Hanna, J.R., Yarkoni, T., Sills, J., Dimidjian, S., & Wager, T.D. (in press). Psychological mechanisms of compassion training. *Emotion*.

Ashar, Y. K., Andrews-Hanna, J. R., Yarkoni, T., Sills, J., Halifax, J., Dimidjian, S., Wager, T. D. (accepted) Effects of Compassion Meditation on a psychological model of charitable donation. *Emotion*.

Dronen, N., Foltz, P. W. & Habermehl, K. (2015). Effective sampling for large-scale automated writing evaluation. *Proceedings of the ACM conference on Learning at Scale*. Vancouver, CA.

Foltz, P. W. (2015). Advances in automated scoring of writing for performance assessments. In Y. Rosen, S. Ferrara & M. Mosharref (Eds.), *Handbook of Research on Tools for Real-World Skill Development*. Springer.

Foltz, P. W., Rosenstein, M. & Elvevåg, B. (2015). Detecting clinically significant events through automated language analysis: Quo imus?. *NPJ Schizophrenia*.

Foltz, P. W. & Rosenstein, M. (2015). Analysis of a large-scale formative writing assessment system. *Proceedings of the ACM conference on Learning at Scale*. Vancouver, CA.

Fox, K.C., Spreng, R.N., Ellamil, M., Andrews-Hanna, J.R., & Christoff, K. (2015). The wandering brain: Meta-analysis of functional neuroimaging studies of mind-wandering and related spontaneous thought processes. *Neuroimage, 111*, 611-21.

Godinez, D., Wilcutt, E.G., Depue, B.E., Burgess, G.C., Andrews-Hanna, J.R., & Banich, M.T. (2015). Familial risk and ADHD specific neural activity revealed by a case-control, discordant twin pair design. *Psychiatry Research: Neuroimaging, 233(3)*, 458-65.

Graesser, A.C., Foltz, P. W., Rosen, Y., Forsyth, C., & Germany, M. (2015). Challenges of Assessing Collaborative Problem Solving. In E. Care, P. Griffin & M. Wilson (Eds.). *Assessment and Teaching of 21st Century Skills: Research and Applications*. Springer

Kaiser, R.H., Andrews-Hanna, J.R., Metcalf, C., & Dimidjian, S. (in press). Dwell or decenter? Rumination and decentering predict working memory updating after interpersonal criticism. *Cognitive Therapy & Research*.

Kaiser, R.H., Andrews-Hanna, J.R., Spielberg, J.M., Warren, S.L., Sutton, B.P., Miller, G.A., Heller, W., & Banich, M.T. (2015). Distracted and down: neural substrates and network dynamics of affective interference in subclinical depression. *Social Cognitive & Affective Neuroscience, 10(5)*, 654-63.

ICS Fellow Publications

Kaiser, R.H., Andrews-Hanna, J.R., Wager, T.D., & Pizzagalli, D. (2015). Large-scale network dysfunction in Major Depressive Disorder: Meta-analysis of resting-state functional connectivity. *JAMA Psychiatry, 72(6)*, 603-11.

Lindquist, M. A., Krishnan, A., Lopez-Sola, M., Jepma, M., Woo, C. -W., Koban, L., Roy, M. Atlas, L. Y., Chang, L. J., Losin, E. A. R., Eisenbarth, H., Ashar, Y. K., Delk, Z., & Wager, T. D. (2015). Group-regularized individual prediction: Theory and application to pain. *NeuroImage*. doi:10.1016/j.neuroimage.2015.10.074

Losin, E. A. R., Woo, C. -W., Krishnan, A., Wager, T. D., Iacoboni, M. & Dapretto, M. (2015). Brain and psychological mediators of imitation: Sociocultural versus physical traits. *Culture and Brain*. doi:10.1007/s40167-015-0029-9

O'Callaghan, C, Shine, J.M., Lewis, S.J.G., Andrews-Hanna, J.R., & Irish, M. (2015). Shaped by our thoughts: Frequency and content of spontaneous thought relate to distinct patterns of default network connectivity in healthy ageing. *Brain and Cognition, 93*, 1-10.

Ramachandran, L., Cheng, J. & Foltz, P. W. (2015). Identifying Patterns For Short Answer Scoring Using Graph-based Lexico-Semantic Text Matching. *North America Association for Computational Linguistics, Workshop on Building Educational Applications, 2015.*

Ramachandran, & Foltz, P. W. (2015). Generating Reference Texts for Short Answer Scoring Using Graph-based Summarization. *North America Association for Computational Linguistics, Workshop on Building Educational Applications, 2015.*

Reineberg, A., Andrews-Hanna, J.R., Depue, B., Friedman, N.P. & Banich, M.T. (2015). Resting-state networks predict individual differences in common and specific aspects of executive function. *Neuroimage, 104*, 69-78.

Rosenstein, M., Foltz, P. W. & Elvevåg, B. (2015). Language as a biomarker in those at high-risk for psychosis. *Schizophrenia Research.*

Rosenstein, M., Foltz, P. W. & Elvevåg, B. (2015). Practical issues in developing semantic frameworks for the analysis of verbal fluency data: A Norwegian data case study. *NAACL Workshop on Computational Linguistics and Clinical Psychology — From Linguistic Signal to Clinical Reality.*

Sharma, A, Glick, H, Campbell, J, Torres, J, Dorman, M, Zeitler, DM (In press, Accepted Oct 2015). Cortical Neuroplasticity in pediatric single-sided deafness pre- and post-cochlear implantation: A case study. *Otology & Neurotology.*

Shermis, M. D., Burstein, J., Elliot, N., Miel, S. & Foltz, P. W. (2015) Instructional Applications for Automated Writing Evaluation. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.) *Handbook of Writing Research (2nd Edition).* Guilford Press.

Spreng, R.N., & Andrews-Hanna, J.R. (2015). Social cognition and the brain's default network. In: A.W. Toga (Eds.) *Brain Mapping: An Encyclopedic Reference* (165-169) London: Academic Press. (Invited chapter)

Wager, T. D. & Woo, C, -W. (2015). fMRI in analgesic drug discovery. *Science Translational Medicine. 7,* 274fs6, doi:10.1126/scitranslmed.3010342

Wolfe, E., Williams, L, & Foltz, P. W. (2015). Distributional Agreement Indices for Evaluating the Performance of Automated Scoring. *Proceedings of Association for Educational Assessment Europe (AEA-E) 2015.*

Woo, C. -W., Roy, M., Buhle, J. T. & Wager, T. D. (2015). Distinct brain systems mediate the effects of nociceptive input and self-regulation on pain. *PLoS Biology. 13(1)*: e1002036. doi:10.1371/journal.pbio.1002036

Woo, C. -W., & Wager, T. D. (2015). Neuroimaging-based biomarker discovery and validation. *PAIN. 156(8)*:1379-81. doi: 10.1097/j.pain.0000000000000223

Woo, C. -W., & Wager, T. D. (2015). The predictive mapping approach in neuroimaging. *Science (supplement), Advances in Computational Psychophysiology,* 18-21 (invited contribution)

Woo, C. -W., & Wager, T. D. (2015). What reliability can and cannot tell us about pain report and pain neuroimaging. *PAIN.*

Yamamoto, D. J., Woo, C. -W., Wager T. D., Regner, M. & Tanabe, J. (2015) Influence of dorsolateral prefrontal cortex and ventral striatum on risk avoidance in addiction: a mediation analysis. *Drug and Alcohol Dependence, 149*, 10-17. doi: 10.1016/j.drugalcdep.2014.12.026

Yarkoni, T., Ashar, Y. K., Wager, T. D. (2015) Interactions between donor Agreeableness and recipient characteristics in predicting charitable donation and positive social evaluation. *PeerJ* 3:e1089 https://dx.doi.org/10.7717/peerj.1089

ICS Fellow Presentations

Goodman, Katherine, Jean Hertzberg, Tim Curran, and Noah Finkelstein. *Expansion of Perception in Fluids.* Poster presented at ASEE 2015, June 2015.

Jena Hwang presented her joint paper with Martha Palmer on *Identification of Caused Motion Construction* at *SEM, in conjunction with NAACL, 2015 in Denver in June.

Reddan M, Schiller D, and Wager, T. *Imagined Extinction Reduces Real-life Threat Expression.* Emotion and Motivation Session, Organization of Human Brain Mapping, Honolulu, HI, June 2015.

Shumin Wu presented his joint paper with Martha Palmer on *Can selectional preferences help automatic semantic role labeling?* at *SEM, in conjunction with NAACL, 2015 in Denver in June.

Shumin Wu presented his joint paper with Martha Palmer on *Improving Chinese-English PropBank Alignment* at the Workshop on Syntax, Semantics and Structure in Statistical Translations, in conjunction with NAACL, 2015 in Denver in June.

Caccamise, D., Friend, A., Kintsch, E., Litrell-Baez, M., & Okochi, C. (2015, July). *An integrated reading and science curriculum to help struggling readers in middle school.* Twenty-First Annual Meeting of Society for the Scientific Study of Reading, Kona, Hawaii.

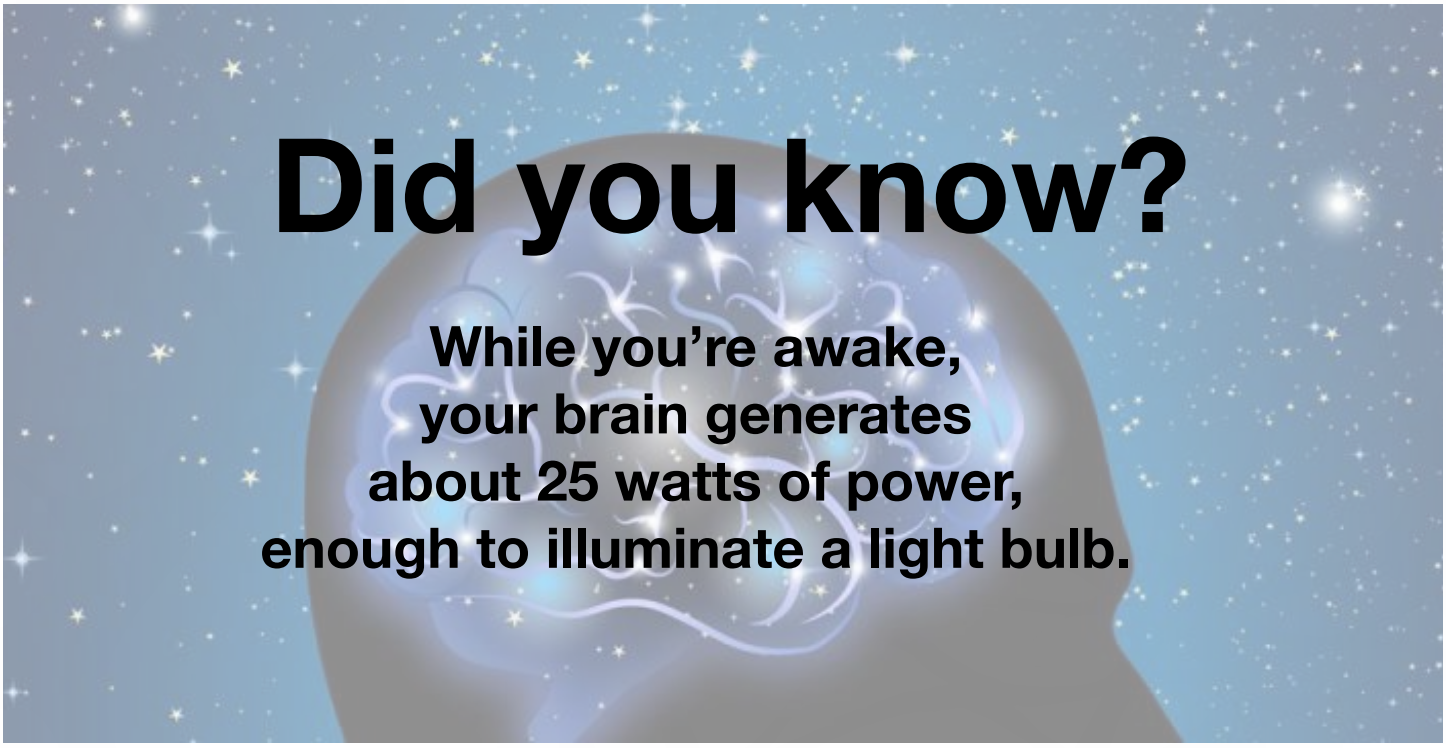
Wei-Te Chen presented his paper on *Learning to Map Dependency Parses to Abstract Meaning Representations,* in the ACL 2015 Student Research Workshop in Beijing, China, in July 2015.

Glick, H, Sharma, A. (2015, October). *Cortical neuroplasticity in single sided deafness.* Poster session at the annual Society for Neuroscience Conference, Chicago, IL.

Glick, H, Sharma, A. (2015, November). *Cross-modal plasticity in single-sided deafness before and after cochlear implantation.* Poster session at the annual American Speech-Language-Hearing Association convention, Denver, CO. Meritorious poster designation.

Glick, H, Sharma, A. (2015, November). *Brain changes in hearing loss.* Poster session at the annual American Speech-Language-Hearing Association convention, Denver, CO. Meritorious poster designation.

Glick, H, Sharma, A. (2015, November). *Virtual assessment of auditory-visual speech perception in background noise.* Poster session at the annual American Speech-Language-Hearing Association convention, Denver, CO.



Recent Grants Awarded to Members of the Institute of Cognitive Science

PI Name	Sponsor	Title of Project / Amount to ICS
Sarel van Vuuren	HHS: sub from UC Denver	RERC-ACT / $406,266
Jessica Andrews-Hanna	NARSAD	Neurocognitive mechanisms of dysfunctional self-generated thought in Major Depressive Disorder: insight from experience sampling and dynamic connectivity fMRI / $65,000
Marina Lopez-Sola	NARSAD	Neural effects of mindfulness-based cognitive therapy in post-partum women with high vulnerability for depression relapse / $65,000
Michael Mozer	NSF	"Bayesian Optimization for exploratory experimentation in the behavioral sciences comparisons to A-Z comparisons / $400,000
Jennifer Jacobs	NSF	An Efficacy Study of the Learning and Teaching Geometry PD Materials: Examining Impact and Context-Based Adaptations / $2,808,325
Marie Banich	NIH	Prefrontal mechanisms of selection: Disrupted in internalizing psychopathology? / $3,192,465
Tamara Sumner (Co-PI Heather Leary)	NSF	Engineering Experiences / $286,117
Tor Wager	NIH: sub from Columbia	Neural Signature of Fear Overgeneralization in Trauma Exposed Adults / $152,079
Phillip Gilley (Co-PI Christine Yoshinaga-Itano)	HHS: sub from Gallaudet Univ	Rehabilitation Enginnering Research Center on Improving the Accessibility, Usability and Performance of Technology for Individuals who are Deaf and Hard of Hearing / $749,067
Christine Yoshinaga-Itano	HHS: sub from Univ of S. Carolina	NECAP: EHDI Developmental Outcomes Study / $563,500
Tamara Sumner	NSF: sub from UCAR	EAGER: Special Collection to Support Core Ideas in High School Biology / $70,076
Christine Yoshinaga-Itano	HHS: sub from Univ of S. Carolina	Assessing Impact of Early Identification and Intervention on Children with Permanent Congenital Hearing Loss / $300,000
Bill Penuel (Co-PI Tamara Sumner)	Moore Foundation: sub from NorthWestern	Curriculum Units that Exemplify Three Dimensional Learning and Assessment / $405,202
Cinnamon Bidwell	NIDA: sub from Mind Research Network	Effectiveness of Varenicline: Testing Individual Differences / $95,643
Marie Banich	NIH: sub from Univ of Minnesota	3/13 ABCD-USA Consortium: Research Project / $2,844,504
Martha Palmer	Defense Threat Reduction Agency/J4C	eTASC - Empirical Evidence for a Theoretical Approach to Semantic Components / $750,000*
Martha Palmer	NIH: sub from Boston Children's Hospital	THYME (Temporal History of Your Medical Events) renewal / $531,328*
Martha Palmer	DARPA: sub from Linguistic Data Consortium, Univ of Penn	Lorelei (Low Resource Languages for Emergent Incidents) / $280,000*
Martha Palmer	DARPA: sub from Univ of Illinois, Urbana-Champaign	A Communicating with Computers, Cognitively Coherent HCI / $450,000*

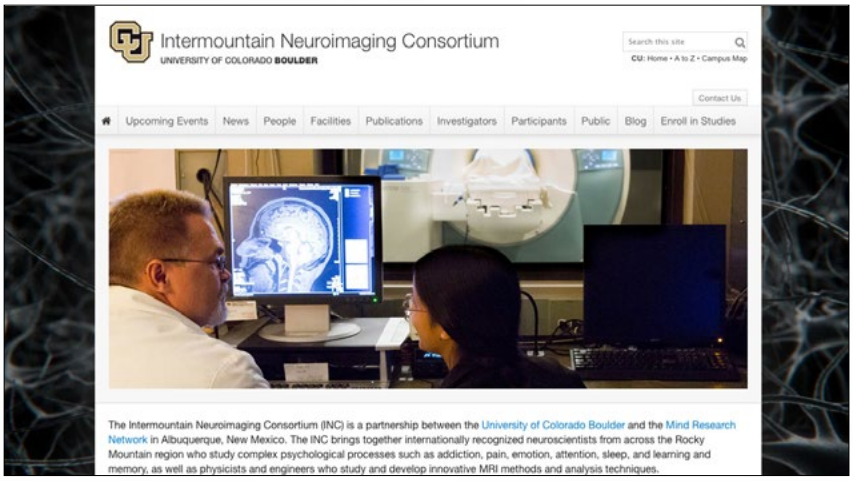
**Palmer grant funds administered by Computer Science*

INC News Update

INC's brain imaging facility continues to draw in new investigators from across the Front Range and beyond, with new studies this year coming from researchers at Macquarie University (Australia), the University of Denver, the University of Colorado Denver, departments across the CU Boulder campus (including Integrative Physiology and Speech, Language and Hearing Sciences), and even a local Boulder-based company.

The breadth of research topics among INC investigators also continues to grow and ranges from understanding basic cognitive processes such as reading to testing the effects of nutritional supplements on brain structure and function. INC scanned both its youngest and oldest participants to date in 2015: INC staff worked with Dr. Pilyoung Kim at the University of Denver to develop a protocol to study brain structure and emotional processing in 8-18 month old infants, and with Drs. Angela Bryan, Jessica Andrews-Hanna, Marie Banich and Douglas Seals to develop a protocol to study the effects of exercise and dietary interventions on brain structure and function in 65+ year old adults. Ongoing research continues with children ages 8-17, as well as adults of all ages. In 2016, INC's imaging facility will expand its support for child and adolescent studies as one of 13 sites selected to be part of a multi-site, longitudinal, national study to explore the effects of substance use on the developing brain (supported by a grant to Dr. Banich).

INC Intermountain Neuroimaging Consortium



New INC Website: www.colorado.edu/mri

INC continues its outreach into the larger Colorado community with neuroscience lessons for K-12 classrooms, talks for the public and a newly implemented professional development workshop for K-12 teachers (in partnership with CU Teach). From March 14-20 2016, the INC will participate in the Dana Foundation's Brain Awareness Week by hosting talks and events around the CU Boulder campus to increase public awareness of brain research. Stay up to date on the latest INC research, events and research opportunities via the new INC website and social media channels.

On the web: www.colorado.edu/mri

Facebook: www.facebook.com/CUBoulderMRI

Twitter: twitter.com/CUBoulderMRI

Twitter: twitter.com/CUBoulderMRI

Facebook: www.facebook.com/CUBoulderMRI

Welcome New Staff

ICS is happy to welcome Marisa Seitz onto our staff. She is an administrative assistant in our Muenzinger office, and will also be leading our new forays into social media. Marisa is looking forward to expanding ICS's presence on Facebook and Twitter, and asks that any exciting news from ICS associates (papers published, conferences attended, etc.) be sent to her at marisa.seitz@colorado.edu. Marisa recently moved to Colorado from Arlington, VA and is excited to work with the institute.

ICS Social Media

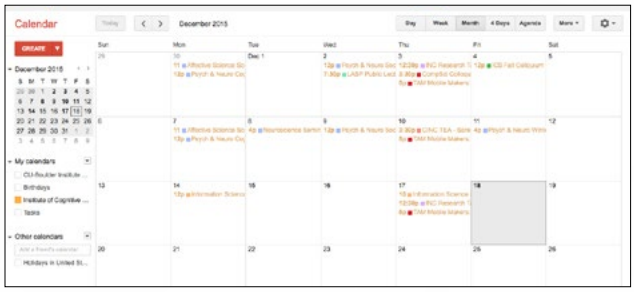
ICS is now on social media! Be sure to like us on Facebook and follow us on Twitter to get the latest updates on the work being done by ICS faculty, fellows, and students.

Did you publish a paper? Attend a conference? Do you have any other exciting news you'd like to share? Let us know! Just email Marisa Seitz at marisa.seitz@colorado.edu with any news.

Want to keep up with events at ICS and our associated departments? Subscribe to the ICS Google Calendar to see what talks and events are going on around campus. Just visit our homepage at www.colorado.edu/ics and click on the Google Calendar to add it. Have a relevant event to add? Email marisa.seitz@colorado.edu.

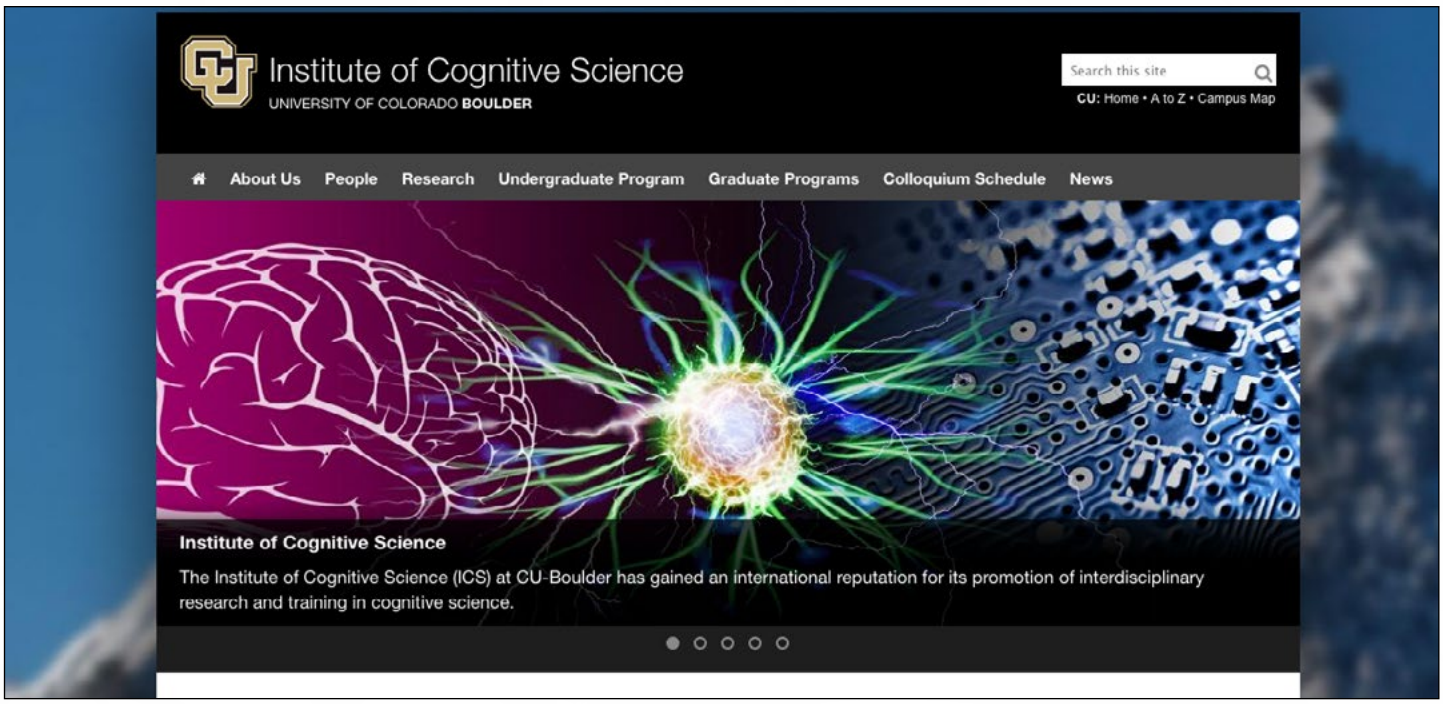
Twitter: twitter.com/CU_ICS

Facebook: facebook.com/cubolderICS



New ICS Website

The institute is excited to announce the launch of our new website! The new design presents an updated look and cleaner functionality. Be sure to click around and check it out. If you have any questions, concerns, or updates about the website, please contact Marisa Seitz at marisa.seitz@colorado.edu.



www.colorado.edu/ics

ICS Student Presentations

Goodman, Katherine, Hunter Ewen, Jean Hertzberg, and Jeffrey Harriman. *Aesthetics of Design: a case study of a course.* American Society for Engineering Education (ASEE) 2015, June 2015.

Woo, C. -W., et al. (June, 2015). *Cerebral contributions to pain independent of nociceptive stimulus intensity.* Poster presentation at the annual meeting of the Organization for Human Brain Mapping, Honolulu, Hawaii

Croghan, N, Glick, H, Smith, Z. (2015, July). *Influence of simulated current spread on speech-in-noise perception and spectro-temporal resolution.* Poster session at the biennial Conference on Implantable Auditory Prostheses, Lake Tahoe, CA.

Nickerson, H., Brand, C., & Repenning, A. (2015). *Grounding computational thinking skill acquisition through contextualized instruction.* In Proceedings of the Eleventh International Computing Education Research Conference (pp. 207-216). New York: ACM Press.

Goodman, Katherine, Jean Hertzberg, and Noah Finkelstein. *Aesthetics and Expanding Perception in Fluid Physics.* Frontiers in Education (FIE) 2015 conference, El Paso, TX. October 2015.

Hertzberg, Jean, and Katherine Goodman. *Aesthetics and Emotional Engagement Why it Matters to Our Students, Why it Matters to Our Professions.* Special Session, FIE 2015, El Paso, TX. October 2015.

Learning effects on pain generalize to perceptually similar cues and modify pain perception, UROP (Undergraduate Research Opportunity) Daniel Kusko, Leonie Koban, and Tor Wager

Graduate Student Awards

The following awards were won by ICS Graduate Students in 2015:

Marianne Reddan - registration award for Social Affective Neuroscience Society in 2016 for designing a logo.

Marianne Reddan - $500 international travel grant for Human and Animal Emotion Conference in Sicily in 2016 from the graduate school.

Wani Woo - Heyer Award, Dept. of Psychology and Neuroscience, University of Colorado at Boulder

Wani Woo - Carol B. Lynch Graduate Fellowship, University of Colorado at Boulder

ICS Travel and Research Student Awards Fall 2015

ICS awarded the following students travel and research awards for Fall 2015:

Brett Roads - Computer Science - Research

Katherine Phelps - Linguistics - Research

Leif Oines - Psychology/Neuroscience - Travel

Shane Schwikert - Psychology/Neuroscience - Travel

For more information about ICS Student Awards, visit colorado.edu/ics/graduate-programs/student-travel-research-awards