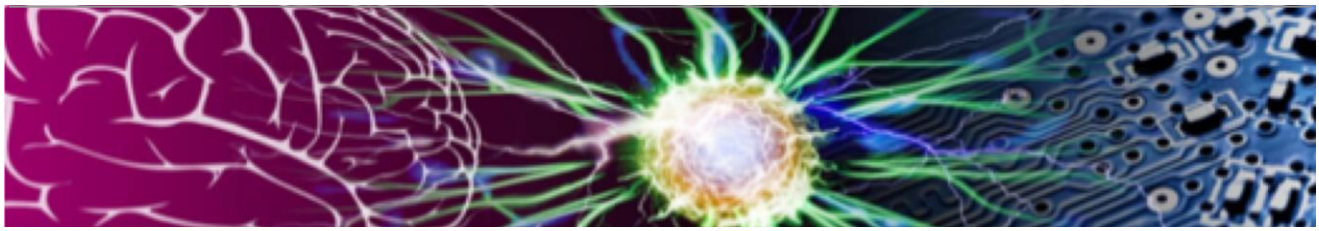
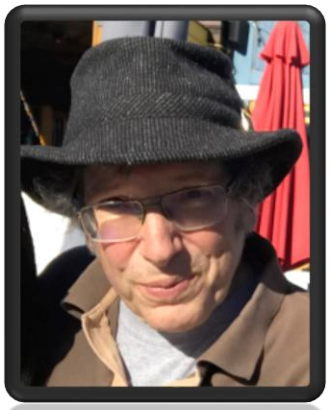
INSTITUTE OF COGNITIVE SCIENCE

Newsletter | Spring Early Edition | 2019



HONORING MICHAEL EISENBERG



Mike Eisenberg left us March 12, 2019. He was a professor in CU Boulder's Department of Computer Science and Institute of Cognitive Science. His passion was teaching – he won numerous teaching awards and was part of the prestigious President's Teaching Scholar Program. His students adored the breadth and depth of his knowledge, coupled with his quick wit and kind and gentle personality. He taught classes as diverse as cognitive science, artificial intelligence, classical readings in computer science, discrete mathematics, human augmentation, and technology and the young.

Mike's research interests were built upon his background in Constructionist learning, with an emphasis on math and science education. He was a pioneer in the "Maker Movement," combining technology with real-world building experiences and crafts. His Craft Technology Lab was a wonderland of paper polyhedral sculpture, 3D printers, a laser cutter, bench tools, and every type of craft item imaginable. His home was very similar to his lab, with the addition of thousands of books and a few dozen dog toys.

In addition to his academic work, Mike had a passion for theatre and wrote an off-off-Broadway play called "Hackers". He also co-created "The Great Columbia Riot of 1978," one of the Columbia University Varsity Shows. His most recent play, "Terrember," was performed at The Dairy as part of the Theatre Made in Boulder festival.

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Digital newsletters with active hyperlinks are found at www.colorado.edu/ics/AboutUs

FROM THE DIRECTOR

Friends,

This has been a very challenging semester for the Institute. We have experienced terrible losses, but, at the same time our community is being refreshed and energized by new faculty and new members. I outline some of the major changes here.

Our friend, mentor, teacher, and dear, dear colleague - **Prof. Mike Eisenberg** - died in March. Mike had been battling cancer since last year. The beautiful tribute on our front page was written by his wife Ann, who co-directed the Craft Technologies Lab with Mike for the past 30 years. Please take a few minutes to reflect on all the joy, love, curiosity, wonder, and grace that Mike brought to our lives and the lives of everyone he connected with. With the support of RIO, we have appointed Dr. Ann Eisenberg to the post of Senior Research Associate (our only one!) and she will continue directing the Craft Lab for the foreseeable future.

Prof. Tor Wager - Director of the Cognitive and Affective Neuroscience Lab - will be joining Dartmouth University starting July 1. The last faculty member to leave ICS for another University was Dan Jurafsky in 2003! Tor is being appointed to a Research Affiliate position so that he can continue to oversee several ongoing NIH-funded projects that depend on the capabilities of our neuroimaging center. I am pleased to announce that two Research Scientists from the Wager Lab will stay with the Institute and continue this work: Dr. Marta Ceko and Dr. Philip Kragel. They will be migrating to new office and lab space at our CINC facility this summer. We have been approved to search in collaboration with the Department of Psychology and Neuroscience for a new “open” neuroscience faculty position, which means that we have the option to hire at senior levels.

An absolutely bright spark in all of this is the successful transition of **Prof. Cinnamon Bidwell**, who will be starting a tenure track appointment this Fall. Cinnamon will be our newest Assistant Professor in the Institute, with her tenure home in the Department of Psychology and Neuroscience. In a first for the Institute, Cinnamon will be a member of the Clinical group in Psychology, helping us to think more deeply about translating our research into societal impact. Cinnamon will continue to serve as the Director of CU REACH (Center for Research and Education Addressing Cannabinoids and Health).

In another first for the Institute, **Prof. William Penuel** will be joining us this fall as our first Institute-Rostered faculty member from the School of Education. As described by Dean Katherine Schultz later in this newsletter, this marks the beginning of a new, long-term strategic partnership between the Institute and the School of Education. We are thrilled to have Bill join our faculty and to continue to deepen our collaborations with our education and learning sciences colleagues. We have been talking about doing this in ICS for the last 20 years so this is a very welcome realization of our dreams!

I know this is a lot to take on board. Please don’t hesitate to contact me, or stop by, if you want to talk about these changes or simply to reminisce.

Tammy Sumner, ICS Director

HONORING MICHAEL EISENBERG cont.

Mike did his undergraduate work at Columbia, and his Ph.D. at MIT, where he was proud to have been voted "Most Otherworldly" by fellow classmates.

He is survived by the loves of his life: wife and professional collaborator Ann (Nishioka) Eisenberg, son Adam Eisenberg, and dog Stella. He is preceded in death by his parents, Lawrence and Frances (Brenner) Eisenberg, and his beloved rat terrier, Rhombi. He was also the proud dissertation advisor to 11 Ph.D. graduates.

In lieu of flowers or gifts, the family requests a small donation to Animal Rescue of the Rockies (animalrescueoftherockies.org) or to the American Cancer Society (www.cancer.org) in Mike's name. Content was first published in the CU Boulder Craft Tech Lab.

SPECIAL MENTIONS

Marie Banich ICS Faculty has been invited and accepted a position on the Governing Board of the Cognitive Neuroscience Society, one of the leading organizations in the field. The Cognitive Neuroscience Society is committed to the development of mind and brain research aimed at investigating the psychological, computational, and neuroscientific bases of cognition. Congratulations and thank you for representing the Institute of Cognitive Science at CU Boulder.

Claudia Folska ICS PhD alumna named Regional Transportation District (RTD) District E's director and in the news to help kickoff the RTD's Self-driving Shuttle Launch.

Leanne Hirshfield ICS Research Faculty was in several academic and popular news articles covering her research on "Are Human Brains Vulnerable to Voice Morphing Attacks", on synthesized speakers and real human speakers being difficult to distinguish by the human brain.

David Quigley, ICS Research Associate and instructor was accepted to the Open Educational Resources professional development opportunity sponsored by OpenCU Boulder. He will be reviewing the open-source textbook 'Mind, Body, World: Foundations of Cognitive Science' and considering its suitability for use in the Cognitive Science online class

Tamara Sumner, ICS Faculty and Director was named to the College of Arts and Sciences committee on Interdisciplinary Teaching, Research, and Creative Work.

Tor Wager ICS Faculty and **Leonie Koban** post-doc Research Associate were in the news around Valentine's Day for "Broken Hearts and the Placebo Effect" about how expectations of relief from pain can have powerful effects on the experience of emotional pain.

Tor Wager and **Mariann Reddan** ICS triple PhD candidate were featured in Neuron for research on "Imagining sounds is just as good as hearing them for removing negative associations."

PUBLICATION HIGHLIGHTS

Striatal-frontal network activation during voluntary task selection under conditions of monetary reward. Orr JM, Imburgio MJ, Bernard JA, **Banich MT**. Cogn Affect Behav Neurosci. 2019 Jan 29. doi: 10.3758/s13415-019-00689-0. [Epub ahead of print] Erratum in: Cogn Affect Behav Neurosci. 2019 Feb 25

Turning down the heat: Neural mechanisms of cognitive control for inhibiting task-irrelevant emotional information during adolescence. **Banich MT**, Smolker HR, Snyder HR, Lewis-Peacock JA, Godinez DA, Wager TD, Hankin BL. Neuropsychologia. 2019 Mar 4;125:93-108. doi: 10.1016/j.neuropsychologia.2018.12.006. Epub 2019 Jan 4.

R.E. Thayer, S.L. YorkWilliams, **K.E. Hutchison, A.D. Bryan**, Preliminary results from a pilot study examining brain structure in older adult cannabis users and nonusers, Psychiatry Res. Neuroimaging. 285 (2019) 58–63. doi:10.1016/J.PSCYCHRESNS.2019.02.001.

S. YorkWilliams, C.J. Gust, R. Mueller, L.B. Cinnamon, **K.E. Hutchison**, A.S. Gillman, **A.D. Bryan**, The New Runner's High? Examining Relationships Between Cannabis Use and Exercise Behavior in States with Legalized Cannabis, Front. Public Heal. 7 (2019) 99. doi:10.3389/FPUBH.2019.00099.

S.W. Feldstein Ewing, **A.D. Bryan**, T. Alicante, P.T. Korthuis, **K.A. Hudson**, T.I. Lovejoy, Three integrated elements of empowerment: HIV prevention with sub-Saharan African adolescent females involved in transactional sex., Clin. Pract. Pediatr. Psychol. 6 (2018) 355–363. doi:10.1037/cpp0000251.

E.A. Montanaro, T.S. Kershaw, **A.D. Bryan**, Dismantling the theory of planned behavior: evaluating the relative effectiveness of attempts to uniquely change attitudes, norms, and perceived behavioral control, J. Behav. Med. 41 (2018) 757–770. doi:10.1007/s10865-018-9923-x.

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CINNAMON BIDWELL HEADED FOR TENURE TRACK

Cinnamon who is currently an ICS Research Professor, unanimously was approved by ICS faculty for a tenure track position as Assistant Professor. Congratulations, and we eagerly await the completion of the review of the appointment by university administration and approval by the Regents.

ICS FACULTY PRESENTATION HIGHLIGHTS

Alzen, J., & **Penuel, W. R.** (2019, April). Theorizing about how teachers facilitate purposeful student sense-making in the classroom. Paper presented at the NARST Annual Meeting, Baltimore, MD.

Penuel, W. R., Lo, A. S., Jacobs, J. K., Gardner, A., Stuhlsatz, M. A. M., & Wilson, C. (2019, April). Tools for supporting teachers to build quality 3D assessment tasks. Paper presented at the NARST Annual Meeting, Baltimore, MD.

Quigley, D., Caccamise, D., Foltz, P., Kintsch, E., Weatherley, J., & Kurtz, H. (2019). Determining reading comprehension of domain texts. Supplement to Proceedings of the 9th International Conference on Learning Analytics & Knowledge.

Sedey, A. & **Yoshinaga-Itano, C.** (March 5, 2019). Vocabulary Ability and Growth and Predictors of Better Outcomes, EHDI Conference, Chicago, ILQuigley, D., Caccamise, D., Foltz, P., Kintsch, E., Weatherley, J., & Kurtz, H. (2019). Determining reading comprehension of domain texts. Supplement to Proceedings of the 9th International Conference on Learning Analytics & Knowledge.

Yoshinaga-Itano, C. (March, 15, 2019). Predictors and outcomes of our at-risk populations with hearing loss: low SES, non-English speaking, multiply disabled. Judy Gravel Memorial Lecture in Pediatrics, Vanderbilt University.

FIRST ICS FACULTY FROM THE SCHOOL OF EDUCATION

ICS rostered-faculty and the ICS executive committee voted unanimously to approve the transfer of Bill's tenure line from the School of Education to ICS. This marks the start of a strategic relationship which highlights a new era in collaborative research. Welcome Bill!

Message from Kathy Schultz, Dean School of Education:
"We are delighted to formalize the longstanding partnership between the School of Education and ICS with the appointment of Bill Penuel as the inaugural ICS faculty member from the School of Education. Professor Penuel's work as a learning scientist, whose scholarship focuses on a number of areas including the promise and power of Research Practice Partnerships, Designed-based Implementation Research, and the implementation of equity-minded science curriculum developed with and for teachers, individual schools, and large school districts.

His commitment to prepare the next generation of researchers, whose work is carried out in collaboration with districts, universities, and communities, has put him at the forefront of critical conversations about the implementation of powerful research findings. This scholarship builds on the research that resides in both ICS and the SOE and has already generated several collaborative projects. We look forward to many years of partnership built on these and many more overlapping interests and commitments."

VISIT THE ICS WEBSITE FOR NEWS

For information on special events, colloquia, research updates & news, visit:

www.colorado.edu/ics

NEW ICS FELLOWS – WELCOME!

Julie Staffel
Assistant Professor Philosophy
Julia joined CU Boulder's Department of Philosophy in Fall 2018 and specializes in epistemology, with a focus on formal epistemology. Her work focuses, among other things, on the question of how to make idealized formal models in epistemology applicable and relevant to human, non-ideal thinkers.

PENUEL NAMED A FELLOW OF THE INTERNATIONAL SOCIETY OF LEARNING SCIENCES

Congratulations to William (Bill) Penuel, former ICS Fellow now ICS Faculty, and Professor of Learning Sciences and Human Development in the School of Education. ICS director Tamara Sumner stated: "This is a huge honor and wonderful recognition of the depth and breadth of Bill's research contributions to learning sciences." According to the International Society of the Learning Sciences (ISLS), "The ISLS Fellows program recognizes those who have made major contributions to the field of the Learning Sciences since its inception nearly three decades ago. These individuals are each highly accomplished scholars and community members who will continue to serve in critical roles for the society in the future through their continued leadership and mentorship activities... New fellows are named in subsequent years through a selection committee consisting of existing ISLS fellows."

ICS FELLOWS AWARDS

Alice Healy, ICS Professor Emerita
Alice received the prestigious Franklin V. Taylor Award for Outstanding Contributions in the Field of Applied Experimental/Engineering Psychology, American Psychological Association's Division 21.

Awards Committee Chair Robert W Proctor stated "...you are this year's recipient of APA Division 21's prestigious Franklin V. Taylor Award, which recognizes outstanding achievements made by a psychologist in the field of applied experimental/engineering psychology. This award is based on your outstanding contributions to the field by virtue of (1) research and publication, (2) special new contributions, and (3) general leadership in the field."

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ICS FELLOWS PRESENTATIONS

Frongillo, R., Mehta, N., Morgan, T., Waggoner, B. Multi-Observation Regression. International Conference on Artificial Intelligence and Statistics (AISTATS) 2019.

Ceppi, S., Kash, I., **Frongillo, R**. Partial Verification as a Substitute for Money. AAAI Conference on Artificial Intelligence (AAAI) 2019.

Healy, A. F., Schneider, V. I., Buck-Gengler, C. J., Kole, J. A., & Barshi, I. (2018, November). Intention to respond in a special way protects against forgetting associations even when working memory is occupied. Paper presented at the 59th Annual Meeting of the Psychonomic Society, New Orleans, LA.

Tao, L., & **Healy, A. F.** (2018, November). The role of function words in text processing by native speakers and learners of Chinese and English. Poster presented at the 59th Annual Meeting of the Psychonomic Society, New Orleans, LA.

Hoover, J. D., & **Healy, A. F.** (2019, April). The bat-and-ball problem, error sensitivity, and conscious representation. Invited paper presented in the Ellis-Battig Memory symposium, Rocky Mountain Psychological Association Convention, Denver, CO.

Kaiser, R.H., Peterson, E., Kang, M., Van Der Feen J., Aguirre, B., Clegg, R., Goer, F., Esposito, E., Auerbach, R.P., & Pizzagalli, D.A. (2018). Frontoinsular network markers of current and future adolescent mood health. Poster presentation (by R. Kaiser), annual meeting of the American College of Neuropsychopharmacology (ACNP), Hollywood, FL.

Peterson, E., Kang, M., Clegg, R., Van Der Feen J., Pizzagalli, D.A., & **Kaiser, R. H.** (2018). Frontoinsular and hippocampal markers of current and future adolescent mood health. Poster presentation (by E. Peterson), annual meeting of the Society for Neuroscience (SfN), San Diego, CA.

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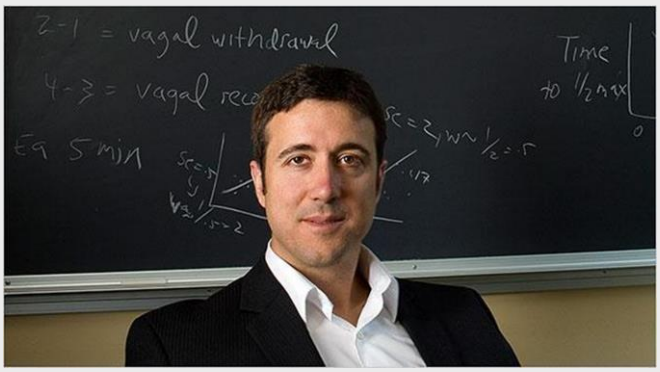
Institute of Cognitive Science
UNIVERSITY OF COLORADO **BOULDER**

AN INTERVIEW WITH TOR WAGER: NEW FRONTIERS



We at ICS are so very grateful for the years of your service and inspiration and wish you well as you explore new frontiers. Thanks for sharing the news of your next career phase with the greater ICS community.

ICS: How many years have you been a part of ICS at CU Boulder?

I joined CU in January 2010, so I have been here for 9 years.

ICS: In what ways do you feel you have grown/ changed as a researcher during your tenure here at ICS?

It has been a tremendous time for me here, and I have benefited a ton from the intellectual community. Our research program grew in scope and launched the new directions, including the use of machine learning to develop biomarkers for pain and emotion. The fMRI Center and other resources in the Institute of Cognitive Science and the Department of Psychology and Neuroscience have been instrumental in this growth.

ICS: Will you maintain research relationships here once you move to your new university and what the continued collaboration look like?

Yes we (my lab and Institute of Cognitive Science) have some terrific ongoing collaborations with Institute of Behavior Genetics (IBG) that should continue on, including a project to scan 600 twins in the largest pain neuroimaging study to date. Märta Ceko, currently a postdoc in my lab, is staying on as a research faculty and launching her own research program. Other staff will stay over the next year, as well Phil Kragel, a postdoc in my lab who is doing terrific work with emotion. I hope to continue these collaborations with members of IBG, including Matt Keller and Naomi Friedman, with the ICS ABCD study team, with ICS faculty Mckell Carter on a new project, and with our new ICS colleagues Sidney D'Mello and ICS Fellow Tam Vu, among others.

ICS: What will you miss most about being part of ICS?

I will miss the terrific support from Jean, Cat, and the ICS staff. I will also miss the fMRI Center, which is running terrifically, and is a world-class center under the guidance of Marie Banich and management of Nicole Speer. And I will miss all my friends and colleagues here, who have been so supportive and fun to be with over these years.

ICS: Can you tell us where you are going once you leave CU Boulder?

Dartmouth College in Hanover New Hampshire.

ICS: You will be missed here, and we look forward to future collaborations. Thank you Tor!

ICS FELLOWS AWARDS Cont.

Valerie K Otero, ICS Fellow
Professor and executive Director, Learning Assistant Program and PEER Program, Co-Director, Center for STEM Learning has received the American Physical Society 2019 Excellence in Physics Education Award: The Learning Assistant Program and International Learning Assistant Alliance, awarded to Valerie Otero, Dick McCray, Laurie Langdon, Steven Iona, Steven Pollock, Ian Her Many Horses, Michael Oatley, Ben Van Dusen.

Roselind (Rosi) Kaiser, ICS Fellow
Assistant Professor Dept of Psychology and Neuroscience has received two travel awards: from the 2018 American College of Neuropsychopharmacology and the 2019 Society of Biological Psychiatry.

CU REACH CENTER UPDATE

Kent Hutchison spoke at the Laureate Institute of Brain Research in Tulsa sponsored event titled "Cannabis Conference: What We Have Learned Through Scientific Research."

Monika Fleshner reported on the results of her study on the effect of oral CBD extract on physiological stress responses in male and female rats, which was funded by the inaugural iteration of the REACH Research Excellence Award.

CU REACH announced the graduate Cannabis Research Scholar Award for pre-doctoral students. Deadline for submission of all materials is July 15, 2019 (at 11:59PM MST). Details are found at: https://www.colorado.edu/center/reach/research/cu-reach-graduate-cannabis-research-scholar

Four CUChange Undergraduates were named Biological Sciences Initiative (BSI) & Undergraduate Research Opportunity (UROP) student scholars. Congratulations!

- **Jerry Ma** UROP: Impact of Marijuana use on the Gut Microbiome in relation to overall Anxiety Levels
- **Ivy Zhou** UROP: Impact of High Potency Cannabis Concentrates and Tobacco Co-Use on Gut Microbiome Diversity
- **Mohammad Habib** BSI: Sex and gender differences in anxiety levels assessed by novel rumination induction task
- **Benji Morris** UROP: Promoter SNP-dependent variation in exercise-mediated cytokine changes in connection with depression and executive function in

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DONORS

ICS thanks the following fall semester donors for their generous contribution to the Institute.

Institute of Cognitive Science Fund
Eric Worden
Amy Stone

Bidwell Lab Fund
Margaret Blazek

CU REACH
Tom Yoksas

Rocky Mountain Society for Artificial Intelligence
Keisuke Nishimoto

CENTER FOR RESEARCH ON TRAINING

Alice Healy and Lyle Bourne founded the Center for Research on Training (CRT) in 2005, with Dr. Healy acting as the first Director of the CRT until her retirement last year. This Fall, Matt Jones officially took the reins as the CRT Director, with Shaw Ketels acting as CRT Co-Director.

The new leadership is excited to expand the range of research topics at the CRT, while also maintaining the longstanding focus on learning, retention, and transfer established by Healy and Bourne. Specific areas of expansion include computational modeling, links between human and machine learning, online education, educational technology, educational assessment and evaluation, and certain topics from Human Factors and I/O psychology.

Please contact Dr. Jones (mcj@colorado.edu) or Dr. Ketels (Shaw.Ketels@colorado.edu) if you're interested in being affiliated with the center.

INTERMOUNTAIN NEUROIMAGING CONSORTIUM

The INC is on track to complete the 2018-2019 academic year recording the largest use in its 7-year history, and there are no signs of INC slowing down any time soon. This year a number of new investigators from universities and private corporations in the Denver/Boulder area began using INC's exceptional MRI scanning facility for their research projects. In addition to continuing to support a range of brain imaging research projects, INC has now developed the capacity to enable biomedical industry partners to test medical devices and procedures for MRI compatibility.

In February, INC's neuroscience outreach program culminated in a day-long celebration of the brain for approximately 150 3rd-6th grade students from rural northeastern Colorado. Students from the northeastern portion of the state joined CU Boulder undergraduate and graduate students at Northeastern Junior College to learn about brain function, anatomy, and development, and parents learned about stress, the microbiome, and mental health through a talk by CU Boulder graduate student Ms. Kelsey Loupy. Read more about this event via the story on the CU Boulder Office of Outreach and Engagement website.

Students play a brain game with CU graduate students.

Spencer Lab grad students ready to inspire the public.

SAVE THE DATE March 14 – 21
2020 Brain Awareness Week

In March, the 3rd annual Brain Awareness Week took place over a 10 day period, impacting over 200 attendees and researchers from the community and campus.

The 2019 Research to Real Life speaker series featured Yoni Ashar, PhD student presenting on "Psychological approaches to reducing chronic pain" partnering with the Boulder East Senior Center, Kelsey Loupy PhD student speaking about "Inflammation and stress" at the Center for Community, and Drs Nomita Chhabildas and Erik Willcutt presenting "When should I be concerned? A talk about attention, learning, and behavior disorders for parents, caregivers, and educators." in collaboration with Casey Middle School.

In addition the CU Boulder student Neuroscience Club held a high school student focused "Brain bumble challenge" where students moved from table to table solving neurological function and knowledge problems at the CU recreation center gym, and the largest event in the series, "Community Brain Expo Day" featured 14 exhibitors from CU Boulder and Anschutz campuses providing hands-on activities, demonstrations, posters for all ages at the lab home of Institute of Cognitive Science, Center for Innovation and Creativity (CINC) in East Campus. The energy at the Expo was high, inspiring, and contagious as researchers connected with one another and shared their work with the public.

If you would like to visit our facility or learn more about the INC, please visit our website or contact the INC's Executive Director, Dr. Marie Banich (Marie.Banich@Colorado.edu), or Dr. Nicole Speer, INC Director of Operations (Nicole.Speer@Colorado.edu).

NEW SENIOR HIRE COMING UP FALL 2019

A new senior hire for a Neuroscience Associate/Full Professor level to replace Tor is in the approval process, and the official search is anticipated to begin in late summer. ICS will collaborate with the Department of Psychology and Neuroscience to select candidates to interview this coming fall semester.

While our search process cannot officially begin until approved by the regents during their summer meeting, please let potential candidates know that we "anticipate" moving forward with the senior hire, with the search officially beginning in late summer.

MEET ROSI KAISER, RADD LAB

Rosalind (Rosi) Kaiser is a recent addition to the ICS Fellows roster. She is Assistant Professor in the department of Psychology & Neuroscience in the Research of Affective Disorders and Development (RADD) lab.

ICS: Rosi, how are you settling in to CU Boulder and ICS?

It has been such a pleasure to set up my lab and launch research here at CU Boulder. Moving always comes with challenges, but I feel fortunate to have an incredibly talented team of junior scientists in my lab and access to the experts and resources of INC/ICS; this support makes possible the three (!) active research studies we've initiated since Sept. 2018. It's hard to believe that it's been less than a year since I arrived!

ICS: Tell us about your RADD Lab.

A quick overview of the lab mission (also see our website: www.raddlab.com): The RADD Lab is a research group dedicated to understanding and improving emotional health in adolescence and across the lifespan. Our research and clinical work are centered on discovering how neurocognitive functioning is disrupted in depression and related experiences, identifying markers of depression risk and treatment response, and understanding how neurocognitive functioning may be enhanced to foster emotional health.

ICS: How does your work arising from the lab impact the community?

It is our hope that our translational work will directly impact the community by guiding the development and delivery of psychosocial treatments.

ICS: Rosi, thanks for jumping in during Community Brain Expo Day this year. It was great to have you there (2nd photo above)

CUNY CONFERENCE HIGHLY SUCCESSFUL

The 32nd CUNY Conference on Human Sentence Processing took place Friday, March 29 – Sunday, March 31, 2019 at The University of Colorado Boulder. The theme of the Special Session was Variation in the Mechanisms of Human Language Processing. 375 scholars attended from North America, Europe, Asia, and Australia to hear the presentation of 34 talks and 309 posters.

In a truly collaborative and multidisciplinary effort, the conference was organized and delivered by ICS, and departments of Psychology and Neuroscience and Linguistics.

Faculty Organizers:

- Al Kim (Psychology & Neuroscience, Institute of Cognitive Science)
- Eliana Colunga (Psychology & Neuroscience, Institute of Cognitive Science)
- Bhuvana Narasimhan (Linguistics, Institute of Cognitive Science)
- Laura Michaelis (Linguistics, Institute of Cognitive Science)

And special mention to students who were instrumental in the success of this event:

- Shannon McKnight (Psychology & Neuroscience, Institute of Cognitive Science)
- Norielle Adricula (Linguistics, Institute of Cognitive Science)
- Katie Conger (Linguistics, Institute of Cognitive Science)
- Kayla Kohake (Linguistics, Institute of Cognitive Science)

More information on the conference can be found at the website:

https://www.colorado.edu/event/cuny2019/

Digital newsletters with active hyperlinks are found at: www.colorado.edu/ics/AboutUs

iHUB BIOLOGY ADOPTION FROM A DISTRICT PERSPECTIVE

In this ongoing series exploring how research impacts real life, ICS interviewed Douglas Watkins, Denver Public School High School (DPS) Science Curriculum Specialist. inquiryHub (iHub) is a research-practice partnership bringing together educational researchers, computer scientists, school district leaders, teachers, and students from DPS, curriculum developers, interactive resource providers, and multiple publishers of STEM curricula, to undertake a systemic approach to learner-centered teaching that promotes adaptability and responsiveness to the differing needs of diverse learners.

ICS: Why and in what ways is iHub Biology course adoption important to DPS as a district?

The fact that we were able to get iHub Biology on the table for consideration for adoption through the regular curriculum-adoption cycle was important. It signaled an end to only considering curricula developed by for-profit organizations and full-blown curriculum developers and a shift toward recognizing the value of co-designed curricular materials and open-education resources The iHub Biology curriculum being chosen by the curriculum-review team of teachers is very significant for our teachers and our students because the DPS Biology teachers will have a curriculum written by their peers that is designed to be relevant for DPS students.

Through the iterative process of developing all the units within the curriculum, the research team identified a need to measure potential phenomena to anchor each unit with students first, in order to provide the greatest alignment to DPS students' motivation.

The result of that process is a sequence of anchoring phenomena that are highly motivational for the greatest number of DPS students. This is important because of the link between student motivation for engagement and positive learning outcomes. The iHub Biology curriculum provides DPS Biology teachers with a resource designed through a storyline process, developed by researchers at Northwestern University that centers students as agents of their own learning, through a guided inquiry model that, in a departure from previous models of guided learning, promotes authentic student questioning to drive their learning. The curriculum guides teachers to elicit students' questions about the anchoring phenomenon and to then, through various discussion strategies, develop investigative routines to figure out the answers to the questions they prioritize in order to explain the anchoring phenomena.

This is a huge pedagogical shift for science teaching and, in my opinion, is what makes the iHub Biology curriculum the most equitable curriculum available. All students' ideas and experiences are encouraged, honored, and leveraged to help the community of learners make sense of their learning and investigations. All this will ultimately lead to increased student outcomes. We have initial data that suggests students who, through valid experiences with this learning and curriculum, outperform their peers on content-related questions, as a result of a more coherent, relevant experience in the classroom.

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Professor of Psychology and Neuroscience and ICS Fellow Leaf Van Boven participates in public outreach activities. As a guest speaker during the monthly online meeting of the Santa Barbara Citizens Climate Lobby, Leaf shared his social psychology research on the role of partisanship and environmental policy with citizens interested in this topic. On April 9, 2019 he was interviewed for a BBC Capital print article targeted to the general public titled "How many days should you take off work?" which looks at a "bliss point" of a length of a vacation, where longer vacations can reduces the “bliss point” due to the difficulty in transitioning into regular life. Read the article on the BBC Capital website

ICS CERTIFICATES AND PHD COMPLETION

Congratulations

Combined PhD
Lakshmi Lalchandani
Psychology & Neuroscience and Cognitive Science

Rick (Richard) Parker
Computer Science and Cognitive Science

Triple PhD
Hannah Glick
Speech Language Hearing Sciences, Neuroscience and Cognitive Science

Leif D. Oines
Psychology & Neuroscience, Neuroscience, and Cognitive Science

ICS Graduate Certificates
Stephen Sommers
Alexandra Gendreau

Human Language Technology Certificate
Amy Burkhardt

ICS Undergraduate Certificate
Kimberly Nieblas
Megan Pielke
McKenna Rogers
Nadine Salvador

NEXT CALL FOR TRAVEL & RESEARCH AWARDS

Call for applications will occur in mid-May. Interested students can contact the following Student Award Committee members.

- EDUC - Stephen.sommer@colorado.edu (chair)
- PHIL - Lisa.Thomassmith@colorado.edu
- CS - Alexandra.Gendreau@colorado.edu
- PSYC - Shannon.Mcknight@colorado.edu
- LING - Norielle.Adricula@colorado.edu
- SLHS - Carly.Schimmel@colorado.edu

NEW ICS CERTIFICATE STUDENTS

Welcome

Combined PhD
Shirley Huang (SLHS)
Spencer Dudley (Education)

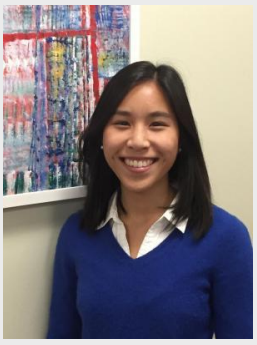
Undergraduate Certificate

Dieu Hang Hoang	Emma Spartachino
Mckenna Rogers	Michael Fitzgerald

STUDENT TRAVEL & RESEARCH AWARDS

Congratulations


Srinjita


Shirley

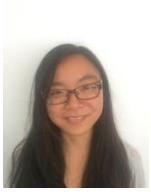
Spring semester awards were awarded to:

- Srinjita Bhaduri in CS for travel, presenting a paper at the ACM CHI conference.
- Shirley Huang in SLHS for travel, presenting a poster at the Symposium on Child Language Disorders

These awards encourage students in one of the ICS certificate or PhD programs to participate in interdisciplinary study and research. The Institute provides funds to attend and present at interdisciplinary conferences or to conduct original research. The awards are administered by a student committee representing several disciplines of study.

Graduate Certificate and Combined PhD Program and Undergraduate Certificate Program info is found:
www.colorado.edu/ics/graduate-programs and www.colorado.edu/ics/undergraduate-certificate-cognitive-science-overview

GRADUATE STUDENTS RECOGNIZED



Winnie Zhuang received full funding from the Swiss Graduate School for Cognition, Learning, and Memory to attend their summer workshop this June! The workshop takes place at the University of Bern in Zurich, Switzerland, and is about "Dealing with Uncertainty: Decision-Making and Memory Processes." Here is a link to the webpage about their program.

Lisa Thomas-Smith, PhD Candidate, Philosophy, GPTI received the Graduate Student Teaching Excellence Award for 2018-20. Nominated by the GPTI (Graduate Part-Time Instructor) Fellowships and Awards committee. Recognizing part-time instructor teaching excellent for over 30 years, the Graduate School calls for nominations and faculty committee members select recipients based on the submission of biographical and teaching philosophy statements, teaching ability evaluations by faculty and students, and classroom observations.

ICS GRADUATE STUDENT HANNAH GLICK 1ST PLACE

In just 3 minutes flat, Hannah Glick (SLHS '12, AuD '17, PhD '19) summarized 6 years of her doctoral research, taking home the people's choice award and first place in the CU 3-Minute Thesis (3MT) in Boulder last February and first place at the Western Regional 3MT competition in Tucson in March. She will be traveling to compete in the national 3MT competition in Nashville in December. Founded in Australia in 2008, 3MT challenges graduate students to explain their work in quick, compelling, and simple way to a broad general audience using a single graphic aid. Since its inception, 3MT has spread to over 600 universities across 65 countries.

In Hannah's presentation entitled "Your Brain on Hearing Aids" she discussed how untreated, age-related hearing loss (even very mild hearing loss) impacts sensory cortical neuroplasticity and cognitive functioning, and how early treatment with hearing aids may restore more typical functioning. Watch Hannah's winning presentation.

Her message? Age-related hearing loss needs to be addressed from a public health perspective. Despite the fact that hearing loss is the 3rd most common chronic health condition among aging adults and has been independently associated with dementia (including Alzheimer's), many adults have never had a hearing test, and the vast majority of adults who could benefit from hearing aids remain untreated.

This research was recently recognized at the American Academy of Audiology conference, where Hannah's poster received the James and Susan Jerger Award for Excellence in Student Research. Hannah defended her PhD in February and will graduate with her combined PhD (SLHS/ICS/Neuroscience) in May. She hopes to continue this work in her future career, bridging successful partnerships between academia, industry, and public health sectors.

Digital newsletters with active hyperlinks are found at www.colorado.edu/ics/AboutUs

Learn about the four ICS Graduate Programs at www.colorado.edu/ics/graduate-programs

COOL STUFF BY ICS STUDENTS

She returns to Boulder filled with insights on fostering global, playful partnerships. Pic 2 photo credit to LEGO Foundation.

Layne Jackson Hubbard, PhD student in computer science and ICS graduate fellow, traveled in April to the LEGO headquarters in Billund, Denmark with 400+ others from around the world for the 2019 LEGO Idea Conference. This year's theme was "Unlocking the Power of Parenting" with a focus on play! While in Billund, Layne collaborated with a local school using her MindScribe.org robotic prototypes to help kindergarteners tell stories about their creations in Danish, English, Dutch, and Japanese.

ICS STUDENT PRESENTATIONS

Srinjita Bhaduri is presenting a first authored paper titled "Designing an Informal Curriculum to Develop 3D Modeling Knowledge and Improve Spatial Thinking Skills" at the ACM CHI Conference; May 2019; Glasgow, UK.

Jessie Finocchiaro gave a spotlight presentation at NeurIPS 2018 in December 2018 (acceptance rate 3.4%) for her paper titled Convex Elicitation of Continuous Properties, with Rafael Frongillo, ICS Fellow.

Shirley Huang is presenting a poster titled "Convergence of a Questionare on Bilingual Children's SocioEmotional Experience and Storytelling" at the Symposium on Research in Child Language Disorders. June, 2019; Madison, Wisconsin

Marianne Reddan, Wager TD, & Schiller D is presenting a talk on "Attenuating Neural Threat Expression with Imagination" at the Organization of Human Brain Mapping Annual 2019 Meeting in Rome (June 2019).

ICS STUDENT PUBLICATION HIGHLIGHTS

Gendreau, A., Recker, M., Jacobs, J., Sumner, T. (2019). Designing a middle school science curriculum that integrates computational thinking and sensor technology. Paper presented to the Special Interest Group on Computer Science Education Technical Symposium. Minneapolis, MN.

Koushik, V., Guinness, D., Kane, SK. StoryBlocks: A Tangible Programming Game To Create Accessible Audio Stories (This work will receive Best Paper Honorable Mention)

Koushik, V., & Kane, SK. “It Broadens My Mind”: Empowering People with Cognitive Disabilities through Computing Education

Reddan MC, Wager TD, & Schiller D (2018) Attenuating Neural Threat Expression with Imagination. Neuron, 100, 994–1005

Suresh, A., Sumner, T., Huang, I., Jacobs, J., Foland, B. & Ward, W. (2018). Using deep learning to detect talk moves in teachers’ mathematics lessons. Poster presented to the IEEE International Conference on BigData, Seattle WA.

Suresh, A., Sumner, T., Jacobs, J., Foland, B. & Ward, W. (2019). Automating analysis and feedback to improve mathematics teachers’ classroom discourse. Paper presented to the Ninth Symposium on Educational Advances in Artificial Intelligence (EAAI). Honolulu, HI.

Institute of Cognitive Science
UNIVERSITY OF COLORADO **BOULDER**

DISSERTATION SPOTLIGHTS

A Learning Analytics Approach To Scaffolding Scientific Modeling In The Classroom

David Philip Quigley
Advisor: Tamara Sumner

Scientific modeling is increasingly important both in K-12 science education and the broader scientific community, but there are significant gaps in both our understanding of how people learn modeling and how we can support them in this process. This work takes a comprehensive look at how students use digital modeling tools in science classrooms, particularly with EcoSurvey, a tool developed to support students in creating a model of the components and interactions in the local ecosystem. This tool has been developed using an iterative process and deployed in three consecutive school years as part of a design-based implementation research project in high school biology classrooms. During this time, I have developed new techniques for analyzing students' models and modeling activity along with the impact of feedback and recommender systems. These approaches have demonstrated significant power in creating a picture of students' modeling activity in real time. In addition, I have determined the effects of certain design decisions on student tool utilization through iterative deployment, and found that explicit scaffolds can have a significant impact on students' models and modeling practices. Finally, I have begun to map how student activity can be related to their learning of modeling as a science and engineering practices. Through this work, I have demonstrated the power of real-time activity analytics to provide insight on the appropriate level of student support to give. This work advances learning analytics, the study of scientific modeling in the classroom, and modeling tool design.

David would like to thank his committee for their support on his dissertation, and would like to extend special thanks to Tammy and Bill for supporting his project both with participation in the inquiryHub project and grant funding. David is now a Research Associate in the Institute of Cognitive Science and Assistant Professor - Adjunct in the Department of Computer Science at CU Boulder. He is currently working on the eBRAVO project building adaptive, personalized supports for reading expository texts. David is also teaching, including leading the Minds & Machines Cognitive Science course developed by Mike Eisenberg and various courses in Computer Science.

Developing Software Engineers: Investigating the Influence of a Computer Science Capstone on Professional Identity Formation

Richard (Rick) Parker
Advisor: Tamara Sumner

Professional identity, or the connection between individuals and their professional community of practice, begins forming as early as deciding a major for university studies. Development is supported or hindered by situated practices and experiences throughout undergraduate studies and across the transition from university to the workplace. To explore how the academic setting supports or hinders professional identity formation, I expand situated learning theory with stages of concern to directly model identity-related progression of concerns across situated planes of development.

My dissertation research focuses on the Computer Science (CS) capstone experience. The CS capstone course is composed of teams of four to six undergraduate CS students. Each team works directly with an external sponsor to apply software engineering practices toward a project with real-world impact. I conducted interviews with 19 students across two cohorts of the capstone course, and gathered individual and team artifacts from five cohorts of the course. Analysis of this qualitative dataset explores the role of emotions and interest in supporting student engagement and perception of project relevance. These findings culminated in my proposed framework, Multiple Planes of Concern or MPoC, which combines planes of development with stages of concern for examining support for professional identity formation in an academic setting.

This dissertation is organized around three publications over the course of my studies. Outcomes from this dissertation research include the MPoC analytical framework, a conjecture map linking the CS capstone structure to learning theory, broader implications for educational support of professional identity, the CS Capstone Dataset, and the academic artifact consent policy. I advance theory at the intersection of learning sciences and formation of professional identity in CS.

Rick would like to thank his advisor Tamara Sumner and committee members Bill Penuel, Ben Shapiro, Clayton Lewis, and Lecia Barker. Since defending my dissertation, Rick has accepted a position as Senior Software Engineer at Lucid Software in Salt Lake City, Utah. Lucid is creator of Lucidchart and Lucidpress. His role is developing new features and functionality around visual reasoning and collaborative thinking, while contributing to the onboarding process and leadership training of new engineering hires.

iHUB BIOLOGY ADOPTION Cont.

ICS: What can we do better as researchers?

As I prepare for a panel discussion on democratizing evidence, I have been thinking about the role researchers have played in providing teacher voice in what you study. I think I have had a lot of voice in that process, which makes sense, given my closer connection to the researchers, but I think if you could find ways to get teachers to identify how future research should look, that would be good. My relationship with the researchers has been amazing and I don't know how I would like to see any changes in that relationship. Maybe I'll have something by the time we talk again about this!

ICS: What are your plans and hopes for the immediate and near future using iHub Biology?

I hope the Professional Development teacher training this summer is planned, delivered, and received well. Then I hope the implementation across the district goes well. And finally, I hope that the few schools in DPS that did not opt-in to using the curriculum eventually jump on board and end up using it, seeing the successes at other schools. I also hope we successfully design the iHub Chemistry curriculum moving forward and find it adopted officially in a few years.

ICS: How might iHub Biology impact the national science education scene?

If we do this right, we might actually provide a real motivation for districts across the nation to stop purchasing textbooks and to, instead, either use whatever storylined curricula are available on the Open Educational Resource market, or to, even better, begin developing research-practice partnerships across the nation to do the work we did and co-design curricular materials for their local interests. iHub Biology will probably change the scholastic scene of educational research and, hopefully, find its way into the reading material for graduate classes for learning sciences and education across the nation. It may be the catalyst for a huge change in how educational institutions at higher education and K-12 levels conduct science curricular business!

inquiryHub Biology course for high school is a deeply digital curriculum that is designed so that all course materials are accessed within the digital environment.

Deeply digital means that all teacher and student facing materials were developed, created, tested for use in a strictly digital environment, with teaching and learning materials designed to interact seamlessly with one another through hyperlinks.

ICS PUBS– Cont.

Hagerty, S.L., Ellingson, J.M., Bidwell, L.C., Helmuth, T., **Hutchison, K.E.**, & **Bryan, A.D.** An overview and proposed research framework for studying co-occuring mental and physical health dysfunction. Perspectives on Psychological Science. [In press]

Thayer, R.E., YorkWilliams, S.L., **Hutchison, K.E.**, & **Bryan, A.D.** (2019). Preliminary results from a pilot study examining brain structure in older adult cannabis users and nonusers. Psychiatry Research: Neuroimaging

Bosch, N., & **D'Mello, S. K**. Automatic Detection of Mind Wandering from Video in the Lab and in the Classroom, IEEE Transactions on Affective Computing.

Spann, C., Shute, V. J. Rahimi, S., & **D'Mello, S. K.** The Productive Role of Cognitive Reappraisal in Regulating Affect during Game-Based Learning. Computers in Human Behavior.

Hutt, S., Krasich, K., Mills, C. Bosch, N., White, S., Brockmole, J., & **D'Mello, S. K.** (in press) Gaze-based Models of Mind Wandering in Classrooms. User Modeling & User-Adapted Interaction. (IF = 2.8).

Hutt, S., Grafsgaard, J., & **D'Mello, S. K.** (2019). Time to Scale: Generalizable Affect Detection for Tens of Thousands of Students across An Entire Schoolyear. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019). New York: ACM. (Full paper– AR = 24%).

Vrzakova, H., Amon, M. J., Stewart, A., & **D'Mello, S. K.** (2019). Dynamics of Visual Attention in Multiparty Collaborative Problem Solving using Multidimensional Recurrence Quantification Analysis. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019). . New York: ACM. (Full paper– AR = 24%).

Aslan, S., Alyuz, N., Tanriover, C., Mete, S. E., Okur, E., **D'Mello, S. K.**, et al. (2019). Investigating the Impact of a Real-time, Multimodal Student Engagement Analytics Technology in Authentic Classrooms. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019). . New York: ACM. (Full paper– AR = 24%).

Continued on page 16…

ICS PUBS– Cont.

Stone, C., Quirk, A., Gardener, M., Hutt, S., Duckworth, A. L., & **D'Mello, S. K.** (2019). Language as Thought: Using Natural Language. Processing to Model Noncognitive Traits that Predict College Success. Proceedings of the 9th International Learning Analytics and Knowledge Conference (LAK'19).

Baikadi, A., Becker, L., Budden, J., **Foltz, P.W.**, Gorman, A., Hellman, S., Murray W. & Rosenstein, M. (2019). An apprenticeship model for human and AI collaborative essay grading. In User Interactions for Building Knowledge Workshop (UIBK 2019) at IUI 2019. Los Angeles, CA. March 2019.

Cohen, A.S., Fedechko, T., Schwartz, E., Le, T., **Foltz, P.W.**, Bernstein, J., Cheng, J., Rosenfeld, E., Holmlund, T. B. & Elvevåg, B. (2019). Ambulatory Vocal Acoustics, Temporal Dynamics, and Serious Mental Illness. Journal of Abnormal Psychology , 128, 97-105. doi: 10.1037/abn0000397

Cowan, T. Le, **T. P. Elvevåg, B**., **Foltz, P. W.**, Tucker, R. P., Holmlund, T. B., Cohen, A. S. (2019). Comparing static and dynamic predictors of risk for hostility in serious mental illness: Preliminary findings, Schizophrenia Research, Volume 204, pp. 432-433,ISSN 0920-9964, https://doi.org/10.1016/j.schres.2018.08.030.

Holmlund, T.B., **Foltz, P.W.**, Cohen, A.S., Johansen, H.D., Sigurdsen, R., Fugelli, P., Bergsager, D., Cheng, J., Bernstein, J., Rosenfeld, E. & Elvevåg, B. (2019). Moving psychological assessment out of the controlled laboratory setting and into the hands of the individual: Practical challenges. Psychological Assessment. 31(3). doi: 10.1037/pas0000647

J.M. Ellingson, R. Corley, J.K. Hewitt, **N.P. Friedman**, A prospective study of alcohol involvement and the dual-systems model of adolescent risk-taking during late adolescence and emerging adulthood, Addiction. (2018). doi:10.1111/add.14489.

Finocchiaro, Jessica & **Frongillo, Rafael**. Convex Elicitation of Continuous Properties. Neural Information Processing Systems (NeurIPS) 2018.

Frongillo, Rafael & Waggoner, Bo. Bounded-Loss Private Prediction Markets. Neural Information Processing Systems (NeurIPS) 2018.

Schneider, V. I., **Healy, A. F.**, **Carlson, K. W**., Buck-Gengler, C. J., & Barshi, I. (2019). How much is remembered as a function of presentation modality? Memory, 27, 261-267.

Bandara, D., Velipasalar, S., and **Hirshfield, L.**, Classification of Affect Using Deep Learning on Brain Blood Flow Data. Journal of Near Infrared Spectroscopy, 2019 (in press).

Hirshfield, L., Bobko, P., Barelka, A., Sommer, N., and Velipasalar, S., Toward Interfaces that Help Users Identify Misinformation Online: Using fNIRS to Measure Suspicion. Journal of Augmented Cogntion, 2019 (in press).

Kaiser, R. H., Snyder, H. R., Goer, F. Clegg, R., & Pizzagalli, D. A. (EPub 2018). Attention bias in rumination and depression: Cognitive mechanisms and brain networks. Clinical Psychological Science. doi: 10.1177/2167702618797935

Olson, E. A., **Kaiser, R. H.**, Pizzagalli, D. A., Rauch, S. L., & Rosso, I. M. (EPub 09, 2018). Regional prefrontal resting state functional connectivity in PTSD. Biological Psychiatry: Cognitive Neuroscience and Neuroimaging. doi: 10.1016/j.bpsc.2018.09.012

Nguyen, KP, Josić, K., & **Kilpatrick, ZP**. Optimizing sequential decisions in the drift-diffusion model. J Math. Psychol. 88 (2019) pp. 32-47.

Gould, Kevin M. & **Michaelis, Laura A**. 2018. Match, Mismatch and Envisioning Transfer Events: How Verbal Constructional Bias and Lexical-class Concord Shape Motor Simulation Effects. Constructions and Frames 10: 234–268.

Alzen, J. Langdon, L., & **Otero, V.** (2018). A logistic investigation of the relationship between the learning assistant model and failure rates in introductory STEM courses, International Journal of STEM Education, 5 (56), https://doi.org/10.1186/s40594-018-0152-1.

Lindsay, W., Belleau, S., & **Otero, V.** (2018). PEER Suite: A holistic approach to supporting inductive pedagogy implementation, in L. Ding, A. Traxler, and Y. Cao (Eds.), 2018 Physics Education Research Conference Proceedings, AIP Press:Melville, NY, http://dx.doi.org/10.1119/perc.2018.pr.Lindsay.

Alzen, J., Langdon, L., & **Otero, V.** (2018). The Learning Assistant Model and DWF rates in introductory physics, in L. Ding, A. Traxler, and Y. Cao (Eds.), 2017 Physics Education Research Conference Proceedings, AIP Press: Melville, NY, 36. http://dx.doi.org/10.1119/perc.2017.pr.004

Belleau, S., Quinty, E., & O**tero, V.** (2018, copyright). Physics through Evidence, Empowerment through Reasoning Suite, currently in publication negotiations.

Furtak, E. M., & **Peneul, W.R.** (2019). Coming to terms: Addressing the persistence of "hands-on" and other reform terminology in the era of science as practice. Science Education, 103(1), 167–186. doi:https://doi.org/10.1002/sce.21488

Continued on page 17…

A digital newsletters with active hyperlinks are found at: www.colorado.edu/ics/AboutUs

ICS PUBS– Cont.

Furtak, E. M., & **Peneul, W.R.** (2019). Coming to terms: Addressing the persistence of "hands-on" and other reform terminology in the era of science as practice. Science Education, 103(1), 167–186. doi:https://doi.org/10.1002/sce.21488

Penuel, W. R. (2018). Infrastructuring as a practice of design-based research for supporting and studying equitable implementation and sustainability of innovations. The Journal of the Learning Sciences. doi:https://doi.org/10.1080/10508406.2018.1552151

Peffer, Melanie, **Quigley, David**, Mostowfi, Mehrgan (2019). Clustering Analysis Reveals Authentic Science Inquiry Trajectories Among Undergraduates. Proceedings of the 9th International Conference on Learning Analytics & Knowledge, 96-100.

Smart, Stephen & **Szafir, Danielle Albers**. "Measuring the Separability of Shape, Size, and Color in Scatterplots." In the Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), 2019.

Song,Hayeong & **Szafir, Danielle Albers**. "Where's My Data? Evaluating Visualizations with Missing Data." IEEE Transactions on Visualizations and Computer Graphics, 25(1): 914-924, 2019.

Whitlock, Matt & **Szafir, Danielle Albers**. "Situated Prototyping of Data-Driven Applications in Augmented Reality." In the Proceedings of the Interaction Design & Prototyping for Immersive Analytics Workshop, 2019.

*Mrkva K., *Westfall, J., & **Van Boven, L.** (in press). Attention drives emotion: Voluntary visual attention increases perceived emotional intensity. Psychological Science.

Van Boven, L., *Ramos, J., Montal-Rosenberg, R., Kogut, T., Sherman, D. K., & Slovic, P. (In press). It depends: Partisan evaluation of conditional probability importance. Cognition. DOI: 10.1016/j.cognition.2019.01.020

*André, Q., Carmon, Z., Wertenbroch, K., Crum, A., Frank, D., Goldstein, W., Huber, J., **Van Boven, L.**, Weber, B., & Yang, H. (2018). Consumer choice and autonomy in the age of artificial intelligence and big data. Customer Needs and Solutions, 5, 28–37. DOI: 10.1007/s40547-017-0085-8

*Ehret, P., **Van Boven, L.**, & Sherman, D. (2018). Partisan barriers to bipartisanship: Understanding climate policy polarization. Social Psychological and Personality Science: Recent Geopolitical Events, 9, 308–318. DOI: 10.1177/1948550618758709. Winner: Best Graduate Student paper, APA Division 34, Population and Conservation Psychology.

Yoshinaga-Itano, C., Sedey, AL., Wiggin, M., Mason, C. Language Outcomes Improved Through Early Hearing Detection and Earlier Cochlear Implantation Otology & Neurotology. 39(10):1256-1263, December 2018.

de Diego-Lazaro, B., Rstrepo, MA, Sedey, AL., **Yoshinaga-Itano, C.** (2019). Predictors of Vocabulary Outcomes in Children Who Are Deaf or Hard of Hearing From Spanish-Speaking Families, 50(1), Language Speech & Hearing Services in Schools, https://doi.org/10.1044/2018_LSHSS-17-0148

ICS FELLOWS PRESENTATIONS Cont.

Kaiser, R. H. (2019). Predicting youth mood health using neurocognitive biomarkers. In F. Gunning (Chair), The use of cognitive and affective neuroscience to inform novel interventions for mood and anxiety disorders: A lifespan perspective. Symposium, (03/29/19), annual meeting of the Anxiety and Depression Association of America (ADAA), Chicago, IL.

Liu, L. (2019) "Visual Listening In: Extracting Brand Image Portrayed on Social Media" at the Data Institute Conference this year (March 10-12) https://www.sfdatainstitute.org/speakers.html

Otero, V. (2018, December). The Learning Assistant Model as a Catalyst for Instructional Innovation and Institutional Change, Invited presentation for faculty and administrators at Michigan State University.

Otero, V. (2018, December). LA Campus Software for Managing Your LA Program, Invited workshops for faculty and administrators at Michigan State University.

Otero, V. (2019, March) Improving undergraduate physics instruction and physics teacher preparation through the use of Learning Assistants, Invited presentation at the American Physical Society March meeting, Boston, MA, March 2-4, 2019.

Otero, V. (2019, March). Improving Undergraduate STEM instruction through the use of Learning Assistants, Boston University, Invited presentation for Boston University STEM faculty, March 6, 2019.

Continued on page 18…

ICS FELLOWS PRESENTATIONS Cont.

Otero, V. (2019, March). LA Campus software for managing your program and collecting longitudinal data, Invited workshop at the annual PhysTEC meeting, Boston, MA, March 3-5, 2019.

Otero, V. (2019, April). Learning Assistant Model for Building Equitable Learning Environments, Invited presentation at the American Physical Society April Meeting, Denver, CO, April 12-16—Invited.

Lindsay, W. & **Otero, V.** (2019, April). The Influence of Institutional Elements on Reforming, Presented at the annual conference of the National Research in Science Teaching, Baltimore, MA, March 31-April 3, 2019.

Lindsay, W. & **Otero, V.** (2019, April). Institutional tensions surfaced by pedagogical reform: Next Generation Science Standards Implementation in a "No-Excuses" Context. Presented at the annual meeting of the American Educational Research Association, Toronto, Canada, April 5-9, 2019.

In recent months, ICS Fellow **Rob Rupert** has made presentations at Johns Hopkins University, New York University, the biennial meeting of the Philosophy of Science Association, Ruhr University-Bochum, University of Tennessee-Knoxville, and the City University of New York's Graduate Center; and his annotated guide "Situated Cognition" was published in Oxford Bibliographies in Philosophy.

Szafir, Danielle Albers. "Driving Exploratory Data Visualization Through Perception & Cognition." Next in Data Visualization. Radcliffe Institute for Advanced Study at Harvard University. Boston, MA.

Cole, J., **Van Boven, L.**, Ehret, P., & Sherman, D. (2019). Peer and political leader influence on climate policy support. Paper presented at Midwestern Psychological Association, Chicago, IL.

Mrkva, K., & **Van Boven, L.** (2019). Salience theory of exposure effects: Salience causes hedonic escalation and amounts for exposure effects. Paper presented at Society for Consumer Psychology, Atlanta, GA.

Pomerance, J., & **Van Boven, L.** (2019). Party over product: Do people use political cues when choosing consumption experiences? Paper presented at Society for Consumer Psychology, Atlanta, GA.

Van Boven, L., Cole., J., Ehret, P., & Sherman, D. K. (2019). Party over planet: The dominance of peer partisanship in evaluating climate policy. Paper presented at symposium chaired by Leaf Van Boven, "Partisan Psychological Barriers to Addressing Climate Change," International Conference of Psychological Scientists, Paris, France.

Carter, B., Ito., T., & **Van Boven, L.** (2018). Party affiliation overpowers message processing to bias higher-level judgments of politician behavior. Poster presented at Society for Personality and Social Psychology, Atlanta, GA.

Cole, J., & **Van Boven, L.** (2018). Who else cares about the climate? The role of social norms in support of a cap and trade policy. Poster presented at Society for Personality and Social Psychology, Atlanta, GA.

Cole, J., **Van Boven, L.**, & Pearson, A. (2018). Angry storms: The effect of anthropomorphizing natural disasters on climate change action. Lightning paper presented at Behavior, Energy, and Climate Change, Washington, DC.

Van Boven, L. The Bren School of Environmental Science & Management University of California, Santa Barbara RESEARCH COLLOQUIUM, "Perceiving American Political Polarization: Attitude Extremity, Partisan Identification, and Policy Implications" Wednesday, Oct. 30, 2013

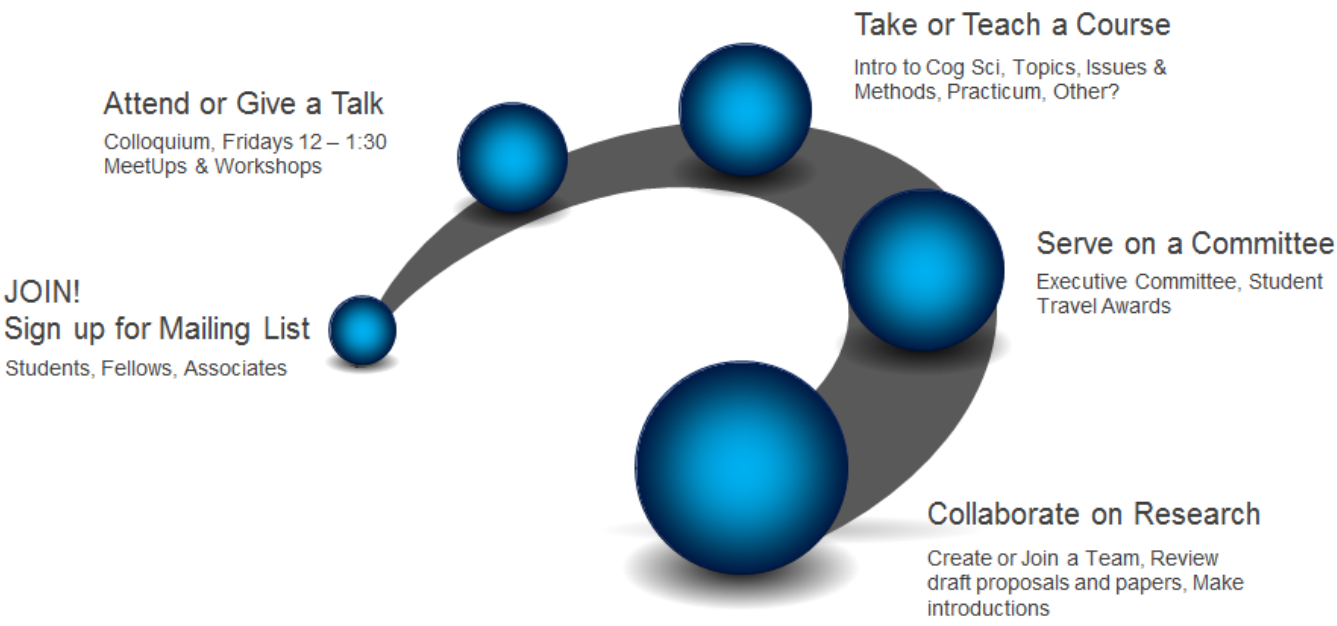
HAVE QUESTIONS? NEED HELP?

Jean Bowen, MUEN Office, Mon - Fri 9 to 5, Jean.Bowen@colorado.edu

Donna Caccamise, Associate Director
Donna.Caccamise@colorado.edu
Open office hours: MUEN D422: Mon: 9-12, Wed: 1-3, Friday 10-12 CINC 227: TTH

Tammy Sumner, Director
Sumner@colorado.edu
Open office hours: MUEN D420: Fridays 2-4pm
CINC 182j: Thursdays 1-3pm

WAYS TO GET INVOLVED WITH ICS



GIVE TO ICS

We need your help to sustain and grow our innovative research studies and initiatives and provide outreach programs to the public. Our Institute is almost entirely funded by research grants and donations.

Your donations are particularly helpful in supporting critical pilot studies that build into larger scale research, graduate students, and early career scholars.

Your donations both large and small can also help the functioning of the following programs:

The ICS General Fund	Supports pilot studies, graduate students, early career scholars.
The CU Reach Fund	Supports Research, Education, and Application in Cannabinoids and Health (CU REACH) multi-disciplinary center to expand the capacity for research, education, and application and become leaders in the study of cannabinoids and health.
The ICSD Building Community & Collaboration Fund	Supports research collaboration events and functions associated with recruitment, outreach, and community building.

Donations can also be made to specific programs such as faculty labs, Centers, special projects.

Digital newsletters with active hyperlinks are found at www.colorado.edu/ics/AboutUs

MISSION

Our mission is to identify and address key questions in cognitive science. Through interdisciplinary research and education, we explore the nexus of humans and machines as we seek to understand and extend human cognition, machine intelligence, and fruitful collaborations between the two. Our research builds on artificial intelligence, cognitive neuroscience, human learning, and emotional processing to tackle some of society's most pressing challenges: understanding brain health and wellness, developing personalized therapies and interventions, enhancing and deepening human learning, and optimizing complex cognitive processes to improve human performance and collaboration

VISION

Our vision for ICS is:

- Be a campus leader in innovative, interdisciplinary research
- Be a campus leader in inclusiveness, diversity, and equity
- Reimagine our interdisciplinary educational programs
- Develop a robust resource engine to support future growth

University of Colorado Boulder