

Psychology News

Twin studies at CLDRC

If you cross paths with identical twins, chances are you'll do a double take. There's something engaging about identicals that wakes us up, perhaps rousing our basic human interest in identity, individuality, and sense of self.

Twins are also of particular interest to many researchers, including those at CU. The combination of their genetic makeup and their similar family environments make twins highly valued in research. Monozygotic (identical) twins share 100% of their genes, having developed from one zygote that splits. Dizygotic (fraternal) twins share about 50%, developing from separate eggs and fertilized by separate sperms. Both groups of twins, when raised together, share many aspects of their environment. By comparing the correlations or similarities for large samples of identical and fraternal twin pairs, researchers are able to estimate the heritability of traits, that is, the average proportion of individual differences in the sample that is due to genetics. They can also evaluate the influence of shared versus non-shared environments. These estimates help researchers to grapple with questions of nature and nurture – more specifically, the influence of genetics and the environment.

Faculty doing twin studies can be found across multiple areas in our department, including Behavioral Genetics, Cognitive, and Clinical. Some of these faculty members are also affiliated with CU's Institute for Behavioral



Past participants in CLDRC twin study. (Photos in this article courtesy of CLDRC.)

Genetics (IBG), a multidisciplinary research unit located on CU-Boulder's east campus. Twin studies are a natural fit for IBG, with their focus on the genetic and environmental bases of behavioral differences. Current IBG research on twins includes studies of drug-related behaviors, cognitive abilities, personality and psychopathology, early reading development, and learning disabilities.

The Colorado Learning Disabilities Research Center (CLDRC) is administered by IBG and is headed by CU psychology professor Dick Olson. It includes several faculty members and former students in our department, and is one of four such national research centers supported by the National Institutes of Health (NIH). Investigators at the center use pairs of fraternal and identical twins to assess the genetic and environmental causes of reading disabilities and other learning disabilities. They also consider the relationship of these disabilities to concurrent problems, such as psychopathology and ADHD (attention deficit hyperactivity disorder).

Researchers at the CLDRC are happily celebrating the renewal of their five-year, \$9.3 million grant from NIH, which will allow them to continue the work started in 1973 with the Colorado Family Reading Study.

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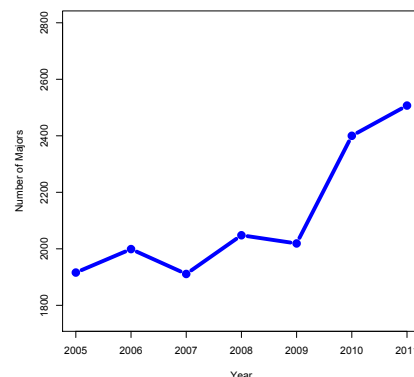
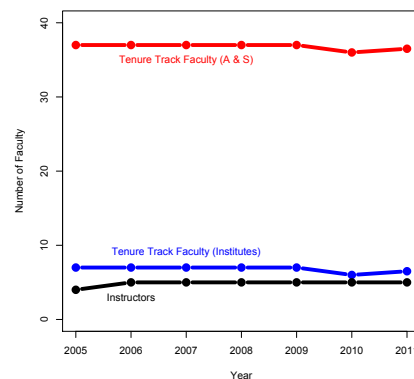
Message from the Chair



It is the best of times and the worst of times. Our department is thriving: The students and faculty have never been more productive. The hallways are alive with impromptu discussions about exciting research ideas and debates about the theoretical implications of research data. People are collaborating with each other to create innovative research projects. We are now in the middle of the program review that is mandated every seven years. Last Fall we completed the comprehensive self study portion of the review and the results were eye-opening. In the past six years the number of faculty members in our department has remained constant, as is shown in the figure below. But during the same period of time the number of undergraduates declaring psychology as their major has increased from about 1,900 in 2005 to over 2,500 in 2012, a 32% increase.

This increase reflects the desirability and success of our two psychology majors (psychology and neuroscience). It also reflects the fact that the total size of the undergraduate class has increased over the past years as well. The State of Colorado has been steadily reducing its contribution to the operating budget of the University and now it has sunk to the lowest in the nation, around 4%! Budget-wise, we are hardly a state university. We desperately need more faculty to meet student demand.

There are many bright spots, however: Professors Chick Judd and Gary McClelland were named co-recipients of the 2012 Jacob Cohen Award for Distinguished Contributions to Teaching and Mentoring, given by Division 5 of the American Psychological Association. The research of Professor Dan Barth and graduate student Krista Rodgers has led to the development of a potential novel therapy for the treatment of post-traumatic brain injury. Professors Akira Miyake and Tiffany Ito published an exciting study in *Science* on how to reduce the grade achievement gap between men and women in introductory physics classes. Distinguished Professor Linda Watkins was named the CU-Boulder "Inventor of the Year" by the University of Colorado Technology Transfer Office for developing novel drug therapies. Professor Mark Whisman was granted a College Scholar Award from the College of Arts & Sciences. At the Winter graduation in the Glenn Miller Ballroom I had the honor of introducing graduating senior Sara Elizabeth Whitney to the other students and their parents. She received the Chancellor's Recognition Award at CU-Boulder's Winter Graduation ceremony the following day. She was one of only two students in the whole university who achieved a straight A academic record during her college career. These honors and awards confirm that we are an excellent department of which we can all be proud. *—Lew Harvey*



The alumni newsletter for the Department of Psychology and Neuroscience is published biannually and distributed to all alumni.

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Twin Studies at CLDRC (continued from page 1)

That project, initiated and directed by CU psychology professor John DeFries, led to the Colorado Reading Project, co-founded by Professor DeFries and Professor Olson. As these studies evolved, the CLDRC took shape, now reflecting almost four decades of investigation into the etiology and complexity of learning disabilities. The current director of the center is Professor Olson and CU psychology professor Erik Willcutt is the associate director. Professor DeFries continues to be involved with the center as a researcher and consultant. Other personnel from our department include CU psychology professor Akira Miyake, alumna Dr. Sally Wadsworth (a Senior Research Associate at IBG) and alumna Dr. Jan Keenan (a cognitive psychologist and a professor at the University of Denver). There are also many CU undergraduates and graduate students involved in research at the center.

In its current form, the CLDRC comprises six individual research projects related to various aspects of both learning and learning disabilities. Though distinct, the projects are also highly synergistic, enabling researchers to understand disabilities, specifically dyslexia and ADHD, from converging perspectives.

“We’re trying to match the complexity of the research with the complexity of the problems,” says Professor Olson. He explains that reading is a multifaceted process, utilizing cognitive skills that are quite varied, including rapid integration of print and speech, general processing speed, working memory, language abilities, focused attention and ability to infer. Researchers involved in studying specific components of such an intricate process benefit greatly from sharing results and expertise.

In addition to data gathered from the six projects at the center, researchers at the CLDRC are able to access data from the International Longitudinal Twin Study (ILTS), a long-term project in place since 2000, which gathers information on non-selected population samples of twins in Australia, Colorado and Scandinavia.

Results from the CLDRC have shown that, on average, genes are responsible for about 60% of dyslexia, shared environment about 30%, and non-shared environment such as different teachers, peers, or injury, about 10% or less.

“These results from groups of identical and fraternal twins only tell us about the average influence from genes and environment, and not the influence of dyslexia-related genes on an individual twin,” says Professor Olson. To approach the goal of individual identification, the CLDRC conducts analyses of the



twins’ and their siblings’ DNA. By combining the information from DNA and behavioral measures, CLDRC investigators have isolated several regions on different chromosomes that include genes related to dyslexia, and often to ADHD as well. Professor Olson notes that “the behavioral and molecular-genetic evidence for a strong average biological influence on dyslexia and ADHD testifies to their reality and the need for extraordinary intervention, and it helps relieve the guilt that some parents and teachers may feel over the common accusation that improper parenting or teaching is the cause of their children’s reading difficulties.”

Results from the International Longitudinal Twin Study have shown that shared family environment is the main influence on individual differences in preschoolers’ pre-reading skills, such as letter name and sound knowledge. But by the end of kindergarten and more so by the end of first grade, genes are by far the dominant influence on individual differences in children’s reading development. These results contradict the common assumption in the popular press and among many politicians that variation in children’s reading skills is primarily due to differences in teacher or school quality. “Of course, individual teachers and schools do teach children to read,” says Professor Olson, “but the variability in how quickly and easily children learn is primarily driven by genetic variability.”

The CLDRC and the other three learning disabilities research centers supported by NIH are hard at work to learn the specific genetic and environmental pathways to reading and to learning more generally, both for children with dyslexia and for children across the broad normal range that is represented by the “bell curve.”

—Alicia Segal and Dick Olson

Faculty News



Mark Whisman was awarded a College Scholar Award from CU's College of Arts & Sciences in December 2011. A panel of the College's Professors of Distinction annually bestows these awards in recognition of scholarly accomplishments, and the awards allow faculty to pursue full-time research.

Gary McClelland, on behalf of the National Research Council Committee on which he served, presented a briefing in October 2011 to the senior managing intelligence analysts at the Defense Intelligence Agency. The topic was how intelligence analysis could make better use of methods and results from the social and behavioral sciences particularly with respect to evidence-based evaluation of existing and proposed analysis methods and the hiring of analysts with more quantitative and analytical skills. For more information, see http://www.nap.edu/catalog.php?record_id=13062



In August 2011, **Tiffany Ito** received a CU Chancellor's Award for Excellence in STEM (Science, Technology, Engineering, and Math) Education. This award recognizes her work examining ways to reduce the gender achievement gap in college science courses.



Theresa Hernández received one of *Prevention* magazine's Integrative Medicine Awards for 2011. The award is for her research on how acupuncture can improve memory and attention in patients who have suffered mild to moderate brain injuries.



In January 2012, **Linda Watkins** was named the CU-Boulder "Inventor of the Year" by the University of Colorado Technology Transfer Office for developing "both novel drugs and new uses of known drugs targeting various disorders with unmet medical needs, including chronic and neuropathic pain, multiple sclerosis, ALS and addiction." Read more about the award at <https://www.cu.edu/techtransfer/>

In August 2011, **Alice Healy** organized and chaired a symposium at the 119th Annual American Psychological Association Convention in Washington, D.C. The symposium was entitled, "Applications of Research in Cognitive Psychology to Training in the Real World." At the symposium, Dr. Healy also presented a paper co-authored with **Lyle Bourne** entitled, "Empirically Valid Principles for Training in the Real World." While in the Washington, D.C. area, Dr. Healy visited Johns Hopkins University in Baltimore, Maryland, and delivered a colloquium there entitled, "Principles of Training."



In November 2011, post-doctoral fellow **Michael Baratta** participated in the "On the Leading Edge of Stress" press conference at the annual Society for Neuroscience meeting in Washington, D.C. He described his work with optogenetics, a new method that allows researchers to control the activity of targeted cell populations with light.



A Brief History of Psychology

The fifth edition of *A Brief History of Psychology*, by Professor Emeritus Michael Wertheimer, has just been published. This edition features an additional final chapter analyzing the current state of psychology, including the potential of the field to influence global policies such as environmental sustainability. Other additions include a discussion of the increased role and number of women in psychology, spotlights on major figures in the field, and changes in the practice of psychology, including the rise of evidence-based practice.

Dr. Wertheimer has been engaged for months in the challenging endeavor of preparing web-based material such as PowerPoint presentations and test banks for each chapter in the fifth edition and says he's pleased that the process is finally completed.

Brighter Hallways, Brighter Spirits at Raimy Clinic by Kate Bell



The phrase “brighter hallways, brighter spirits” was my inspiration, as building proctor, for initiating the renovation for the Raimy Psychology Clinic this past summer. Located in Muenzinger, the Raimy Clinic is a training site for graduate students in our department’s Clinical Psychology PhD program, providing affordable psychological treatment to Boulder County residents.

The last time major improvements were made in the clinic was 1999. You can imagine that things were looking a little droopy around the edges! The opportunity for a design leap into the 21st century presented itself in 2011 when the public areas of Muenzinger were scheduled to be painted. Emily Richardson, Director of the Raimy Clinic, and I sought out design guidance from Lori Black who works with project managers at Facilities Management and who was a design consultant in a previous career. We also had access to artwork on loan from the university’s art department and were able to draw inspiration from the variety of color in the art pieces, as you can see in the photos on this page.



New curtains have been hung in some of the therapy rooms and a new sign, designed by Professor Richardson and Mark Whisman, Director of the Clinical area, welcomes clients as they enter the clinic. Best of all, the vintage video recording equipment for taping student sessions is now replaced with digital webcams and computers in each therapy room. This new state-of-the-art equipment was funded by a research education training grant from the National Institute of Mental Health and a CU ASSETT (Arts and Sciences Support of Education Through Technology) Development Award, both awarded to Professor Whisman.

New furniture for the waiting room and more new curtains for therapy rooms are on the horizon. We now find ourselves in brighter hallways with the hope of achieving our mission to brighten spirits.



Building proctor Kate Bell, design consultant Lori Black, and Raimy Clinic Director Emily Richardson

Research News

Schizophrenia Risk Factors in Adolescents

Professor Vijay Mittal, who heads the Adolescent Development and Preventive Treatment (ADAPT) Lab, is working on a newly funded \$5 million grant project looking at adolescents at risk for schizophrenia. He and his lab (housed in the recently renovated Raimy Clinic) are studying adolescents who are beginning to exhibit a cluster of “attenuated symptoms,” which are watered down versions of symptoms such as unusual thoughts, suspiciousness, grandiosity (such as the belief that one has magical or super powers), perceptual abnormalities, or deficits in the ability to participate in conversation. The study looks at these factors in combination with other risk factors such as obstetrical complications (e.g., the mother having a virus during the second trimester of pregnancy, or hypoxia during pregnancy or birth) or hippocampal abnormalities. Participants go through clinical interviews and neurocognitive, social stress, hormone, genetic, sleep, and neuroimaging assessments. After gathering information in several domains of functioning for each participant, the lab then follows them for a period of two years. The ultimate goal is to determine the differences between those who develop more serious psychosis and those who don’t. —*Alyson Daly*



Highlights from Alumni News on our Website

Alumni who sent us updates over the past year are listed below. You'll find a full account of their news, as well as updates submitted by other alumni over the years, on our Alumni News website at <http://psych.colorado.edu/alumni/>. Click on the "Alumni News" link. You may initially see a "Permission Denied" message. Click on the "Login" button. For login information, email psychology.news@colorado.edu

Eileen L. Cooley, PhD (BA '72) is a faculty member at Agnes Scott College in Atlanta, Georgia, and is doing research on women and retirement issues.

Merrill C. Anderson, PhD (BA '74) co-owns a coaching-based leadership development company, Cylint, LLC, with his wife.

Ellen Oler, LCSW (BA '74) is a therapist working primarily in New York City, specializing in couples therapy and people dealing with addictions.

Mark Montano, MD (BA '83) is the Medical Director for MedExpress Urgent Care in the Colorado region. He is married and has two young boys.

James Tepper (PhD '83) is Professor II of Neuroscience at the Center for Molecular and Behavioral Neuroscience at Rutgers University.

Tina Shanstrom Edwards (BA '88) is working in Wisconsin as a paraprofessional in the Madison school system, teaching kindergarten. She is married and has three children.

Andrew Rittgers, MS, MBA (BA '89) completed his MBA in 2006, his MS in Finance in 2010, and is now working at the U.S. Department of Energy.

Autumn Steward-Campbell (Van Kirk) (BA '97, Psych & Sociology) completed her Master's in School

Counseling in June 2011. She lives in Jacksonville, North Carolina, with her husband and three children.

Kristen Rahbar Morrison, PhD (BA '03) recently returned to Denver after completing her doctoral training in Texas. She is currently part of a group private practice in Denver called The Colorado Center for Clinical Excellence.

Tom Wartman (BA '05, Psych & Business) notes that his psychology degree has been helpful in business, networking and general life, enhancing his ability to interact and consider others' perspectives.

Caitlin Moran, MEd (BA '06) returned to CU to complete her Master's of Education in 2008 and is now teaching sixth grade math.

Meghan (Wright) Cronk (BA '09, Psych & MCDB) is working on a Master's in Nursing at the University of Virginia, in hopes of becoming a psychiatric or neurology nurse.

Heather Faust (BA '10) continues to work at Mooseheart Child City and School in Mooseheart, Illinois. She finds the work fun and rewarding.

Christian Tucker (BA '11) is currently a missionary for the Otoe-Missouria Native Americans in Oklahoma, giving support and working with children and adults.

Alumni Spotlight: Gary Beven, MD (BA '84)

Dr. Gary Beven (BA '84) recently wrote to us about his journey from CU undergraduate to medical school at Case Western Reserve University, then on to serving with the military and his current role as Chief of Aerospace Psychiatry at NASA. You can read his full account on our Alumni News website (see above for login information). In the meantime, here's an excerpt from his interesting story:

"In 2005 I began working for NASA at the Johnson Space Center (JSC) in Houston and now serve as the Chief of Aerospace Psychiatry and Chief of the Behavioral Health and Performance Group within the Space Medicine Division. My main focus is support of all behavioral health aspects of the Human Space Program, especially astronauts assigned to the International Space Station (ISS) Program. Aerospace psychiatry is a unique blend of preventive medicine, aerospace medicine, psychology and psychiatry with the main effort being keeping high performing, healthy individuals at their peak mental and physical fitness despite challenging circumstances—such as living in space on the ISS for six months as part of an international crew. It is a fantastic job and one unique perk is meeting with U.S. astronauts on board the ISS via video link at the Mission Control Center for a private psychological conference every two weeks in which my colleagues and I keep track of the crew's psychological fitness. So far, I've had the great privilege of working with eighteen long-duration-mission astronauts during their ISS expeditions since my arrival at JSC."



In Memoriam



Mary Ann Tucker (1943-2011)

Here are remembrances of Mary Ann Tucker, an administrative assistant for our department from 1966 to 2005:

Beloved Mary Ann touched thousands of lives with her generous heart, kind spirit and sweet nature.

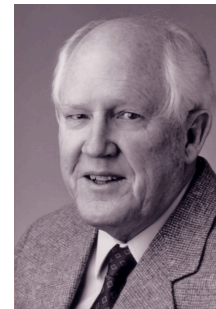
She warmly embraced everyone

who was fortunate enough to cross her path in this life's journey. Her cherubic face with beautiful smile and contagious laughter blessed all those who were in her presence. Her shoulders were stronger than any woman of her short stature, for she carried the burdens of many who entrusted her with their secrets and life struggles. She found ways to truly connect with individuals of all different backgrounds and stations in life, which is a rare gift. Mary Ann was genuine and pure, but not innocent, which added to her authenticity. She left this world a much better place through her simple acts of love and will be missed by all who knew her. *(Contributed by Laurel Amsel)*

Mary Ann frequently operated between the chairman and the rest of the faculty, working with the chairman and keeping the faculty informed of propositions arising in the higher levels of administration. She was indispensable to the department faculty and students. She came to know virtually all the nooks and crannies of the College of Arts and Sciences and became even more indispensable to the young faculty and graduate students who had not learned their way around the bureaucracy. More importantly, Mary Ann had a warm, caring and friendly disposition and was always willing to help. She earned the love and respect of generations of graduate students and faculty. She was justifiably proud of her service to the department and leaves a lasting legacy. *(Contributed by David Chiszar)*

Mary Ann Tucker was a luminous gem whose blithe spirit lit up CU's psychology department for decades. She was the warm, diffident, beloved, deeply spiritual, benevolent angel to whom everyone in the department – undergraduate students, graduate students, staff, faculty, department chairs, and visitors – could turn for help, sage advice, and inspiration. Quiet, always considerate, generous, compassionate, and supremely competent, she shared her amazing understanding of the intricate practices and details of a huge, complex department and of life's problems with anyone who consulted her. The best secretary and administrative assistant imaginable, she embodied the principle that anything worth doing is worth doing well. Her incomparable contributions to the department and to the thousands of people who had the privilege of interacting with her were deeply appreciated. She will be missed... *(Contributed by Michael Wertheimer)*

OJ Harvey (1927-2011)



Professor Emeritus OJ Harvey died of a heart attack at his Boulder home on October 31, 2011. He was eighty-four years old. His wife, Chris, preceded him in death in 2003. OJ retired from CU in 1991. He remained active, traveling, reading, and writing. In the 1990s, OJ and Chris founded an educational foundation, to assist capable students without financial resources. OJ also assisted the Center for the History of Psychology at the University of Akron with review of some archives.

Born in 1927, he was raised in rural southeastern Oklahoma in near poverty conditions by devoted parents, who instilled in him the value of education. His great-grandfather was part Choctaw and OJ often played with Indian children. He never forgot these roots. Always a patriot, he volunteered for the Navy after attending Oklahoma A&M University in Fall 1945. Following Navy journalism school, he served as correspondent on a battleship and in port at New York City.

After the Navy, OJ enrolled at Oklahoma University, where he found two loves: Chris Minton, his wife and loyal companion, and Social Psychology, his lifelong career. As a graduate student, he worked with Muzafer Sherif and played a primary role in planning and conducting *The Robbers Cave Experiment*, landmark research dealing with the development and resolution of conflict between competing groups.

At Yale University in 1954-55, he was a postdoctoral research fellow on the Attitude Change Project directed by Carl Hovland. After three years teaching at Vanderbilt University, he moved on to CU in 1958, becoming full professor in 1962. He served on the Department Executive Committee and was Chair of the Social-Personality area. Selected as a fellow at the Center for Advanced Study, he spent one year in Palo Alto, California. His most prized achievement was receiving the CU Teacher of the Year award in 1989. He mentored many graduate students, serving as Chair of thirty-nine doctoral dissertations and on nineteen additional committees. OJ and Chris were a limitless source of encouragement and support for many students and friends.

The Harvey Educational Foundation will continue under the leadership of Terry Minton, Chris and OJ's nephew. To date, about fifty college scholarships have been granted. Contributions can be made by check to *OJ and Mary Christine Harvey Educational Foundation* and mailed to their house c/o Terry Minton, 435 S. 68th Street, Boulder CO 80303. A Celebration of Life is planned for Saturday, June 9, 2012, 2:00pm-5:00pm at the house. To aid planning, please email the number in your party to cfelknor@qwest.net by May 10, 2012. *(Contributed by some of OJ's past graduate students)*

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Share news about yourself on our alumni website. Include your name, degree(s), and year that you graduated from CU. Feel free to add other information about yourself, including activities of interest (current employment, professional activities, family news, etc.) and insights into how your CU degree has helped to shape your life and work.

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