



**Department of Psychology
Graduate Programs Brochure**

UWM Department of Psychology Graduate Programs

2022-2023 Academic Year

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Deadlines:

All application materials must be received by:

Ph.D. Programs:

DECEMBER 1, 2021

M.S. Program:

January 31, 2022
later applications may be considered if openings are available

Please Note:

The information presented in this brochure is meant to assist you in your graduate studies application process. A Graduate Student Handbook will be distributed to students admitted to our graduate programs containing full program requirements.

In addition to the information in this brochure, information about our programs and faculty can be found at our website: <http://uwm.edu/psychology/>

General Information



Thank you for inquiring about graduate study in psychology at the University of Wisconsin-Milwaukee (UWM)! UWM is located in a vibrant urban setting on Milwaukee's North Shore close to Lake Michigan. It serves approximately 25,000 undergraduate and graduate students, with the most diverse population of any school in the UW system. UWM is among the nation's major research universities. It is one of only 131 universities nationwide to receive the highest rating for a research institution (Research 1, also known as R1) from the Carnegie Classification of Institutions of Higher Education.

The Psychology Department places a premium on excellence in teaching and scholarly research. As a result, we are one of the most dynamic and productive departments on the UWM campus. The faculty are recognized experts in their various disciplines as well as accomplished teachers. Our clinic provides psychotherapy and assessment services to both the UWM campus and the greater Milwaukee community.

Perhaps the best indicator of our success, however, is the quality of our students. Our graduate students have been extraordinarily successful in research and scholarship. Together with faculty, they publish cutting-edge research. They successfully compete for national scholarships, grants and awards. They consistently secure postgraduate positions at some of the most prestigious universities in the country as well as employment in industry, government and academia.

Overview of Department of Psychology Graduate Programs

The Psychology Department offers two graduate degrees: **Ph.D. in Psychology** and **terminal M.S. in Psychology**.

We are currently accepting applications to two of our Ph.D. programs (both of which include earning the M.S.):

- ◆ **Clinical Psychology (accredited by the American Psychological Association)**
- ◆ **Neuroscience***

*Please note that the Department of Biological Sciences and other departments also offer opportunities for doctoral study in neuroscience.

We offer one terminal M.S. program:

- ◆ **Health Psychology**

Note that our doctoral programs are actually combined M.S./Ph.D. programs (although applicants with advanced degrees are also encouraged to apply; see pp. 2, 6 and 9 for more information for students with advanced degrees). All programs are in person and full-time and train students in the facts, methodologies, and theories of psychology, with special emphasis on developing research competence. The department has well-equipped laboratories and an on-campus training clinic. The city of Milwaukee provides additional opportunities for training at such facilities as hospitals, social service agencies, and the Medical College of Wisconsin. Detailed program descriptions begin on p. 6.

Information for UWM Undergraduates and Alumni

We believe that it is important for graduate students to learn and work with a range of faculty during their training. Therefore, students with bachelor's degrees from UWM who majored in psychology are not eligible to apply for admission to our doctoral programs unless they have earned a master's degree in psychology or neuroscience at a different institution. Similarly, those who double-majored in psychology and another subject at UWM are not eligible to apply to our doctoral programs. However, UWM undergraduates who majored in psychology are eligible to apply for admission to the terminal master's program.

Counseling Psychology

The department refers students interested in **Counseling Psychology**, or School Psychology, to the Department of Educational Psychology in the School of Education. **Their website is: <http://uwm.edu/education/>**

Financial Support in the Ph.D. Programs*

Academic year stipend (mid August-mid May): Each admittee to our Ph.D. programs will receive an **academic-year teaching assistantship (TAship)**, which includes a stipend, full remission of tuition, and benefits such as health insurance. The academic-year TAship stipend is \$13,750 (for those who don't hold a thesis-based master's degree in psychology or neuroscience) or \$15,000 (for those who hold a thesis-based master's degree in psychology or neuroscience). TAs work approximately 20 hours per week and are typically assigned to lead discussion sessions or to assist in face-to-face or online courses. Our department's doctoral students generally hold TAships or equivalent forms of support (e.g., research assistantships or full fellowships sponsored by the Graduate School) throughout their years at UWM, but funding beyond the fifth year isn't guaranteed.

Additional potential academic year support: Based on a review of credentials, up to six admittees to the Neuroscience Ph.D. program, and up to three in the Clinical Psychology Ph.D. program, will receive an additional \$4,000 per year (i.e., a **Chancellor's Graduate Student Award [CGSA]**) for their initial three years in the program, resulting in a total academic year support package of \$17,750 or \$19,000. Furthermore, Neuroscience admittees who hold CGSAs will also receive one-time summer 2022 support payments of \$2,000 or more, resulting in a first-year support package of at least \$19,750 or \$21,000.

Also, some faculty with extramural grants may decide to offer their incoming Neuroscience or Clinical advisees additional funding, which may increase the first-year (and perhaps beyond) support package by another \$1,500 to \$3,500.

Summer support (mid May-mid August): In addition to departmental support during the academic year, some students may also receive funding to conduct research full time during the summer. Typically, this support comes from the major professor, although some support may be available from the department in the form of a competitive summer fellowship. Availability and amount of summer support varies depending on the source, so students should discuss this with their major professor.

Major Professor

All graduate students must have a major professor (advisor) to oversee their progress and to supervise their research. It is, therefore, important that potential major professors be considered very carefully on the application. Entering students will be assigned to one of the major professors they have chosen during the admissions process. The department also has a Graduate Program Coordinator who advises students about courses and programs of study.

Information for Students with Master's Degrees in Psychology

Students admitted to the doctoral programs who already have a master's degree in psychology or neuroscience that included an empirically based master's thesis are exempt from the requirement of having to earn the M.S. at UWM. Students admitted with a master's degree in psychology or neuroscience that did *not* include a thesis must complete a thesis and earn the M.S. at UWM. In many cases, students admitted to the doctoral program with master's degrees in psychology or neuroscience are allowed to waive some of their UWM coursework based on courses they took in their master's programs.

Time Limits

Departmental regulations stipulate that students in the doctoral programs must be full-time students; no part-time study is allowed. Doctoral students must earn the M.S. within three years of enrolling (by March 10 of their third year for most favorable consideration within the teaching assistant priority system), and they must earn the Ph.D. within seven years of enrolling (exclusive of the internship year for clinical students). The terminal master's program in health psychology has a time limit of seven years for earning the M.S. to allow for the possibility of part-time study.

Admission Criteria

Admission is very competitive. It is based on the evaluation of an applicant's entire record. In evaluating each application, the Admissions Committee examines such factors as GPAs, courses taken, research record, and letters of recommendation (three letters are required). See below for the average GPA of recently admitted students. Please note that as of Fall 2021, we are NOT considering GRE scores in our application review process. Applicants do not need to include GRE scores in their application to our MS/PhD programs. To be considered for admission, an applicant must also meet the Graduate School's general admission requirements. <http://uwm.edu/graduateschool/admission/>

How Many Students Are Admitted?

Students work in close association with their major professors. The student:major professor ratio is about 5:1. Given this ratio, the department has room for approximately 70 graduate students, with about 12 new students admitted each year to the doctoral programs. About 1 or 2 students are admitted each year to the terminal M.S. program. A total of 249 students applied to the clinical doctoral program and 31 applied to the neuroscience doctoral programs for Fall, 2021. Ten applicants were accepted to the doctoral programs as follows: a) 9 females, 1 male; b) 5 clinical, 5 neuroscience; c) 3 applicants with a master's degree.

GPA of Recently Admitted Students

The Graduate Admissions Committee is often asked about requirements for admission into the graduate program, in particular whether there is a minimum grade-point average. Below are summary statistics on students recently admitted to the doctoral programs. Average scores are included.

	Clinical	Neuroscience
GPA, all courses, 4 yrs.	3.73	3.52

Information for Students Who Did Not Major in Psychology

Students without an undergraduate major in psychology or neuroscience are welcome to apply, and will be evaluated on a case-by-case basis. If they are offered admission, they will be informed about any additional courses that would need to be taken at UWM (in addition to the required graduate coursework) to fill gaps in training.

Information for UWM Undergraduates and Alumni

As was stated on p. 2, students with bachelor's degrees from UWM who majored in psychology are eligible to apply for admission to the terminal master's program, but are *not* eligible to apply for admission to the doctoral programs unless they have earned a master's degree in psychology or neuroscience at a different institution. Double-majoring in psychology and another subject as an undergraduate at UWM does *not* make a student eligible to apply to the doctoral programs.

Application Process

Beginning students are accepted for the Fall Semester. Prospective students must apply directly to the Graduate School.

<http://uwm.edu/graduateschool/admission/>

In the graduate school application, you should indicate whom you would like to serve as your major professor. If you are admitted, every effort will be made to honor your first request as to choice of major professor, but it is not always possible to do so. Most students in the clinical doctoral program choose clinical faculty as advisors; however, some students combine study and research in a non-clinical specialty with the clinical program and, therefore, choose a major professor from the non-clinical faculty. Similarly, most students applying to the neuroscience doctoral programs choose advisors within the neuroscience program, but sometimes choose an advisor in the clinical program.

Because graduate study in psychology is highly individualized, applicants should read the material carefully and identify potential faculty advisors whose interests are compatible with their own. Do not hesitate to e-mail, write, phone, or if possible, visit a potential major professor/advisor.

Information regarding academic rules and regulations, financial assistance, student services, etc., can be located on the Graduate School web site:

<http://uwm.edu/graduateschool/#>

Graduate School Application

The graduate school application can be completed at this address online:

<https://graduateschool-apply.uwm.edu/>

The following items must be submitted for your application to be considered complete: unofficial transcripts from each undergraduate and graduate school that you attended, reasons statement, three letters of recommendation, and a non-refundable \$75 base application fee.

Please Note: Students currently enrolled in a Masters or Ph.D. program within the department who wish to switch to a different program within the department are required to reapply.

Deadlines

All application materials must be received by:

Ph.D. Programs:

DECEMBER 1, 2021

M.S. Program:

January 31, 2022 and later applications may be considered if openings are available

Deadlines

Those applying to a Ph.D. program should complete their application to the graduate school so that it is received by **December 1, 2021**. Applicants to the terminal M.S. program should complete their application to the graduate school so that it is received by **January 31, 2022**. Applicants who meet these deadlines and are accepted into the program can typically expect to receive information about their acceptance as early as late February to as late as late April. Notification of non-acceptance is usually made by May 1.

Interviews for Clinical Applicants

Finalists who are being considered for admission to the Ph.D. program in clinical psychology will be interviewed. Interviews will be held on January 28, 2022. Only top candidates will be interviewed. There may be later interviews if further openings become available.

Interviews for Neuroscience Applicants

The highest ranking candidates who are being considered for admission to the Ph.D. program in neuroscience will be interviewed. Neuroscience Interview Day will be held on February 4, 2022. Only top candidates will be invited.

Special Guidelines for International Students

International students are required to follow additional instructions that are listed at this web page:

<http://uwm.edu/cie/international-admissions/application-requirements/>

Core Faculty

Shawn Cahill
W. Hobart Davies
Bonnie Klein-Tasman
Christine Larson
Han Joo Lee
Krista Lisdahl
Stacey Nye

The Ph.D. program in clinical psychology is accredited by the American Psychological Association* and follows the Boulder (scientist-practitioner) model. The UWM Clinical Psychology Program is also a member of The Academy of Psychological Clinical Science, which is a coalition of doctoral training programs that share a common goal of producing and applying scientific knowledge to the assessment, understanding, and amelioration of human problems. In addition, the program is a member of the Child Clinical and Pediatric Psychology Training Council (CCaPPTC). Our program is committed to excellence in scientific training, and to using clinical science as the foundation for designing, implementing, and evaluating assessment and intervention procedures. Students gain competence as scientists by reviewing basic and applied literatures relevant to clinical psychology and by conducting research under the direction of their major professor each semester. Students gain competence as practitioners by completing seminars, practica, and community placements in private and institutional settings. Although it is expected that some clinical students may emphasize either the basic or applied aspects of the Boulder model, the goal is excellence and integration of both areas. Evaluation of students is based on performance in courses, clinical teams, practica (clinical skills, ethical behavior, accepted professional behavior), a preliminary examination, and on the quality of their master's and doctoral research.

Most students in the clinical doctoral program choose clinical faculty as advisors; however, some students combine study and research in a non-clinical specialty with the clinical program and, therefore, choose a major professor from the non-clinical faculty.

*UWM's Clinical Psychology Program is Accredited by the American Psychological Association. Please use the contact information below to contact APA:

Office of Program Consultation and Accreditation
750 First Street, NE
Washington, DC 20002-4242
Phone: 202-336-5979

Administration

The Director of Clinical Training, (DCT), Christine Larson, administers the policies and procedures of the program in clinical psychology. An important part of the program involves practicum work in the department's training clinic. The Psychology Clinic Director is Stacey Nye, Ph.D. The members of the Clinical Training Committee are the Clinical Program core faculty, a Department faculty representative from outside the Clinical program and two voting clinical graduate students.

Financial Support

All students admitted to the doctoral program in clinical psychology receive academic-year financial support, usually in the form of teaching assistantships, which include not only a stipend but also full remission of tuition, and benefits such as health insurance. Many students also receive supplemental financial support. See p. 2 of this brochure for more information.

Applicants with Advanced Degrees

Individuals with advanced degrees, usually in psychology or neuroscience, are eligible to apply to the doctoral program in clinical psychology.



Doctoral Program in Clinical Psychology

Coursework

The minimum degree requirement is 54 graduate credits beyond the bachelor's degree, at least 27 of which must be earned in residence at UWM. Students in psychology may earn more than 54 credits to satisfy the specific requirements of the program.

1. Clinical Courses

Students in the clinical program satisfy their major by completing a sequence of required clinical courses, which can be seen in the table below. Note that in addition to classroom courses, students in the clinical program must also complete a sequence of practicum courses for a minimum of 400 hours of training in assessment, diagnosis, therapy, and professional practice; and later, a pre-doctoral, extramural, full-time (2000 hour) internship.

	<i>Fall Semester</i>	<i>Spring Semester</i>
Year 1	Assessment I (831) Developmental Psychopathology (912) First Year Clinical Practicum (802)	Clinical Research Methods (710) First Year Clinical Psychology Practicum (802)
Year 2	Professional Ethics and Issues in Clinical Psychology (712) Practicum in Assessment (821) Foundations of Psychotherapy (741)	Assessment II (832) Empirically Supported Interventions (742) Practicum in Empirically Supported Interventions (845) Practicum in Assessment II (822)
Year 3	Practicum in Therapy (842)	Practicum in Therapy (842)
Year 4	Community Placement in Clinical Psychology (811)	Community Placement in Clinical Psychology (811)
Year 5	Community Placement in Clinical Psychology (811, optional)	Community Placement in Clinical Psychology (811, optional)

2. Statistics requirement: Students must complete the two-semester introductory statistics sequence (Psychology 510 and 610).

3. Breadth requirement: Students must follow American Psychological Association requirements and must complete the following breadth courses: Psych 930 (which covers the social bases of behavior) and Psych 727 (which covers the cognitive/affective bases and the biological bases of behavior).

4. Multicultural requirement: Students must complete a course in multicultural issues in clinical or counseling psychology.

5. Developmental psychology requirement: Students must complete a graduate level lifespan developmental psychology course.

6. History of psychology requirement: Students who took a History of Psychology course as undergraduates, and/or who majored in psychology, have already satisfied the History of psychology requirement. Other students must complete a course in the History of Psychology in our department (Psychology 750).

Waiver of Coursework for Students with Prior Graduate Work

Equivalent coursework taken elsewhere as a graduate student may substitute for one or more of the courses described above. Waiver of a required practicum course requires the consent of the major professor, and the DCT. Waiver of a required lecture course requires the consent of the major professor, the instructor of the course in question, and the DCT. Demonstration of proficiency is typically required before a waiver is granted.

Clinical Training and Program of Excellence in Scientifically Validated Interventions

Students receive a minimum of eight semesters of clinical training. During their first three years in the program they receive both assessment and intervention training from the clinical faculty at the department's on-campus clinic after which they work in various community agencies under the supervision of adjunct faculty. Some of the community agencies involved in the department's training program include Children's Hospital of Wisconsin, the Zablocki Veterans Affairs Medical Center, the Medical College of Wisconsin Behavioral Medicine and Clinical Neuropsychology services, and Rogers Memorial Hospital. A criminal background check is required once admitted, and may affect placement. The Clinical Psychology program was recognized with a "Program of Excellence in Scientifically Validated Behavioral Interventions" grant from NIH, which resulted in further development of our curriculum in scientifically validated interventions for various psychological conditions. While offerings vary by year according to faculty interests and availability, we currently offer specialized training in prolonged exposure for PTSD and cognitive-behavioral therapy for anxiety, treatments for childhood elimination disorders, treatments for eating disorders, and cognitive behavior therapy for anxiety. Specialized training in Clinical Neuropsychology is also available in collaboration with our community partners. Upon successful completion of our program, students will have been trained as competent generalist psychologists as they have always been. However, students will also graduate with specialized training in the competent administration-delivery of assessment and treatment in specific empirically-supported interventions.

Master's Thesis

The student, under the direction of his or her major professor, must develop an acceptable thesis based on empirical research. The student must pass an oral examination in defense of the thesis. Note: Students who, upon admission, already have a master's degree in psychology that included an empirically based master's thesis are exempt from the requirement of having to earn the M.S. at UWM, pending approval by the student's UWM advisor and the DCT. Students admitted with a master's degree in psychology that did *not* include a thesis must complete a thesis and earn the M.S. at UWM.

Doctoral Preliminary Examination

To advance to doctoral candidacy, students must pass a preliminary examination in clinical psychology after they earn the M.S., and within five years of enrolling.

Dissertation

The candidate must write an empirically-based dissertation that demonstrates the ability to formulate a research topic, pursue an independent and original investigation, and must pass an oral examination in defense of the dissertation.

Clinical Internship

An extramural, one-year, full-time 2000 hour internship is required. Students must pass their preliminary examination and dissertation proposal before applying for internship. It is recommended that they pass their doctoral dissertation defense before beginning internship. This internship must be completed at an APA-accredited site, or one approved by the department's Clinical Training Committee. Students from UWM have been very successful in obtaining internships at highly competitive sites across the country. In recent years, UWM's clinical psychology students have completed internships at Texas Children's Hospital, University of Chicago, Zablocki Milwaukee VA Medical Center, Duke University Medical Center, University of Mississippi Medical Center, University of California-San Diego, Brown University Medical School, University of Cincinnati Medical Center, Seattle VA, Houston VA, and Harvard Medical School/Massachusetts General Hospital.

Time Limits

Doctoral students must earn the M.S. within three years of enrolling (by March 10 of their third year for most favorable consideration within the teaching assistant priority system), and they must earn the Ph.D. within seven years of enrolling (exclusive of the internship year).

Doctoral Program in Neuroscience

The Ph.D. program in neuroscience follows an apprenticeship model in which the student is exposed to individualized research experiences within the laboratory of his or her major professor and, in many cases, other faculty as well. This research training is accompanied by an integrated set of courses and seminars. Throughout, major emphasis is placed on the role of the neuroscientist as a scholar - a person who can advance neuroscience through original research.

Core Faculty

Caitlin Bowman
Ira Driscoll
Karyn Frick
Deborah Hannula
Fred Helmstetter
James Moyer
Rodney Swain

About Neuroscience

Neuroscience is devoted to the study of the nervous system. The curriculum is designed to provide students with the intellectual and technical skills necessary for a productive career in academics or industry. Students are part of the greater Milwaukee Area Neuroscience group, which includes faculty members and students from various departments at UWM, the Medical College of Wisconsin, and Marquette University. Students learn a wide range of techniques working with laboratory animals and human subjects. These include experimental design, behavioral testing and analysis, neurophysiology, aseptic surgical techniques, quantitative protein and mRNA assays, immunohistochemistry, eyetracking, and functional magnetic resonance imaging (fMRI). Current research topics include cellular and molecular mechanisms of learning and memory; mapping brain areas involved in memory and emotion in humans and rodents using fMRI; effects of exercise on cerebral blood flow; mechanisms of recovery from brain damage; visual attention; effects of aging on learning and memory; and the role of calcium and calcium-binding proteins in ischemic cell death.

Financial Support

All students admitted to the doctoral program in neuroscience receive academic-year financial support, usually in the form of teaching assistantships, which include not only a stipend but also full remission of tuition, and benefits such as health insurance. Many students also receive supplemental financial support. See p. 2 of this brochure for more information.

Coursework

The minimum degree requirement is 54 graduate credits beyond the bachelor's degree, at least 27 of which must be earned in residence at UWM. Students in psychology may earn more than 54 credits to satisfy the specific program requirements. The Neuroscience curriculum includes four core courses (behavioral neuroscience, cellular and molecular neuroscience, cognitive neuroscience, and proseminar in biological psychology). Other required courses include a two-course statistics sequence, seminar in neuroscience (three semesters of enrollment), and 3 electives, chosen in consultation with the major professor.

Waiver of Coursework for Students with Prior Graduate Work

Equivalent coursework taken elsewhere as a graduate student may substitute for one or more of the courses described above. Waiver of a required course requires consent of the major professor and the instructor of the course in question.

Master's Thesis

The student, under the direction of his or her major professor, must develop an acceptable thesis based on empirical research. Candidates must pass an oral examination in defense of the thesis. Note: Students who, upon admission, already have a master's degree in psychology or neuroscience that included an empirically based master's thesis are exempt from the requirement of having to earn the M.S. at UWM. Students admitted with a master's degree in psychology or neuroscience that did *not* include a thesis must complete a thesis and earn the M.S. at UWM.

Doctoral Preliminary Examination

To advance to doctoral candidacy, students must pass a preliminary examination in Neuroscience after they earn the M.S., and within five years of enrolling.

Dissertation

Candidates must write an empirically-based dissertation that demonstrates the ability to formulate a research topic and pursue an independent and original investigation. Candidates must pass an oral examination in defense of the dissertation.

Time Limits

Doctoral students must earn the M.S. within three years of enrolling (by March 10 of their third year for most favorable consideration within the teaching assistant priority system), and they must earn the Ph.D. within seven years of enrolling.

Terminal Master’s Program in Health Psychology

Health psychology is concerned with the psychological variables that influence physical health and illness. The M.S. program in health psychology offers training in research and theories relevant to health promotion. The program of study consists of core health psychology coursework, research coursework, psychology breadth coursework, and an optional field placement. Recent research topics include gender and health, cancer prevention and health education, reproductive health and STD prevention, patient advocacy and self-care behaviors, the effects of stress and mechanisms of coping with it, and child abuse prevention. Research is conducted in the laboratory as well as in clinical settings and many of the faculty have strong ties to the Milwaukee community.

Core Faculty
 W. Hobart Davies
 Raymond Fleming
 Bonnie Klein-Tasman
 Marcellus Merritt

Coursework and Model Course Plan

Coursework includes 36 credits distributed as follows (Course substitutions are permissible with the director's approval):

1. Twelve credits in core Health Psychology courses. All students must take Psych 955 (Seminar in Social Psychology and Health), and any three of the following courses: Psych 711 (Current Topics, only when the topic is Child Health Psychology or another topic directly relevant to health), Psych 754 (Proseminar in Biological Psychology), Psych 756 (Psychophysiology), Psych 854 (Behavioral Neuroscience), or Psych 930 (Seminar in Social Psychology). These core courses introduce students to research, theories, and applications of health psychology.
2. Fifteen credits in research courses: Psych 510 (Advanced Psychological Statistics), Psychology 610 (Experimental Design), Psych 932 (Proseminar in Evaluation Research), and six credits of Psych 790 (Independent Research) for those selecting the thesis option or six credits of Psych 791 (Master's Project for Master's Students) for those selecting the project option. These courses prepare students for conducting basic and applied research.
3. Nine credits in psychology breadth courses (virtually any psychology graduate-level course not listed above).
4. Optional: Although students are exposed to theories and applications in coursework, field placements offer further opportunity to apply theory. Students are encouraged to complete at least 3 credits of 812 (Field Placement in Psychology) in their area of interest.

	<i>Fall Semester</i>	<i>Spring Semester</i>
Year 1	Advanced Psychological Statistics (510) Seminar in Social Psychology and Health (955) Core Selection 1 Breadth Selection 1	Experimental Design (610) Seminar in Evaluation Research (932) Core Selection 2 Breadth Selection 2
Year 2	Core Selection 3 Master's Research (790) Optional:Field Placement (812)	Breadth Selection 3 Master's Research (790) Defend Thesis

Thesis or Project, Time Limit

The student, under the direction of an advisor, has the option of developing either a thesis based on empirical research or a project (a review or theoretical paper). If the student chooses the thesis option, he or she must pass an oral defense of the thesis. The student must complete all degree requirements within seven years of initial enrollment.

Relation of the Master’s Program in Health Psychology to Doctoral Study in Psychology

The M.S. program in health psychology is self-contained and primarily prepare students for work within the community. However, the emphasis on research training and basic principles also prepares students for doctoral studies. Some students may change their goals and wish to pursue a doctoral degree. Such students, if they do not have an undergraduate psychology major from UWM, are eligible to apply for admission to the department's doctoral programs. However, please note that the department's doctoral programs are highly competitive. Admission is neither automatic nor guaranteed. Applications from students in the M.S. specialization in health psychology are *not* given preferential treatment in the doctoral admission process.

Descriptions of Faculty Teaching and Research Interests

All graduate students must have a major professor (advisor) to oversee their progress and to supervise their research. It is, therefore, important that potential major professors be considered very carefully on the graduate school application. Only those individuals listed in the graduate school application have openings for new students for the coming year. Those offered admission will be assigned to one of the major professors they have chosen during the application process. Faculty interests are briefly described in the following pages. For more detailed information about faculty members please visit:

<http://uwm.edu/psychology/our-people/>

Caitlin Bowman, Assistant Professor

Ph.D., The Pennsylvania State University, 2015

Contact: bowman2@uwm.edu

Website: <https://www.cabilab-uwm.com/>

Key Areas of Interest

Cognitive neuroscience of memory

Cognitive aging

Human neuroimaging

Teaching and Research Interests

Our work focuses on two important facets of memory and how they change with advanced age: 1) the ability to remember specific past events and 2) the ability to link across related experiences to form new knowledge. While it is well established that memory specificity declines with advanced age, less is known about how age affects the formation of new knowledge. To better understand these human memory functions, we use a combination of behavioral tasks, computational modeling, and brain imaging techniques that include model-based fMRI and multivariate pattern analyses. Our ultimate goal is to understand the basic cognitive and neural mechanisms of memory and age-related declines in memory, and to find ways to support new learning and flexible decision-making in people across the lifespan.

Selected Recent Publications

Bowman, C.R., de Araujo Sanchez, M.A., Hou, W., Rubin, S., & Zeithamova, D. (in press). Generalization and false memory in an acquired equivalence paradigm: the influence of physical resemblance across related episodes, *Frontiers in Psychology*.

Bowman, C.R., Iwashita, T., & Zeithamova, D. (2020). Tracking prototype and exemplar representations in the brain across learning. *eLife*.

Zeithamova, D. & **Bowman, C.R.** (2020). Generalization and the hippocampus: More than one story? *Neurobiology of Learning and Memory*, 175.

Bowman, C.R. & Zeithamova, D. (2020). Training set coherence and set size effects on concept generalization and recognition. *Journal of Experimental Psychology: Learning Memory & Cognition*, 46(8), 1442-1464.

Ashby, S.R., **Bowman, C.R.**, & Zeithamova, D. (2020). Perceived similarity ratings predict generalization success after traditional category learning and a new paired-associate learning task. *Psychonomic Bulletin and Review*, 27(4), 791-800.

Frank, L.E., **Bowman, C.R.**, & Zeithamova, D. (2019). Differential functional connectivity along the long axis of the hippocampus aligns with differential role in memory specificity and generalization. *Journal of Cognitive Neuroscience*, 31(12), 1-18.

Bowman, C.R., Chamberlain, J.C., & Dennis, N.A. (2019). Sensory representations supporting memory specificity: Age effects on behavioral and neural discriminability. *Journal of Neuroscience*, 39(12), 2265-2275.

Bowman, C.R. & Zeithamova, D. (2018). Abstract memory representations in the ventromedial prefrontal cortex and hippocampus support concept generalization. *Journal of Neuroscience*, 38(10), 2605-2614.

Huhn, J.M., III, **Bowman, C.R.**, Dennis, N.A. (2018). Repeated study of items with and without repeated context: aging effects on memory discriminability. *Memory*, 26(5), 603-609.

Bowman, C.R.*, Shalome, S.L.* & Dennis, N.A. (2017). Modulation of target recollection and recollection rejection networks due to retrieval facilitation and interference. *Learning & Memory*, 24(11), 607-611.

Bowman, C.R., & Dennis, N.A. (2016). The neural basis of recollection rejection: increases in hippocampal-prefrontal connectivity in the absence of a shared recall-to reject and target recollection network. *Journal of Cognitive Neuroscience*, 28(8), 1194-1209.

Shawn Cahill, Associate Professor

Ph.D., Binghamton University (SUNY), 1997

Contact: cahill@uwm.edu; (414) 229-5099

Teaching and Research Interests

My research background and clinical interests are in the nature and treatment of anxiety, especially posttraumatic stress disorder, obsessive-compulsive disorder (OCD), panic disorder, and social anxiety disorder. Although I continue to have interests in these areas, since moving to UWM, a major focus in my lab has been on the nature and consequences of sexual assault with an interest in working towards the development of interventions to reduce the incidence of sexual assault. Ongoing and recently completed research projects in the lab include investigations into the nature of women's reactions to the threat of sexual assault in the context of dating, evaluation of the psychometric properties of a questionnaire designed to assess the frequency of various forms of sexual victimization and perpetration of sexual assault, and the motivation for engaging in non-suicidal self-injury. In addition, the lab is in collaboration with collaboration with Dr. Brad Riemann, Director of the OCD treatment programs at nearby Rogers Memorial Hospital, to help them evaluate the effectiveness of their various treatment programs. I view graduate students as junior colleagues who are expected to participate at all levels of lab projects, from developing a new idea all the way to submitting manuscripts reporting research results. Learning also occurs through teaching; it is expected that graduate students will serve as mentors to undergraduate research assistants, many of whom we hope will also consider a career in psychology. On the clinical and teaching end of things, I teach or contribute to several of the core courses in evidence based interventions for psychological disorders and provide specialized training in the administration of cognitive behavior therapy for the treatment of anxiety through the department Psychology Clinic. I also teach an undergraduate course on basic conditioning and learning.

Selected Recent Publications

Anderson, R. E. & Cahill, S. P. (in press) The Utility of the Response-Latency Paradigm for Evaluating Women's Responses to Threat. *Violence & Victims*, 29, 248-261.

Cahill, S. P. & Anderson, R. E. (in press). Treatment of PTSD: Empirically based and ethical clinical decision making. *FOCUS: The Journal of Lifelong Learning in Psychiatry*, 11, 362-367.

Jayawickreme, N., Cahill, S. P., Riggs, D. S., Rauch, S. A. M., Resick, P. A., Rothbaum, B. O., & Foa, E. B. (in press). Primum non nocere (first do no harm): Symptom worsening and improvement in female assault victims after prolonged exposure for PTSD. *Depression and Anxiety*.

Manos, R. C., Cahill, S. P., Wetterneck, C. T., Conelea, C. A., Ross, A. R., & Riemann, B. C. (2010). The impact of experiential avoidance and obsessive beliefs on obsessive-compulsive symptoms in a severe clinical sample. *Journal of Anxiety Disorders*, 24, 700-708.

Robinson, J. S., Larson, C. L., & Cahill, S. P. (2013, November 25). Relations between resilience, positive and negative emotionality, and symptoms of anxiety and depression. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication. doi: 10.1037/a0033733.

Mueller, D., & Cahill, S. P. (2010). Noradrenergic modulation of extinction learning and exposure therapy. *Behavioural Brain Research*, 208, 1-11.

Simpson, H. B., Wetterneck, C. T., Cahill, S. P., Steinglass, J. E., Franklin, M. E., Leonard, R. C., Weltzin, T. E., & Riemann, B. C. (2013). Treatment of obsessive compulsive disorder complicated by comorbid eating disorders. *Cognitive Behaviour Therapy*, 42, 64-76.

Key Areas of Interest

Nature, Consequences, and Prevention of Sexual Assault

Cognitive-Behavior Therapy in Adults

Nature, Assessment, and Treatment of Anxiety Disorders, with an emphasis on Posttraumatic Stress Disorder (PTSD) and Obsessive-Compulsive Disorder (OCD)

Dr. Cahill will not be accepting students for the 2022-2023 academic year.

W. Hobart Davies, Professor

Ph.D., Michigan State University, 1992

Contact: hobart@uwm.edu; (414) 229-6594

Website: sites.uwm.edu/hobart/

Teaching and Research Interests

My clinical, teaching, and research interests center on the adjustment of children and families under conditions of severe stress. Current projects focus on empirical research ethics, prevention of the Choking Game, pediatric chronic pain, behavioral treatment of constipation and feeding disorders, parent-child communication, and infant-parent bed-sharing and room-sharing.

Selected Recent Publications

Bernacki, J.M., & Davies, W.H. (2012). Prevention of the Choking Game: Parent perspectives. *Journal of Injury & Violence Research, 4*, 73-78.

Hainsworth, K.R., Miller, L.A., Stolzman, S.C., Fidlin, B.M., Davies, W.H., Weisman, S.J., & Skelton, J.A. (2012). Pain as a comorbidity of pediatric obesity. *ICAN: Infant, Child, & Adolescent Nutrition, 4*, 315-320.

Salamon, K.S., ...Davies, W.H., & Kichler, J.C. (2012). Experiencing Type 2 diabetes mellitus: Qualitative analysis of adolescents' concept of illness, adjustment and motivation to engage in self-care behaviors. *The Diabetes Educator, 38*, 543-551.

Gorodzinsky, A.Y., Davies, W.H., & Drendel, A.L. (2013). Parents' treatment of their children's pain at home: Pharmacological and non-pharmacological approaches. *Journal of Pediatric Health Care, 18*.

Hainsworth, K.R., ... Davies, W.H., & Weisman, S.J. (2013). A pilot study of yoga for chronic headaches in youth: Promise amidst challenges. *Pain Management Nursing*.

Gorodzinsky, A.Y., Davies, W.H., et al. (2013). Adolescents' perceptions of family dynamics when a sibling has chronic pain. *Children's Health Care, 42*, 333-352.

Medrano, G.R., Berlin, K.S., & Davies, W.H. (2013). Utility of the PedsQL Family Impact Module: Assessing the psychometric properties in a community sample. *Quality of Life Research, 22*, 2899-2907.

Jastrowski Mano, K.E., ... Davies, W.H., & Weisman, S.J. (2013). A randomized controlled pilot study of Mindfulness-based Stress Reduction for pediatric chronic pain. *Alternative Therapies in Health & Medicine, 19*, 8-14.

Salamon, K.S., Davies, W.H., Fuentes, M., Weisman, S.J., & Hainsworth, K.R. (2014). The Pain Frequency-Severity-Duration (PFSD) scale as a measure of pain: Preliminary validation in a pediatric chronic pain sample. *Pain Research & Treatment, 2014*, 1-6.

Key Areas of Interest

Pediatric Psychology

Clinical Child and Adolescent Psychology

Pediatric Injury Prevention

Empirical Ethics

Coping with Chronic Illness

Pediatric Gastroenterology

P.h.D., University of Lethbridge, Alberta, Canada, 2005

Contact: driscoli@uwm.edu; (414) 229-6665

Teaching and Research Interests

My work is focused on understanding brain changes as early predictors of cognitive deficits and dementia, and the role for hormones and genetic background as modulators of age-related cognitive decline. The function of the hippocampus and the nature of amnesia in aging and Alzheimer's disease are of particular interest. Current research objectives include: 1. Investigating the nature of genetic risk for age-related cognitive decline, the underlying neural circuitry and dynamics, and the role of hormone treatment as a modifier. 2. Investigating factors that reduce the risk of cognitive decline and dementia. 3. Understanding the function of the hippocampal formation and the anatomical and functional organization of learning and memory, in general. 4. Spatial navigation, sexually dimorphic behavior and hormones.

Courses Taught: Psych 254: Physiological Psychology, Psychology 433: Neuropsychology, Psych 680: Psychology of Aging, Psych 654: Advanced Physiological Psychology, Psych 854: Behavioral Neuroscience

Selected Recent Publications

Driscoll I, Snively BM, Espeland MA, Shumaker SA, Rapp SR, Goveas JS, Casanova RL, Wactawski-Wende J, Manson JE, Rossom R, Brooks J, Hernandez DG, Singleton AB, Resnick SM. A candidate gene study of risk for dementia in older, postmenopausal women: Results from the Women's Health Initiative Memory Study. *Int J Geriatr Psychiatry*. 2019;34(5):692-699.

Korthauer LE, Awe E, Frahmnd M, Driscoll I. Genetic Risk for Age-Related Cognitive Impairment Does Not Predict Cognitive Performance in Middle Age. *J Alzheimers Dis*. 2018;64(2):459-471.

Korthauer LE, Zhan L, Ajilore O, Leow A, Driscoll I. Disrupted topology of the resting state structural connectome in middle-aged APOE ε4 carriers. *Neuroimage*. 2018;178:295-305.

Korthauer LE, Goveas J, Espeland MA, Shumaker SA, Garcia KR, Tindle H, Salmoirago-Blotcher E, Sink KM, Vaughan L, Rapp SR, Resnick SM, Driscoll I. Negative Affect Is Associated With Higher Risk of Incident Cognitive Impairment in Nondepressed Postmenopausal Women. *J Gerontol A Biol Sci Med Sci*. 2018;73(4):506-512.

Cacciottolo M, Wang X, Driscoll I, Woodward N, Saffari A, Reyes J, Serre ML, Vizuete W, Sioutas C, Morgan TE, Gatz M, Chui HC, Shumaker SA, Resnick SM, Espeland MA, Finch CE, Chen JC. Particulate air pollutants, APOE alleles and their contributions to cognitive impairment in older women and to amyloidogenesis in experimental models. *Transl Psychiatry*. 2017;7(1):e1022.

Korthauer LE, Nowak NT, Frahmnd M, Driscoll I. Cognitive correlates of spatial navigation: Associations between executive functioning and the virtual Morris Water Task. *Behav Brain Res*. 2017;317:470-478.

Casanova R, Wang X, Reyes J, Akita Y, Serre ML, Vizuete W, Chui HC, Driscoll I, Resnick SM, Espeland MA, Chen JC. A Voxel-Based Morphometry Study Reveals Local Brain Structural Alterations Associated with Ambient Fine Particles in Older Women. *Front Hum Neurosci*. 2016;10:495.

Driscoll I, Shumaker SA, Snively BM, Margolis KL, Manson JE, Vitolins MZ, Rossom RC, Espeland MA. Relationships Between Caffeine Intake and Risk for Probable Dementia or Global Cognitive Impairment: The Women's Health Initiative Memory Study. *J Gerontol A Biol Sci Med Sci*. 2016;71(12):1596-1602.

Korthauer LE, Nowak NT, Moffat SD, An Y, Rowland LM, Barker PB, Resnick SM, Driscoll I (2016). Correlates of virtual navigation performance in older adults. *Neurobiology of Aging*. 39: 118-127.

Goveas JS, Rapp SR, Hogan PE, Driscoll I, Tindle HA, Smith JC, Kesler SR, Zaslavsky O; Rossom RC, Ockene JK, Yaffe K, Manson JE, Resnick SM, Espeland MA (2016). Predictors of Optimal Cognitive Aging in 80+ Women: The Women's Health Initiative Memory Study. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 71 (Suppl 1): S62-S71.

Chen JC, Wang X, Wellenius GA, Serre ML, Driscoll I, Casanova R, McArdle JJ, Manson JE, Chui HC, Espeland MA (2015). Ambient Air Pollution and Neurotoxicity on Brain Structure: Evidence from Women's Health Initiative Memory Study. *Ann Neurol*. 78(3):466-76.

Nowak NT, Murali A, Driscoll I (2015). Factors related to sex differences in navigating a computerized maze. *Journal of Environmental Psychology*. 43:136-144

Driscoll I, Troncoso JC, Rudow G, Sojkova J, Pletnikova O, Zhou Y, Kraut MA, Ferrucci L, Mathis CA, Klunk WE, O'Brien RJ, Davatzikos C, Wong DF, Resnick SM (2012). Correspondence between in vivo (11)C-PiB-PET amyloid imaging and postmortem, region-matched assessment of plaques. *Acta Neuropathol*. 124(6):823-31.

Driscoll I, Martin B, An Y, Maudsley S, Ferrucci L, Mattson MP, Resnick SM (2012). Plasma BDNF is associated with age-related white matter atrophy but not with cognitive function in older, non-demented adults. *PLoS One*. 7(4):e35217.

Driscoll I, Davatzikos C, An Y, Wu X, Shen D, Kraut M, Resnick SM (2009). Longitudinal pattern of regional brain volume change differentiates normal aging from MCI. *Neurology* 72(22):1906-13.

Driscoll I, Resnick SM, Troncoso JC, An Y, O'Brien R, Zonderman AB (2006). Impact of Alzheimer's pathology on cognitive trajectories in nondemented elderly. *Ann Neurol*. 60(6):688-95.

Key Areas of Interest

Behavioral and Cognitive Neuroscience

Brain Imaging

Neurobiology of Learning and Memory

Neurodegenerative Disorders/Dementia

Dr. Driscoll will not be accepting students for the 2022-2023 academic year.

Ph.D., Uniformed Services University of the Health Sciences, 1986
Contact: mundo@uwm.edu; (414) 229-3980

Teaching and Research Interests

I conduct both laboratory and field research in several areas of health psychology, including emotion, anxiety, stress and coping, and symptom perception. My current research focuses on laboratory and field investigations of the contributions of the autonomic nervous system to the genesis and maintenance of emotion and anxiety. Recently completed work in my lab has looked at the role of unrecognized autonomic arousal on cardiovascular reactivity during emotion; the importance of cognitive and autonomic correlates of worry in anxious individuals; and, the role of autonomic arousal in symptom perception. Current research projects include an investigation of the role autonomic arousal plays in the generation of emotion, an investigation of how mindfulness may reduce cardiovascular responses to routine daily stressors, and a laboratory study of the effects of peripheral efferent and afferent signals on negative affect. I also conduct research on the importance of perceived control over learning on student engagement, student learning, and academic success.

I teach Psychophysiology (656/756) and the required graduate statistics sequence (510, 610).

Selected Recent Publications

* Student Author

Fleming, R., Pedrick, L. E., Stoiber, L. C., *Kienzler, S., *Fleming, R. R., & Reddy, D. M. (2018). Increasing undergraduate success: A randomized controlled trial of U-Pace instruction. *Online Learning Journal*. 22(3), 175-192. <https://olj.onlinelearningconsortium.org/index.php/olj/article/view/1317>

Fleming, R., *Kienzler, S., Stoiber, L. C., *Fleming, R. R., Pedrick, L. E., & Reddy, D. M. (2018). Randomized controlled trials of U-Pace instruction: Outcomes in two gateway courses. *Journal of Computer Assisted Learning*. <https://doi.org/10.1111/jcal.12286>

*Stearns, S., *Fero, L., & **Fleming, R.** (2017). Regulating emotional arousal through manipulation of simple hand movements. *Journal of Applied Psychophysiology and Biofeedback* 42, 39-50. DOI: [10.1007/s10484-017-9350-8](https://doi.org/10.1007/s10484-017-9350-8)

*Toussaint, L., *Lange, L. J., *O'Connor, M., *Nakajima, M., & **Fleming, R.** (online prior to print 4/18/17). Control-oriented coping moderates stress responses in evacuees from a technological accident. *Journal of Applied Biobehavioral Research*. <https://doi.org/10.1111/jabr.12062>

*Nakajima, M., *Chen, W., & **Fleming, R.** (2017). Effects of unrecognized arousal on positive and negative emotions. *Journal of Applied Biobehavioral Research*. <https://doi.org/10.1111/jabr.12103>

Fleming, R., Barth, D.J., Weber, N., Pedrick, L. E., *Kienzler, S., & Reddy, D. M. (2017). Effect of U-Pace instruction on academic success, learning, and perceptions in younger and older undergraduates. *American Journal of Distance Education*. <https://doi.org/10.1080/08923647.2017.1368853>

Fleming, R., Stoiber, L. C., *Pfeiffer, H. M., *Kienzler, S. E., *Fleming, R. R., Pedrick, L. E., Barth, D. J., & Reddy, D. M. (2016). Using U-Pace instruction to improve the academic performance of economically disadvantaged undergraduates. *Journal of Computer Assisted Learning*. 32(4), 304-313. <https://doi.org/10.1111/jcal.12133>

*Levine, J.C., Burns, E.A., Whittle, J., **Fleming, R.**, Knudson, P., Flax, S., & Leventhal, H. (2016). Randomized trial of technology-assisted self-monitoring of blood glucose by low-income seniors: improved glycemic control in type 2 diabetes mellitus. *Journal of Behavioral Medicine*. <https://doi.org/10.1007/s10865-016-9763-5>

*Levine, J.C., **Fleming, R.**, *Piedmont, J.I., *Cain, S.M., & *Chen, W. (2016). Heart Rate Variability and GAD during laboratory-induced Worry and Aversive Imagery. *Journal of Affective Disorders* 205, 207-215. doi:10.1016/j.jad.2016.07.019

Fleming, R., Pedrick, L. E., & Reddy, D. M. (2016). Progress on U-Pace instruction. EDUCAUSE Review. This article is licensed under [Creative Commons BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/). <http://er.educause.edu/articles/2016/9/progress-for-the-u-pace-online-instructional-approach>

Key Areas of Interest

Stress and Coping

Emotion

Science of Teaching and Learning

Dr. Fleming will not be accepting students for the 2022-2023 academic year.

Karyn Frick, Distinguished Professor

Ph.D., Johns Hopkins University, 1996

Contact: frickk@uwm.edu; (414) 229-6615 Website: people.uwm.edu/frickk/

Teaching and Research Interests

The Frick laboratory studies the molecular and cellular mechanisms through which sex-steroid hormones, like estrogens and progesterone, influence memory consolidation and brain function throughout the adult female and male lifespan. By pinpointing these mechanisms, our ultimate goal is to identify key receptors, kinases, epigenetic and transcription factors, and genes that could be targets for the development of new treatments to reduce memory dysfunction in aging, Alzheimer's disease, and various neuropsychiatric disorders.

Our laboratory uses mice and rats to examine systems-level and cellular-level questions about memory formation in a mammalian system where the effects of hormones and aging are similar to those in humans. Our studies combine a variety of approaches including behavioral, biochemical, chemogenetic, epigenetic, pharmacological, and anatomical methods to study hormonal regulation of memory consolidation, intracellular signaling, gene transcription, local protein translation, and neuronal dendrite morphology in brain regions including the hippocampus, medial prefrontal cortex, and nucleus reuniens. This work involves female and male wild-type rodents, as well as transgenic mouse models of Alzheimer's disease.

Current projects also explore sex differences in memory, examine a role for glia in estrogenic memory enhancement, and use chemogenetic and optogenetic methods to elucidate the brain circuitry underlying hormonal mediation of memory. Through our collaborative work with other labs, we are also developing novel estrogen receptor agonist compounds and histone deacetylase inhibitors to reduce memory loss in aging and Alzheimer's disease.

I teach The Aging Brain, Hormones and Behavior, and Introduction to Psychology.

Selected Recent Publications

Fleischer, A.W., Schalk, J.C. Wetzel, E., Sem, D.S., Donaldson, W.A., and Frick, K.M. (2021). Long-term oral administration of the novel estrogen receptor beta agonist EGX385 enhances memory consolidation and alleviates drug-induced hot flashes in ovariectomized mice. *Hormones and Behavior*, 130, 104948

Taxier, L.R., Gross, K.S., and Frick, K.M. (2020). Oestradiol as a neuromodulator of learning and memory. *Nature Reviews Neuroscience*, 21, 535-550.

Frick, K.M. (Ed). (2020). *Estrogens and Memory: Basic Research and Clinical Implications*. New York: Oxford University Press. ISBN: 9780190645908.

Kim, J., Schalk, J.C., Koss, W.A., Gremminger, R.L., Taxier, L.R., Gross, K.S., Frick, K.M. (2019). Dorsal hippocampal actin polymerization is necessary for activation of G-protein-coupled estrogen receptor (GPER) to increase CA1 dendritic spine density and enhance memory consolidation. *Journal of Neuroscience*, 39(48):9598-9610.

Tuscher, J.J., Taxier, L.R., Schalk, J.C., Haertel, J.M., Frick, K.M. (2019). Chemogenetic suppression of medial prefrontal-dorsal hippocampal interactions prevents estrogenic enhancement of memory in female mice. *eNeuro*, March/April; 6 (2) e0451-18.2019 1-12.

Koss, W.A., Frick, K.M. (2019) Activation of androgen receptors protects intact male mice from memory impairments caused by aromatase inhibition. *Hormones and Behavior*, 111, 96-104.

Kim, J., Szinte, J.S., Boulware, M.I., and Frick, K.M. (2016). 17 β -estradiol and agonism of G-protein Coupled Estrogen Receptor (GPER) enhance hippocampal memory consolidation via different cell-signaling mechanisms. *Journal of Neuroscience*, 36(11), 3309-3321.

Tuscher, J.J., Luine, V.N., Frankfurt, M., and Frick, K.M. (2016). Estradiol-mediated spine changes in the dorsal hippocampus and medial prefrontal cortex of ovariectomized female mice depend on ERK and mTOR activation in the dorsal hippocampus. *Journal of Neuroscience*, 36(5), 1483-1489.

Key Areas of Interest

Neuroendocrinology of Learning and Memory

Sex Differences

Age-related Cognitive Decline and Alzheimer's Disease

Deborah Hannula, Associate Professor

Ph.D., University of Illinois, Urbana-Champaign, 2005

Contact: hannula@uwm.edu; (414) 229-4158

Website: sites.google.com/site/mindfulofmemorylab/

Key Areas of Interest

Memory

Attention

Cognitive Neuroscience

Eye Tracking, fMRI, and
Neuropsychological
Methods

Teaching and Research Interests

Research in my lab sits at the intersection of memory and attention, two cognitive processes that interact in fundamental ways to support behavior. We are especially interested in whether and under what circumstances information represented in episodic memory might capture attention. The traditional view has been that attention capture is limited to physically salient objects (e.g., the sound of screeching tires, a red tulip in a field of white daisies) but results from recent work, including our own, have indicated that this view of capture is too narrow. In several studies now, we have found that eye movements (and attention) are directed, in error, to objects that are familiar because they were recently encoded even though these objects are not targets of visual search and should be ignored. Based on my previous work (e.g., Hannula & Ranganath, 2009), we assume that pattern completion processes supported by the hippocampus drive this effect, and neuroimaging studies are currently underway to test a proposed model of capture by episodic memory (Hannula, 2018). This research program is supported by a CAREER award from the National Science Foundation. Additional, work in my lab examines capture by fear conditioned materials (e.g., Hopkins et al., 2015) and the effects of event timing on encoding and retrieval success (Kulkarni & Hannula, 2021). In all of these studies, we capitalize on the strengths of eye movement behavior as a measure of memory and combine basic behavioral and eye tracking data with neuroimaging methods (structural and functional MRI) to address questions about brain-behavior relationships. Students in my lab have also had opportunities to work on collaborative projects that address questions about the integrity of memory and brain health in clinical populations and older adults.

Selected Recent Publications

- Yang, Y., Coutinho, M.V.C., Greene, A.J., & Hannula, D.E. (2021). Contextual cueing is not flexible. *Consciousness and Cognition*, 93, article 103164.
- Kulkarni, M. & Hannula, D.E. (2021). Temporal regularity may not improve memory for item-specific detail. *Frontiers in Psychology*, 12, article 623402.
- Nickel, A.E., Hopkins, L.S., Minor, G.N., & Hannula, D.E. (2020). Attention capture by episodic memory. *Cognition*, 201, 104312.
- Hannula, D.E. (2018). Attention and long-term memory: bidirectional interactions and their effects on behavior. K. Federmeier (editor). *The Psychology of Learning & Motivation*, 69, 287-317.
- Mahoney, E.J., Kapur, N., Osmon, D.C., & Hannula, D.E. (2018). Eye tracking as a tool for the detection of simulated memory impairment. *Journal of Applied Research in Memory and Cognition*, 7(3), 441-453.
- Wuethrich, S., Hannula, D.E., Mast, F.W., & Henke, K. (2018). Subliminal encoding and flexible retrieval of objects in scenes. *Hippocampus*, 28(9), 633-643.
- Ragland, J.D., Layher, E., Hannula, D.E., Niendam, T.A., Lesh, T.A., Solomon, M., Carter, C.S., & Ranganath, C. (2016). Impact of schizophrenia on anterior and posterior hippocampus during memory for complex scenes. *NeuroImage Clinical*, 13, 82-88.
- Hannula, D.E. & Duff, M.C. (Eds.) (2017). The hippocampus from cells to systems: Structure, connectivity, and functional contributions to memory and flexible cognition. *Springer Nature*, Switzerland.
- Hannula, D.E., Warren, D.E., & Ryan, J.D. (2017). Beyond long-term declarative memory: evaluating hippocampal contributions to unconscious memory expression, perception, and short-term memory. In *The hippocampus from cells to systems*. Hannula & Duff (Eds). Springer Nature, Switzerland.
- Hopkins, L., Helmstetter, F.J., & Hannula, D.E. (2016). Oculomotor capture by a perceptually simple conditioned stimulus in the absence of explicit contingency knowledge. *Emotion*, 16, 1157-1171.
- Hopkins, L., Schultz, D., Hannula, D.E., & Helmstetter, F.J. (2015). Eye movements index implicit memory expression in fear conditioning. *PLoS ONE*, 10(11), e0141949.
- Nickel, A.E., Henke, K., & Hannula, D.E. (2015). Relational memory is evident in eye movement behavior despite the use of subliminal testing methods. *PLoS ONE*, 10(10), e0141677.
- Hannula, D.E., Tranel, D., Allen, J.S., Kirchoff, B.A., Nickel, A.S., & Cohen, N.J. (2015). Memory for items and relationships among items embedded in realistic scenes: Disproportionate relational memory impairment in amnesia. *Neuropsychology*, 29, 126-138.
- Mahoney, E.J. & Hannula, D.E. (2014). Fractionation of memory in patient populations: Causes, consequences, and conceptualization of memory disorders. *SIG 2 Perspectives on Neuropsychology and Neurogenic Speech and Language Disorders*, 24(2), 50-63.
- Hannula, D.E., Libby, L.A., Yonelinas, A.P. & Ranganath, C. (2013). Medial temporal lobe contributions to cued retrieval of items and contexts. *Neuropsychologia*, 51, 2322-2332.
- Hannula D.E. & Greene, A.J. (2012). The hippocampus reevaluated in unconscious learning and memory: at a tipping point? *Frontiers in Human Neuroscience*, article 80, 1-20.
- Hannula, D.E., Baym, C.L., Warren, D.E. & Cohen, N.J. (2012). The eyes know: eye movements as a veridical index of memory. *Psychological Science*, 23, 278-287.
- Hannula, D.E. & Ranganath, C. (2009). The eyes have it: Hippocampal activity predicts expression of relational memory in eye movements. *Neuron*, 63, 592-599.
- Hannula, D.E. & Ranganath, C. (2008). Medial temporal lobe activity predicts successful relational binding in working memory. *Journal of Neuroscience*, 28, 116-124.
- Hannula, D.E., Ryan, J.D., Tranel, D. & Cohen, N.J. (2007). Rapid onset relational memory effects are evident in eye movement behavior, but not in hippocampal amnesia. *Journal of Cognitive Neuroscience*, 19(10), 1690-1705.
- Hannula, D.E., Tranel, D., & Cohen, N.J. (2006). The long and the short of it: Relational memory impairments in amnesia, even at short lags. *Journal of Neuroscience*, 26, 8352-8359.
- Hannula, D.E., Simons, D.J., & Cohen, N.J. (2005). Imaging implicit perception: Promise and pitfalls. *Nature Reviews Neuroscience*, 6, 247-255.

Fred Helmstetter, Distinguished Professor

Ph.D., Dartmouth College, 1989

Contact: fjh@uwm.edu; (414) 229-4903

Website: sites.uwm.edu/fjh/

Teaching and Research Interests

The primary focus of our work is on understanding the neural systems underlying complex psychological phenomena like learning, memory, and emotion. We are interested in how memory is stored in the brain, how experience and learning can modify the nervous system, and how brain systems work together to solve these problems. While the emphasis in my lab is on basic science rather than on neuropathology or mental disorders, some of the fundamental questions we are addressing can relate to clinical problems. We take a multi-level approach which includes molecular and systems neurobiology, functional brain imaging, and behavioral studies in humans and laboratory animals.

Research projects currently underway include:

Studies on the molecular mechanisms involved in long-term memory formation with a focus on neuronal protein synthesis and degradation.

Examining some of the neurobiological mechanisms through which motivation and emotion can influence learning and perception.

Circuit analysis of fear learning focused on interactions between the amygdala, hippocampus and prefrontal cortex.

Effects of brain aging on synaptic plasticity and memory.

Selected Recent Publications

Dulka, B.N., Pullins, S.E., Cullen, P.K., Moyer, J.R. & Helmstetter, F.J. (2020) Age-related memory deficits are associated with changes in protein degradation in brain regions critical for trace fear conditioning. *Neurobiology of Aging*, 91: 160-166

Ferrara, N.C., Jarome, T.J., Cullen, P.K., Orsi, S.A., Kwapis, J.L., Trask, S., Pullins, S.E. & Helmstetter, F.J. (2019) GluR2 endocytosis-dependent protein degradation in the amygdala mediates memory updating. *Scientific Reports* 9:5180 <https://doi.org/10.1038/s41598-019-41526-1>

Kwapis, J.L., Jarome, T.J., Ferrara, N.C. & Helmstetter, F.J. (2017) Updating procedures can reorganize the neural circuit supporting a fear memory. *Neuropsychopharmacology*.

Jarome, T.J., Ferrara, N.C., Kwapis, J.L. & Helmstetter, F.J. (2016) CaMKII regulates proteasome phosphorylation and activity and promotes memory destabilization following retrieval. *Neurobiology of Learning and Memory*.

Jarome, T.J., & Helmstetter, F.J. (2014) Protein degradation and protein synthesis in memory formation. *Frontiers in Molecular Neuroscience* 7:61 <http://dx.doi.org/10.3389/fnmol.2014.00061>

Gilmartin, M.R., Balderston, N.L. & Helmstetter, F.J. (2014) Prefrontal cortical regulation of fear learning. *Trends in Neuroscience*, <http://dx.doi.org/10.1016/j.tins.2014.05.004>

Key Areas of Interest

Neurobiology of Learning and Memory

Behavioral and Cognitive Neuroscience

Dr. Helmstetter will not be accepting students for the 2022-2023 academic year.

Bonnie Klein-Tasman, Professor

Ph.D., Emory University, 2000

Contact: bklein@uwm.edu; (414) 229-3060

Website: sites.uwm.edu/bklein/

Key Areas of Interest

Child Clinical Psychology
 Child Neuropsychology
 Developmental Psychology
 Intellectual and
 Developmental Disabilities
 Behavioral Phenotyping

Teaching and Research Interests

In my research I seek to improve our understanding of the cognitive, emotional, and behavioral characteristics of children with neurodevelopment disorders of genetic origin using questionnaire, interview, experimental, and observational methods and also have begun to engage in treatment development and evaluation work to develop an evidence-base for interventions for these populations. My students and I are currently working on characterizing the early cognitive and behavioral phenotype of children with neurofibromatosis-1 to identify early indicators of later learning and attention problems, stability of measures of attention in the preschool years, and attention and social problems in the school-age and adolescent years. We are also conducting a pilot study of neural underpinnings of attention in neurofibromatosis using EEG. We are currently conducting treatment development work to address inhibition and anxiety challenges of children with Williams syndrome and social functioning and peer relationships with teens with neurofibromatosis type 1.

Selected Recent Publications

- Klein-Tasman, B. P., Young, B. N., Levine, K., Rivera, K., Micielica, E.J., Yund, B. D., & French, S. (accepted). Acceptability and effectiveness of play and humor-infused exposure therapy for fears in Williams syndrome. *Evidence-based Practice in Child and Adolescent Mental Health*.
- Janusz, J.A. Klein-Tasman, B.P, Payne, J.M., Wolters P.L., Thompson, H.L., Martin, S., de Blank, P., Ullrich, N., del Castillo, A., Hussey, M., Hardy, K.K., Haebich, K., Rosser, T., Toledo-Tamula, MA, Walsh, K.S. for the REiNS International Collaboration (accepted). Recommendations for social skills endpoints for clinical trials in neurofibromatosis type 1. *Neurology*
- Klein-Tasman, B.P., Lee., K., Thompson, H.L., Janusz, J., Payne, J.M., Pardej, S.K., de Blank, P., Kennedy, T., del Castillo, A., & Walsh, K.S. for the REiNS International Collaboration (accepted). Recommendations for measurement of attention outcomes for clinical trials including preschoolers with neurofibromatosis. *Neurology*
- Glad, D., Casnar, C., Yund, B., Lee, K., & Klein-Tasman, B. P. (accepted). A longitudinal investigation of social functioning in children with neurofibromatosis type 1: Relations to attention and cognitive functioning. *Journal of Developmental and Behavioral Pediatrics*.
- Radtko, H. B., Klein-Tasman, B. P., Merker, V. L., Knight, P., Ullrich, N. J., Jordan, J.T., Korf, B., & Plotkin, S. R. (in press). The impact of the COVID-19 pandemic on neurofibromatosis clinical care and research. *Orphanet Journal of Rare Diseases*, 16 (61). doi: 10.1186/s13023-021-01711-w
- Qaiser, F., Yin, Y., Mervis, C. B., Morris, C. A., Klein-Tasman, B. P., Tam, E., Osborne, L. R., & Yuen, R. K. C. (2021). Rare and low frequency genomic variants impacting neuronal functions modify the Dup7q11.23 phenotype. *Orphanet Journal of Rare Diseases*, 16 (6). DOI: <https://doi.org/10.1186/s13023-020-01648-6>. Link.
- Brei, N. G., Raicu, A. M., Lee, H. J., & Klein-Tasman, B. P. (2020). Feasibility and acceptability of an online response inhibition cognitive training program for youth with Williams syndrome. *International Review of Research in Developmental Disabilities*. In S. Hepburn (Ed.), *International Review of Research in Developmental Disabilities* (Vol. 59, pp. 107–134). Academic Press. <https://doi.org/10.1016/bs.irrdd.2020.09.002>
- Glad, D., Casnar, C., Yund, B., Enderle, M., Siegel, D., Basel, D., & Klein-Tasman, B. P. (2020). Adaptive behavior and relations with executive functioning in children with neurofibromatosis type 1 using a mixed design. *Journal of Developmental and Behavioral Pediatrics*, 41(8): 637-643.
- Payne, J., Walsh, K., Pride, N., Haebich, K., Maier, A., Chisolm, A., Glad, D. M., Casnar, C. L., North, K., & Klein-Tasman, B. P. (2020). Social skills and autism spectrum disorder symptoms in children with neurofibromatosis type 1: objective evidence for clinical trial outcomes. *Developmental Medicine and Child Neurology*, 62, 813-819. DOI: 10.1111/dmcn.14517
- Klein-Tasman, B. P., van der Fluit, F., & Mervis, C. B. (2018). Autism spectrum symptomatology in children with Williams syndrome who have phrase speech or fluent language. *Journal of Autism and Developmental Disorders*, 48: 3037-3050. <https://doi.org/10.1007/s10803-018-3555-4>
- Klein-Tasman, B. P., & Mervis, C. B. (2018). Autism spectrum symptomatology among children with Duplication 7q11.23 syndrome. *Journal of Autism and Developmental Disorders*. <https://doi.org/10.1007/s10803-017-3439-z>
- Defenderfer, E.K., Davies, W.H., Brei, N., Raicu, A.M., & Klein-Tasman, B. P. (2017). Toilet fear in early childhood as a predictor of later childhood anxiety disorders. *Children's Health Care*, 46(4), 366-378. DOI: 10.1080/02739615.2016.1193808
- Klein-Tasman, B. P., & Lee, K. (2017). Problem behaviour and psychosocial functioning in young children with Williams syndrome: Parent and teacher perspectives. *Journal of Intellectual Disability Research*, 61 (9), 853–865. DOI: 10.1111/jir.12367
- Casnar, C. L., & Klein-Tasman, B. P. (2017). Parent and teacher perspectives on emerging executive functioning in preschoolers with neurofibromatosis type 1: Comparison to unaffected children and lab-based measures. *Journal of Pediatric Psychology*, 42 (2): 198-207. <https://doi.org/10.1093/jpepsy/jsw042>.

Christine Larson, Professor

Ph.D., University of Wisconsin-Madison, 2003

Contact: larsoncl@uwm.edu; (414) 229-4996

Website: uwmlarsonlab.org/

Teaching and Research Interests

My laboratory, the Affective Neuroscience Laboratory, is dedicated to understanding the neural bases of healthy and pathological emotional processing. Currently, my research program is focused primarily on characterizing individual differences in emotional and cognitive processing that confer risk for anxiety. One of our most prominent lines of research at the moment is to prospectively characterize neurocognitive-affective risk factors for PTSD among acute trauma survivors. We examine this question in adults and are also beginning a new project identifying neural markers for risk for PTSD among youth who have very recently been a victim of violence. As part of this work we focus not just on neural systems, but on socioenvironmental risk and resilience factors, such as social support, exposure to community violence, racial discrimination, and neighborhood disadvantage. We use neuroimaging, psychophysiological, behavioral, and self-report tools to examine these questions.

Selected Recent Publications

Bird, C.M., Webb, E.K., Schramm, A.T., Sellnow, K.A., Torres, L., ***Larson, C.L.**, & ***deRoos-Cassini, T.A.** (in press). Perceived discrimination predicts future PTSD symptoms in trauma-exposed racial and ethnic minority adults. *Journal of Traumatic Stress*. *joint senior authors.

Belleau, E.L., Ehret, L.E., Hanson, J.L., Brasel, K.J., ***Larson, C.L.**, & ***deRoos-Cassini, T.A.** (2020). Amygdala functional connectivity in the acute aftermath of trauma prospectively predicts severity of posttraumatic stress symptoms. *Neurobiology of Stress, Article 100217*. *joint senior authorship

Fitzgerald, J.M, Belleau, E.L., Miskovich, T.A., Pedersen, W.S., & **Larson, C.L.** (2020). Multi-voxel pattern analysis of amygdala functional connectivity at rest predicts variability in posttraumatic stress severity. *Brain and Behavior, e1701*.

Webb, E.K.*, Huggins, A.*, Belleau, E.L., Ehret, L., Hanson, J., deRoos-Cassini, T.A.*, **Larson, C.L.***. (2020). Acute post-trauma resting state functional connectivity of periaqueductal gray subregions prospectively predicts posttraumatic stress disorder symptoms. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 5*, 891-900.

Ward, R.T., Lotfi, S., Sallmann, H., Lee, H.-J., & **Larson, C.L.** (2020). State anxiety reduces working memory capacity but spares filtering efficiency of neutral distracters. *Psychophysiology, 57*, e13625.

Key Areas of Interest

Emotion

Trauma

Anxiety

Brain Imaging

Psychophysiology

Ph.D., University of Texas at Austin, 2009
Contact: leehj@uwm.edu; (414-229-5858)
Website: sites.uwm.edu/leehj/

Teaching and Research Interests

My primary research interests broadly fall into two areas. First, I study maladaptive neurocognitive processes (e.g., attentional biases, inhibitory control deficits, working memory deficits, interpretable biases, etc.) and behaviors (e.g., safety behaviors, deviant action tendencies) in various anxiety problems, OCD and related disorders, and post-traumatic stress disorder. I am also examining mechanisms of change in such cognitive processes, using experimental trials. Second, I am also interested in developing web-based psychological assessment and data management systems. I teach Introduction to Psychology (PSY101), Clinical Psychology (PSY540), and Assessment (PSY831).

Selected Recent Publications

- Lotfi, S., Rostami, R., Shokoohi-Yekta, M., Ward, R., T., Motamed-Yeganeh, N., Mathew, A., S., & Lee, H.-J., (2020). Effects of Computerized Cognitive Training for Children with Dyslexia: An ERP Study. *Journal of Neurolinguistics*, 55.
- Mathew, A., Davine, T., Snorrason, I., Houghton, D., Woods, D., & Lee, H.-J. (2020). Body-Focused Repetitive Behaviors and Non-Suicidal Self-Injury: A Comparison of Clinical Characteristics and Symptom Features. *Journal of Psychiatric Research*, 124, 115-122
- Larsen, S., Lotfi, S., Bennett, K., Larson, C. L., Dean, C., & Lee, H.-J. (2019) A pilot Randomized Trial of a Dual n-Back Emotional Working Memory Training Program for Veteran with Elevated PTSD Symptoms. *Psychiatry Research*, 275, 261-268
- Davine, T., Snorrason, I, Berlin, G., Harvey, A. M., Lotfi, S., & Lee, H. -J. (2019). Development of a Picture-based Measure for "Not Just Right Experiences associated with Compulsive Sorting, Ordering, and Arranging. *Cognitive Therapy and Research*, 43, 481-497.
- Lee, H.-J., Espil, F., Bauer, C., Siwiec, S., & Woods, D.W. (2018). Computerized response inhibition training for individuals with trichotillomania, *Psychiatry Research*, 262, 20-27.
- Berlin, G., & Lee, H.-J. (2018). Response inhibition and error-monitoring processes in individuals with obsessive-compulsive disorder. *Journal of Obsessive-Compulsive and Related Disorders*, 16, 21-27.
- Siwiec, S.G., Davine, T.P., Kresser, R.C., Rohde, M.M., & Lee, H.-J. (2017). Modifying thought-action fusion via a single-session computerized interpretation training. *Journal of Obsessive-Compulsive and Related Disorders*, 12, 15-22.
- Goetz, A.R., Davine, T.P., Siwiec, S.G., & Lee, H.-J. (2016). The functional value of preventive and restorative safety behaviors: A systematic review of the literature. *Clinical Psychology Review*, 44, 112-124.
- Lee, H. -J., Goetz, A. R., Turkel, J. E., & Siwiec, S. G. (2015). Computerized Attention Retraining for Individuals with Elevated Health Anxiety. *Anxiety, Stress & Coping: An International Journal*, 2, 226-237.

Key Areas of Interest

Examining anomalous neurocognitive processes and their mechanisms in anxiety-related problems.

Developing computerized assessment and intervention programs for anxiety and related problems.

Dr. Lee will not be accepting students for the 2022-2023 academic year.

Krista Lisdahl, Professor (formerly Krista Lisdahl Medina)

Ph.D., University of Cincinnati, 2005
 Contact: medinak@uwm.edu; (414) 229-7159 Website: uwmbrainlab.com/

Teaching and Research Interests

Dr. Krista Lisdahl is the Director of the UWM's Brain Imaging and Neuropsychology (Brain) Laboratory. Dr. Lisdahl is a PI or Consultant on four large-scale multi-site neuroimaging studies examining the impact of substance use on the developing adolescent or young adult brain [the MTA Neuroimaging Study; the IDEAA Consortium; ENIGMA; and the Adolescent Brain Cognitive Development (ABCD) study - see below]. She is also the Chair of Women in Neuropsychology (<http://www.scn40.org/piac-win.html>) Subcommittee within the APA Society for Clinical Neuropsychology and the faculty Chair of the UWM Psychology Department Diversity Committee. The primary focus of her research is on examining risk and resilience factors predicting substance use onset in adolescence and understanding the neurocognitive consequences of chronic, repeated drug use during adolescence and emerging adulthood. The lab also investigates health factors (adiposity, exercise/physical activity, screen time, endocannabinoid levels) that influence adolescent neuro, cognitive, and affective development. More specifically, using magnetic resonance imaging (structural MRI, fMRI and DTI) and neuropsychological assessment, Dr. Lisdahl's laboratory examines the effects of chronic marijuana, alcohol, nicotine and ecstasy use on brain structure and function. We also attempt to explain individual differences by examining whether genetics, gender or health factors such as aerobic exercise, physical activity, adiposity (body fat distribution), sleep, or endocannabinoid levels moderate these effects. Finally, several members of the laboratory are interested in the complex

interplay between biological/individual factors (e.g., genetics, personality, psychopathology), family/cultural factors (e.g., family history of SUD, family values, family rules/monitoring, culture/ethnicity, peer and sibling substance use, SES), and environmental factors (drug policy, neighborhood safety, school engagement) in predicting adolescent neurocognition, affective health and substance use trajectories. Recently, we also began collaborating on studies examining the impact of the COVID-19 pandemic on adolescent mental and physical health and wellbeing. We are also committed to disseminating our scientific findings back to the local and national community of parents, educators and healthcare providers.

Current projects within the Brain Lab include: (1) Dr. Lisdahl is the Substance Use Assessment and Drug Policy Workgroup Co-Chair and UWM Site Principal Investigator (PI) for the NIH-funded Adolescent Brain and Cognitive Development (ABCD) study; this landmark study will follow over 10,000 youth for 10 years to determine factors that impact adolescent brain, cognitive and affective development (<https://abcdstudy.org/>). UWM recruited approximately 386 children and their parents from Milwaukee/Waukesha counties; (2) Dr. Lisdahl was the PI on a recently completed NIDA-funded 7 year R01 project examining whether physical activity levels or cardiorespiratory health moderate the effects of marijuana use on frontolimbic connectivity in teens; (3) Dr. Lisdahl is the co-creator and site-PI for the NIDA-funded Imaging Data in Emerging Adults with Addiction (IDEAA) consortium- which includes Drs. Staci Gruber (Harvard/McLean Hospital), Susan Tapert (UCSD), and Francesca Filbey (UT-Dallas); (4) Dr. Lisdahl was the PI on a NIDA-funded R03 project examining the neurocognitive effects of marijuana, ecstasy and binge drinking in emerging adults (in data-analysis); (5) The UWM Brain Lab collaborated with Dr. Ann Swartz to understand how standing desks impact activity levels, postural stability, cognition and classroom behavior in 100 school-aged children; (6) Drs. Lisdahl and Cecelia Hillard will examine the link between circulating endocannabinoid levels and neurocognitive, affective, and substance use outcomes in the ABCD Cohort; (7) Dr. Lisdahl is a Member of ENIGMA-Addiction world-wide consortium, a working group that uses aggregated data from several cohorts to examine the contribution of various genetic and brain correlates on risk for early onset substance use, consequences of repeated substance use, susceptibility to dependence and relapse vulnerability.

Incoming Graduate Students: The UWM Brain Lab is an inclusive, team-oriented environment committed to supporting diversity and equity efforts in science, clinical care, and education. Students who identify as BIPOC, LGBTQIA+, first-generation, or other groups underrepresented in graduate education are encouraged to apply to join our team. Students in the Brain Lab will get exposed to working on multi-site, multiPI large-scale neuroimaging projects (e.g., ABCD Study, IDEAA Consortium, ENIGMA) and will be mentored on grant writing and reviewing. The Brain Laboratory trains Clinical Neuropsychology doctoral and postdoctoral students in neuroscience/neuropsychology-related fields for clinical-science and academic positions. Dr. Lisdahl utilizes a junior colleague mentoring model. Students are provided developmental/stepped levels of supervision as they work towards independent research careers. Graduate students are expected to assist with data collection for the ABCD Study, provide supervision and mentoring for undergraduate students and RAs, publish articles in peer-reviewed journals (first-author and co-authored), and disseminate their findings at poster and paper presentations at national and international conferences. Dr. Lisdahl's teaching is focused on neuropsychology, psychopharmacology, research methods, and clinical assessment.

Selected Recent Publications

- Medina, K.L.,** Shear, P.K., Schafer, J, Armstrong, T.G., & Dyer, P. (2004). Cognitive functioning and length of abstinence in polysubstance dependent men. *Archives of Clinical Neuropsychology*, 19(2), 245-258. PMID: 15010089
- Medina, K.L.,** Shear, P.K., & Corcoran, K. (2005). Ecstasy (MDMA) exposure and neuropsychological functioning: A polydrug perspective. *Journal of the International Neuropsychological Society*, 11(6), 1-13. PMID: 16248911
- Medina, K.L.,** Shear, P.K., & Schafer, J. (2006). Memory functioning in polysubstance dependent women. *Drug and Alcohol Dependence*, 84(3), 248-55. PMID: 16595165
- Nagel, B.J., **Medina, K.L.,** Yoshii, J., Schweinsburg, A.D., Moadab, I., & Tapert, S.F. (2006). Age related changes in prefrontal white matter volume across adolescence. *NeuroReport*, 17(13), 1427-31. PMID: 16932152
- Medina, K.L.** & Shear, P.K. (2007). Anxiety, depression & behavioral symptoms of executive dysfunction in ecstasy users: Contributions of polydrug use. *Drug and Alcohol Dependence*, 87, 303-311. PMID: 17074449
- Medina, K.L.,** Schweinsburg, A.D., Cohen-Zion, M., Nagel, B.J., & Tapert, S.F. (2007). Effects of alcohol and combined marijuana and alcohol use during adolescence on hippocampal volume and asymmetry. *Exposures During Adolescent Development: Are Neurotoxic Risks Increased? Neurotox and Teratology*, 29, 141-152. PMID: 17169528
- Medina, K.L.,** Nagel, B.J., McQueeney, T., Park, A., & Tapert, S.F. (2007). Depressive symptoms in adolescents: Associations with white matter volume and marijuana use. *Journal of Child Psychology and Psychiatry*, 48(6), 592-600. PMID: 17537075
- Medina, K.L.,** Hanson, K., Schweinsburg, A.D., Cohen-Zion, M., Nagel, B.J., & Tapert, S.F. (2007). Neuropsychological functioning in adolescent marijuana users: Subtle deficits detectable after a month of abstinence. *Journal of the International Neuropsychological Society*, 13(5), 807-820. PMID: 17697412
- Medina, K.L.,** McQueeney, T., Nagel, B.J., Hanson, K., Schweinsburg, A.D., & Tapert, S.F. (2008). Prefrontal cortex volumes in adolescents with alcohol use disorders: Unique gender effects. *Alcohol Clinical and Experimental Research*, 32, 386-94. PMID: 18302722
- Medina, K.L.,** McQueeney, T., Nagel, B.J., Hanson, K.L., Yang, T., & Tapert, S.F. (2009). Prefrontal cortex morphometry in abstinent adolescent marijuana users: subtle gender effects. *Addiction Biology*, 14(4), 457-68. PMID: 19650817
- Cohen-Zion, M., Drummond, S.P.A., Padula, C.B., Winward, J., Kanady, J., **Medina, K.L.,** & Tapert, S.F. (2009). Sleep Architecture in Adolescent Marijuana and Alcohol Users during Acute and Extended Abstinence. *Addictive Behaviors*, 34(11), 967-9. PMID: 19505769
- Medina, K.L.,** Nagel, B.J., & Tapert, S.F. (2010). Abnormal cerebellar morphometry in abstinent adolescent marijuana users. *Psychiatry Research: Neuroimaging*, 182(2), 152-159. PMID: 20413277
- Hanson, K. L., **Medina, K. L.,** Nagel, B. J., Spadoni, A. D., Gorlick, A., & Tapert, S. F. (2010). Hippocampal volumes in adolescents with and without a family history of alcoholism. *The American Journal of Drug and Alcohol Abuse*, 36, 161-167. PMID: 20465374
- Schweinsburg, A.D., Schweinsburg, B.C., **Medina, K.L.,** McQueeney, T., Brown, S.A., & Tapert, S.F. (2010). The influence of recency of use on fMRI response during spatial working memory in adolescent marijuana users. *Journal of Psychoactive Drugs*, 42(3), 401-12. PMID: 21053763
- Hanson, K. L., Winward, J. L., Schweinsburg, A. D., **Medina, K. L.,** Brown, S. A., & Tapert, S. F. (2010). Longitudinal study of cognition among adolescent marijuana users over three weeks of abstinence. *Addictive Behaviors*, 35(11):970-6. PMID: 20621421
- Hanson, K.L., **Medina, K.L.,** Padula, C.B., Tapert, S.F., & Brown, S.A. (2011). Impact of adolescent alcohol and drug use on neuropsychological functioning in young adulthood: 10-year outcomes. *Journal of Child & Adolescent Substance Abuse*, 20, 135-154. PMID: 21532924

Key Areas of Interest

Healthy Adolescent and Emerging Adult Brain Development

Risk and Resilience Factors Predicting Substance Use Trajectories

Neuroscience of Addiction and Drug Effects

Role of Circulating Endocannabinoids on Adolescent Development & Substance Use

Effects of Exercise, Physical Activity and Adiposity on Brain Health

Marcellus Merritt, Associate Professor

Ph.D., Howard University, 1997

Contact: merrittm@uwm.edu; (414) 229-6145

Teaching and Research Interests

My research program on stress and cardiovascular health disparities is comprised of two corresponding lines of work: 1) analysis of underlying social psychological and physiological stress factors for excess rates of cardiovascular disease risk among diverse populations (e.g., anger coping and hypertension risk in African Americans), and; 2) analysis of health protective behaviors (e.g., religious coping and educational attainment) that are linked with reduced risk for adverse health outcomes. For instance, my innovative research findings show how the John Henryism active coping (JHAC) hypothesis or how sustained effortful coping responses to everyday psychosocial demands is linked with a) poor daily salivary cortisol responses among African American female dementia family caregivers with more challenging care recipients and b) poor sleep quality and prolonged vascular recovery to anger recall stress among young adults from more socioeconomically deprived family backgrounds. My research focuses on how these psychosocial mechanisms work in settings such as natural social situations, community health care centers, primary medical care settings, and biomedical lab contexts. Currently, I am examining how unique forms of stress management and solutions for health disparities like brief mindfulness meditation and leisure stress coping (e.g., <https://uwm.edu/news/the-power-to-de-stress-yourself/>) boost coping skills, enhance physiological recovery to acute mental stress, and promote nighttime blood pressure dipping among diverse at-risk young adults and family caregivers. Our goal is to leverage this person-centered model to promote better adoption and long-term adherence to relevant stress reduction interventions. Along those lines, I am networking with local colleagues in public health to develop novel community-centered stress management and obesity interventions for African Americans within a collaboration of community health worker, researcher, and healthcare systems. As well, I am collaborating with colleagues in neurology at the Medical College of Wisconsin on a series of innovative projects focused on heart rate variability as an indicator of the efficacy of behavioral and pharmacologic interventions in patients with autonomic disorders and chronic pain. To enhance productivity for current and upcoming research interventions in diverse populations and offer unique student training opportunities, my colleagues and I have developed expertise in the electronic diary sampling of everyday stress responses and appraisal of 24-hour sleep-wake rest-activity rhythms.

I teach undergraduate research methods, the psychology of race, ethnicity and health, psychology of personality and a graduate seminar in social psychology.

I plan on recruiting new master's students in health psychology for the Fall 2022 semester. If you are interested feel to me email me any time.

Selected Recent Publications

Johnson, K. T.*, Merritt, M. M., Zawadzki, M. J., Ayazi, M.*, & Di Paolo, M. R.* (2019). Mindfulness meditation as an effective means of acute cardiovascular recovery to anger recall for non-practicing meditators: A preliminary study. *Journal of Applied Behavioral Research*. DOI: 10.1111/jabr.12167

Ayazi, M.*, Johnson, K. T.*, Merritt, M. M., Di Paolo, M. R.*, Edwards, C. L., Koenig, H. G., Bennett, G. G., Whitfield, K. E., & Barker, C. (2018). Religiosity, education, John Henryism active coping, and cardiovascular responses to anger recall for African American men. *Journal of Black Psychology*, 44(4), 295-321. DOI: 10.1177/0095798418765859

Merritt, M. M., Zawadzki, M. J., Di Paolo, M. R.*, Johnson, K. T.*, & Ayazi, M.* (2017). Dimensions of self-selected leisure activities, trait coping and their relationships with sleep quality and depressive symptoms. *Leisure Studies*, 36(6), 838-851. DOI: 10.1080/02614367.2017.1310283.

Zawadzki, M. J., Smyth, J. M., Merritt, M. M., & Gerin, W. (2013). Absorption in self-selected activities is associated with lower ambulatory blood pressure but not for high trait ruminators. *American Journal of Hypertension*, 26(11), 1273-1279. DOI: 10.1093/ajh/hpt118.

Merritt, M. M., Dillon, S. E.* (2012). Depression and estimated functional aerobic capacity in young women: The good and the bad of John Henryism active coping. *Journal of Applied Biobehavioral Research*, 17(1), 23-37.

McCubbin, J. A., Merritt, M. M., Sollers III, J. J., Evans, M. K., Zonderman, A. B., Lane, R. D., & Thayer, J. F. (2011). Cardiovascular emotional dampening: Blood pressure and recognition of emotion. *Psychosomatic Medicine*, 73(9), 743-750. [Suggested for press release by editor.]

Merritt, M. M., McCallum, T. J., Fritsch, T. (2011). How much striving is too much? John Henryism active coping predicts worse daily cortisol responses for African American but not White female dementia family caregivers. *American Journal of Geriatric Psychiatry*, 19(5), 451-460.

Key Areas of Interest

Stress Physiology

Stress Management

Hypertension

Chronic Pain

Sleep Quality

Health Disparities

Ph.D., Northwestern University, 1992
Contact: jrmoyer@uwm.edu; (414) 229-5883 or (414) 229-3255
Website: sites.uwm.edu/jrmoyer/

Teaching and Research Interests

Our laboratory is interested in how the brain changes as a function of experience and as a function of the aging process. Our research focuses primarily on brain regions (e.g., *prefrontal cortex, retrosplenial cortex, hippocampus, and other medial temporal lobe structures*) that are not only vital for various forms of learning and memory but also are among the most susceptible to aging-related neurodegenerative disorders, including Alzheimer's disease. Our laboratory is currently engaged in research investigating: (1) neurophysiological, cellular, and molecular mechanisms underlying aging-related deficits in acquisition and extinction of trace fear conditioning, (2) intrinsic and synaptic plasticity of ventral hippocampus and retrosplenial cortex neurons as a function of learning and memory, and (3) the role of calcium binding proteins and calcium-dependent processes in aging and susceptibility to neurodegeneration. Behavioral (e.g., *acquisition and extinction of Pavlovian fear conditioning*), cellular (e.g., *use of in vitro models of ischemia to study neurodegeneration*), immunohistochemical (e.g., *Western blotting, fluorescence and confocal microscopy*), and neurophysiological (e.g., *whole-cell patch-clamp recordings from visually identified neurons in living brain slices; intracellular and extracellular recordings in living brain slices*) techniques are utilized to integrate information across multiple levels of analysis.

Graduate and undergraduate students in my laboratory not only gain experience conducting cutting edge research, but they also have opportunities to present their data at local and international conferences, including the Annual Society for Neuroscience Conference.

Interested students should contact me directly or visit our website for additional information about our research or about extramurally funded research opportunities.

Selected Recent Publications

Yousuf, H., Ehlers, V. L., Sehgal, M., Song, C., and Moyer, J. R., Jr. (2020). Modulation of intrinsic excitability as a function of learning within the fear conditioning circuit. *Neurobiology of Learning and Memory*, 167, 107132.

Ehlers, V. L., Smies, C. W., and Moyer, J. R., Jr. (2020). Apoaerugin differentially modulates fear memory in adult and aged rats. *Brain and Behavior*, 10, e01832 (<https://doi.org/10.1002/brb3.1832>).

Yousuf, H., Nye, A., and Moyer, J. R., Jr. (2020). Heterogeneity of neuronal firing type and morphology in retrosplenial cortex of male F344 rats. *Journal of Neurophysiology*, 123, 1849-1863.

Dulka, B. N., Pullins, S. E., Cullen, P. K., Moyer, J. R., Jr., Helmstetter, F. J. (2020). Age-related memory deficits are associated with changes in protein degradation in brain regions critical for trace fear conditioning. *Neurobiology of Aging*, 91, 160-166.

Song, C. and Moyer, J. R., Jr. (2018). Layer- and subregion-specific differences in the neurophysiological properties of rat medial prefrontal cortex pyramidal neurons. *Journal of Neurophysiology*, 119, 177-191.

Song, C., Ehlers, V., and Moyer, J. R., Jr. (2015). Trace fear conditioning differentially modulates intrinsic excitability of mPFC-BLA projection neurons in infralimbic and prelimbic cortices. *Journal of Neuroscience*, 35, 13511-13524

Sehgal, M., Ehlers, V. L., Moyer, J. R., Jr. (2014). Learning enhances intrinsic excitability in a subset of lateral amygdala neurons. *Learning & Memory*, 21, 161-170.

Detert, J. A., Adams, E. L., Lescher, J. D., Lyons, J., and Moyer, J. R., Jr. (2013). Pretreatment with apoaerugin protects hippocampal CA1 neurons from oxygen-glucose deprivation. *Plos One*, 8, e79002.

Sehgal, M., Song, C., Ehlers, V. L., and Moyer, J. R., Jr. (2013). Learning to learn – intrinsic excitability as a metaplasticity mechanism for memory formation. *Neurobiology of Learning and Memory*, 105, 186-199.

Song, C., Detert, J. A., Sehgal, M., and Moyer, J. R., Jr. (2012). Trace fear conditioning enhances synaptic and intrinsic plasticity in rat hippocampus. *Journal of Neurophysiology*, 107, 3397-3408.

Kaczorowski, C. C., Davis, S. J., and Moyer, J. R., Jr. (2012). Aging redistributes medial prefrontal neuronal excitability and impedes extinction of trace fear conditioning. *Neurobiology of Aging*, 33, 1744-1757.

Moyer, J.R., Jr., Furtak, S.C., McGann, J.P., and Brown, T.H. (2011). Aging-related changes in calcium-binding proteins in rat perirhinal cortex. *Neurobiology of Aging*, 32, 1693-1706.

Key Areas of Interest

Neurobiology of
Learning, Memory, and
Aging
Cellular Mechanisms of
Neuronal Aging and
Neurodegeneration

Stacey Nye, Clinical Professor

Ph.D., Northwestern University Medical School, 1991

Contact: nye@uwm.edu; (414) 229-2488

Research Interests

My main area of interest is the training and treatment of eating and body image disorders, including:

- Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder
- Intuitive Eating and Health at Every Size approaches
- Family Based treatment of Anorexia Nervosa
- Cognitive Behavioral therapy for eating disorders

Other areas of interest include:

- Depression
- Anxiety Disorders
- Group psychotherapy
- Acceptance and Commitment Therapy
- Existential psychotherapy and Positive Psychology

Selected Recent Publications

Weighty Matters: Health at Every Size Approach in the Treatment of Eating and Weight Disorders. 6 presentations for Cross Country Education, May 2016.

Nye, S. (2008). Tragic Optimism and the Search for Meaning: Enhancing Recovery in Psychotherapy. *Journal of Eating Disorders Treatment and Prevention*, 16, 358-361.

Nye, S & Cash, T. (2006). Outcomes of Manualized Cognitive-Behavioral Body Image Therapy with Eating Disordered Women Treated in a Private Clinical Practice. *Journal of Eating Disorders Treatment and Prevention*, 14, 31-40.

Nye, S. (2003). Healing Through Connection: Self-Disclosure in Psychotherapy. *Journal of Eating Disorders Treatment and Prevention*, 11, 235-240.

Key Areas of Interest

Eating Disorders

Body Image Disorders

Issues in Psychotherapy

Dr. Nye will not be accepting students for the 2022-2023 academic year.

Diane Reddy, Professor

Ph.D., Uniformed Services University of the Health Sciences, 1984

Contact: reddy@uwm.edu; (414) 229-6482

Teaching and Research Interests

I directed the doctoral research of 22 Ph.D.'s. These alumni went on to obtain research center directorships, distinguished university leadership positions, tenure-track faculty positions, high level corporate positions, clinical positions, and research and clinical positions at medical centers.

My research is focused on:

- health promotion and prevention (especially in relation to tailoring interventions to reduce health disparities, improving doctor-patient interactions and health communication, improving adolescent and women's health, and health promotion in work settings)
- teaching and learning science (I have secured over \$4 million in extramural research funding for current studies).

Selected Recent Publications

- Rameshbabu, A., Ports, K., & Reddy, D.M. (2018). Learning to health yourself: a randomized, tailored self-regulation intervention among custodial employees. *Health Education Research*. <https://academic.oup.com/her/advance-article-abstract/doi/10.1093/her/cyy027/5088938>
- Fleming, R., Pedrick, L., Stoiber, L., Kienzler, S., Fleming, R. R., & Reddy, D. M. (2018). Increasing undergraduate success: A randomized controlled trial of U-Pace instruction. *Online Learning Journal*, 22 (3), 175-192. <http://dx.doi.org/10.24059/olj.v22i3.1317>
- Fleming, R., Kienzler, S., Stoiber, L. C., Fleming, R. R., Pedrick, L. E., & Reddy, D. M. (2018). Randomized controlled trials of U-Pace instruction: Outcomes in two gateway courses. *Journal of Computer Assisted Learning*, <https://doi.org/10.1111/jcal.12286>
- Fleming, R., Barth, D., Weber, N., Pedrick, L., & Reddy, D. M. (2017) Effect of U-Pace instruction on academic success, learning, and perceptions in younger and older undergraduates. *American Journal of Distance Education*. doi: <http://dx.doi.org/10.1080/08923647.2017.1368853>.
- Fleming, R., Pedrick, L., & Reddy, D. M. (2016). Progress on the U-Pace instructional Approach. *Educause Review*. Editor's Pick, September 19, 2016. <http://er.educause.edu/articles/2016/9/progress-for-the-u-pace-online-instructional-approach>
- Fleming, R., Stoiber, L. C., Pfeiffer, H. M., Kienzler, S. E., Fleming, R. R., Pedrick, L. E., Barth, D. J., Reddy, D. M. (2016). Using U-Pace instruction to improve the academic performance of economically disadvantaged undergraduates. *Journal of Computer Assisted Learning*, 32, 304-313.
- Ports, K. A., Reddy, D. M., & Rameshbabu, A. (2015). Cervical cancer prevention in Malawi: A qualitative study of women's perspectives. *Journal of Health Communication*, 20 (1), 97-104.
- Ports, K.A., Reddy, D.M., & Rameshbabu, A. (2013). Barriers and facilitators to HPV vaccination: Perspectives from Malawian women. *Women & Health*, 53(6), 630-645.
- Ports, K.A., Reddy, D.M., & Barnack-Tavlaris, J.L. (2013). Sex differences in health-care provider communication during genital herpes care and patients' health outcomes. *Journal of Health Communication*, 18(12), 1436-1448.
- Reddy, D. M., Fleming, R., Pedrick, L. E., Jirovec, D. L., Pfeiffer, H. M., Ports, K. A., Barnack-Tavlaris, J. L., Helion, A. M., & Swain, R. A. (2013). U-Pace instruction: Improving student success by integrating content mastery and amplified assistance. *Journal of Asynchronous Learning Networks*, 17(1), 145-152.
- Rameshbabu, A., Reddy, D.M., & Fleming, R. (2013). Correlates of negative physical health in call center shift workers, *Applied Ergonomics*, 44, 350 – 354.
- Crowley, O., Marquette, J., Reddy, D.M., & Fleming, R. (2013). Factors predicting willingness to eat irradiated meat. *Journal of Applied Social Psychology*, 43 (1), 95-105.
- Reddy, D.M., Fleming, R., Pedrick, L.E., Ports, K.A., Barnack-Tavlaris, J., Helion, A., & Swain, R. (2011). U-Pace: Facilitating academic success for all students. *EDUCAUSE Quarterly*, 34(4), www.educause.edu/library/EQM1140
- Barnack-Tavlaris, J.L., Reddy, D.M., & Ports, K.A. (2010). Psychological adjustment among women living with genital herpes. *Journal of Health Psychology*, 16(1), 12-21.

Key Areas of Interest

Health Psychology
Science of Teaching and Learning

Dr. Reddy will not be accepting students for the 2022-2023 academic year.

Ryan C. Shorey, Associate Professor

Ph.D., University of Tennessee-Knoxville, 2014

Contact: shorey@uwm.edu, (414) 229-4570

Website: sites.uwm.edu/shorey/

Key Areas of Interest

Adult Clinical Psychology

Intimate Partner Violence

Substance Misuse

Mindfulness-Based Interventions

Teaching and Research Interests

My program of research has two main areas of focus: (1) research on risk factors for, and consequences of, intimate partner violence (IPV) and sexual assault and (2) research on substance use disorders and treatment. In addition, my research integrates these two lines of research to examine substance-related IPV/sexual assault and whether treatment of substance use reduces the occurrence of IPV and sexual assault. My overall goal with these lines of research are to gain a clearer understanding of how to develop and implement prevention and intervention programs aimed at reducing IPV, sexual assault, and substance use disorders. Moreover, my research program aims to explore these areas of focus in diverse and underrepresented populations.

Selected Recent Publications

Shorey, R. C., Brem, M. J., Kolp, H., Glozier, W.K., Norona, J., Baxley, C., Borsari, B., & Stuart, G. L. (in press). Recommendations for affirming brief motivational interventions for sexual minority college student drinking. *Addiction Research & Theory*.

Shorey, R. C., Fite, P. J., Menon, S. V., Cohen, J. R., Stuart, G. L., & Temple, J. R. (2021). The association between PTSD symptoms and IPV perpetration across 6 years. *Journal of Interpersonal Violence*, 36(9-10), NP5340–NP5361.

Wesche, R., Galletly, C. L., & Shorey, R. C. (2021). Developing an inclusive Safe Dates program for sexual and gender minority adolescents: A pilot study. *Journal of Adolescence*, 86(2), 11–14.

Wolford-Clevenger, C., Frantell, K. A., Brem, M. J., Garner, A., Florimbio, A. R., Grigorian H., Shorey, R. C., Stuart, G. L. (2020). Suicide ideation among southern U.S. sexual minority college students. *Death Studies*, 44, 223-229.

Kolp, H., Wilder, S., Andersen, C., Johnson, E., Horvath, S., Gidycz, C., & Shorey, R. C. (2020). Gender minority stress, sleep disturbance, and sexual victimization in transgender and gender nonconforming adults. *Journal of Clinical Psychology*, 76, 688-698.

Shorey, R. C., Stuart, G. L., Brem, M. J., & Parrott, D. (2019). Advancing an integrated theory of alcohol-related intimate partner violence perpetration in sexual minorities. *Journal of Family Violence*, 34, 357-364.

Lu, Y., Shorey, R. C., Greeley, C. S., & Temple, J. R. (2019). Childhood physical abuse and physical dating violence in young adulthood: The mediating role of adverse mental health. *Journal of Clinical Psychology*, 75, 1916-1929.

Cohen, J.R., McNeil, S.L., Shorey, R.C., & Temple, J.R. (2019). Maltreatment subtypes, depressed mood, and anhedonia: A longitudinal study with adolescents. *Psychological Trauma: Theory, Research, Practice, and Policy*, 11, 704-712.

Shorey, R. C., Cohen, J. R., Kolp, H, Fite, P. J., Stuart, G. L., & Temple, J. R. (2019). Predicting sexual behaviors from mid-adolescence to emerging adulthood: The roles of dating violence victimization and substance use. *Preventive Medicine*, 105844.

Shorey, R. C., Allan, N. P., Cohen, J. R., Fite, P. J., Stuart, G. L., & Temple, J. R. (2019). Testing the factor structure and measurement invariance of the Conflict in Adolescent Dating Relationship Inventory. *Psychological Assessment*, 31, 410-416.

Rodney Swain, Professor

Ph.D., University of Southern California, 1992
 Contact: rswain@uwm.edu; (414) 229-5588
 Website: sites.uwm.edu/rswain/

Teaching and Research Interests

Broadly stated, my laboratory is interested in studying the manner in which experience shapes the structure and function of the brain and, in turn, how these alterations affect behavior. Given that experience can take many forms, it should not be surprising that morphological and functional changes also exhibit varied patterns. For example, it has recently been reported that motor skill learning is accompanied by increases in the density of Purkinje cell synapses in the cerebellum of the rat. In contrast, exercise, in the absence of learning, produces increases in the density of capillary innervation of the cerebellum. My laboratory is interested in how these plastic changes, individually and in concert, facilitate behavioral adaptation. Our research focuses on changes in both cognitive and motor systems, particularly the hippocampus and cerebellum, associated with motor skill acquisition and repetitive motor activity (exercise).

Current projects in the lab fall into two separate but related categories. The first category examines the relationship between motor activity and plasticity of vascular and synaptic networks of the brain. The work also addresses the impact that these plastic changes have on the learning process. The second research category explores the nature of cerebellar contributions to higher cognitive function. Of particular interest is the manner in which cognition is degraded following ablation of the cerebellum and how manipulations of both behavior and brain morphology can begin to reverse these degradative changes. These latter studies may be particularly relevant to those interested in autism or ADHD.

Selected Recent Publications

Stevenson, M.E., Nazario, A.S., Czyz, A.M., Owen, H.A., & Swain, R.A. (2021). Motor learning rapidly increases synaptogenesis and astrocytic structural plasticity in the rat cerebellum. *Neurobiology of Learning and Memory*. <https://doi.org/10.1016/j.nlm.2020.107339>

Stevenson, M.E., Miller, C.C., Owen, H.A., & Swain, R.A. (2020). Aerobic exercise increases sprouting angiogenesis in the male rat motor cortex. *Brain Structure and Function*, 225, 2301-2314. <https://doi.org/10.1007/s00429-020-02100-y>

Stevenson, M.E., Kay, J.J.M., Atry, F., Wickstrom, A.T., Krueger, J.R., Pashaie, R.E., & Swain, R.A. (2019). Wheel running for 26 Weeks is associated with sustained vascular plasticity in the rat motor cortex. *Behavioural Brain Research*, 380, <https://doi.org/10.1016/j.bbr.2019.112447>

Stevenson, M. E., Behnke, V. K., & Swain, R. (2018). Exercise pattern and distance differentially affect hippocampal and cerebellar expression of FLK-1 and FLT-1 receptors in astrocytes and blood vessels. *Behavioural Brain Research*, 337, 8-16.

Berggren, K. L., Kay, J. M., & Swain, R. (2014). Examining cerebral angiogenesis in response to physical exercise. *Methods in Molecular Biology: Cerebral Angiogenesis*, 139-154. Humana Press.

Bauer, D. J., Peterson, T. C., & Swain, R. (2014). Cerebellar dentate nuclei lesions alter prefrontal cortex dendritic spine morphology. *Brain Research*, 1544, 15-24.

Swain, R., Berggren, K. L., Kerr, A. L., Patel, A., Peplinski, C., & Sikorski, A. M. (2012). On aerobic exercise and behavioral and neural plasticity. *Brain Sciences*, 2, 709-744.

Peterson, T. C., Villatoro, L., Arneson, T., Ahuja, B., Voss, S., & Swain, R. (2012). Behavior modification after inactivation of cerebellar dentate nuclei. *Behavioral Neuroscience*, 126, 551-562.

Kerr, A. L., & Swain, R. (2011). Rapid cellular genesis and apoptosis: Effects of exercise in the adult rat. *Behavioral Neuroscience*, 125, 1-9.

Bauer, D. J., Kerr, A. L., & Swain, R. (2011). Cerebellar dentate nuclei lesions reduce motivation in appetitive operant conditioning and open field exploration. *Neurobiology of Learning and Memory*, 95, 166-175.

Swain, R.A., Kerr, A.L., & Thompson, R.F. (2011). The cerebellum: A neural system for the study of reinforcement learning. *Frontiers in Behavioral Neuroscience*, doi: 10.3389/fnbeh.2011.00008

Key Areas of Interest

Behavioral
Neuroscience

Psychobiology

Learning and Memory

Cognition

Dr. Swain will not be accepting students for the 2022-2023 academic year.