

## Teaching and Mentoring Statement Alexander J. Shackman, Ph.D.

*The same thrill, the same awe and mystery, comes again and again when we look at any question deeply enough.*

—Richard Feynman (1955)

*When a scientist doesn't know the answer to a problem, he is ignorant. When he has a hunch as to what the result is, he is uncertain. And when he is pretty damn sure of what the result is going to be, he is still in some doubt...Scientific knowledge is a body of statements of varying degrees of certainty—some most unsure, some nearly sure, but none absolutely certain.*

—Richard Feynman (1955)

**Philosophy and Approach.** Feynman, a Nobel laureate physicist, captures two themes that permeate my teaching and mentoring:

1. ***Inspiration.*** The best science is infused with a sense of magic, revelation, and wonder. It is inspiring, counterintuitive, and eye-opening.
2. ***Perspiration.*** Science is not an established body of facts, but a practical set of methods for estimating and reducing uncertainty, an on-going process, at times messy or tedious, of grappling with nature and our preconceived notions about how it works.

This philosophy has informed the initial development and on-going refinement of all of my courses, including three new undergraduate courses and two new graduate seminars<sup>1</sup>. It cuts across my classroom instruction, formal mentoring, and informal professional interactions with students.

***Inspiration.*** The best teachers are passionate story tellers, wiser and more-experienced co-conspirators who can lift veils and expose secrets. Inspiring and engaging students is essential for motivating learning and study. My lectures are dramatic narratives. Each story begins with a conceptual roadmap outlining the fundamental questions that we, as a class, will wrestle with for the next 75 minutes (e.g., *We have been brain-washed by our culture to think in terms of heritability, to blame the genes of a family or a race—But what are the limitations of heritability? How has it been leveraged to motivate racist and eugenicist policies? Why do we so often succumb to temptation—Why is there such a tension between what we do and what we want to do?*). The body of the lecture describes the current state of the science. [Lectures](#) are leavened with case histories, corny jokes, examples from pop culture (e.g., *Star Wars*, *Harry Potter*) and film clips (examples [1](#) and [2](#)); with plenty of time for classroom probes (*Students—what would you predict?*), clicker polls and other active-learning exercises (e.g., ‘pair-and-share’), student questions, and discussion. Of course, no one likes to be left hanging, certainly not with an upcoming exam, and so the story invariably ends with a *dénouement* encapsulating the most important facts, conclusions, and future challenges. Written [Learning Objectives](#), gamified ‘*Jeopardy*’-style review sessions, cumulative examinations, and homework assignments reinforce these key points. In addition, many of the assignments provide an opportunity to thoughtfully integrate material discussed in the classroom with students’ own lived experiences and personal narratives ([‘Critical Thinking Questions’](#)).

The best teachers establish a bond of interpersonal trust and mutual respect with their students. Cultivating a climate of psychological safety enables students to actively engage, take intellectual risks, honestly express confusion, and seek guidance and assistance with other components of their professional development (e.g., letters of recommendation, guidance about graduate training). This philosophy guides all of my interactions—

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<sup>1</sup> **Undergraduate Courses:** **Psychology 210** (*A gentle introduction to temperament & personality*), **Psychology 435** (*Advanced seminar in temperament & personality*), and **Psychology 489A-Honors** (*Advanced seminar on the nature and biological bases of emotion*). **Graduate Courses:** **Psychology/NACS 612** (*Affective science perspectives on temperament & personality: Developmental origins, neurogenetic bases, and implications for psychopathology*) and **Psychology/NACS 614** (*Emotion: From Biological Foundations to Contemporary Debates*). With guidance and encouragement from the Director of Clinical Training, Psychology/NACS 614 was developed to address longstanding concerns about the onerous coursework associated with American Psychological Association-accredited doctoral training in Clinical Psychology (Gee...& Shackman *Annual Review of Clinical Psychol* 2022). This is accomplished by covering multiple areas of ‘Discipline-Specific Knowledge’ in a single course, including foundational and graduate-level knowledge in Affect, Biological Bases of Behavior, and their integration.

formal and informal, face-to-face and digital—with all of my trainees and staff. It's why I begin each semester with a roundtable discussion about the fundamental questions and scholarly debates that frame and animate the courses. It's why I strive to respond to student emails promptly, with humor and charity, even when I am in the midst of grant deadlines and other personal and professional responsibilities. And it motivated me to create a new opportunity for fostering connections with undergraduate students—something that many of them are hungry for, according to a [2022 Inside Higher Ed/College Pulse survey](#). During the Spring 2016 semester, I instituted 'Snack with Shack' (SWS) in my large, introductory level course on temperament and personality. Each week, I invite six students to have a coffee and pastry, on me, after class at the Student Union. SWS provides students with another opportunity to reveal their challenges and aspirations, enabling me to fine tune my courses to their needs and provide informal mentorship, and allowing them to feel heard, respected, and understood. More recently, I have successfully expanded SWS to select graduate seminars.

**Perspiration—Learning to Think Like a Scientist, Even if You Never Become One.** All of my courses are designed to prepare a small minority of my students for careers as researchers and all of them for living more effectively in a world where decisions and public policy are increasingly made on the basis of data, evidence, and quantitative reasoning. In short, to *Think Like a Scientist*, even if they never become one. Lectures and readings are designed to promote a healthy sense of skepticism and to cultivate the intellectual habits required to critically evaluate the assumptions and observations that underlie *The Facts* in the biomedical and social sciences. Emphasis is placed on seminal observations—particularly those that are prospective or mechanistic in nature—and a deeper understanding of the methods underlying the claims, including the relative strengths and weaknesses of introspective reports, animal models, molecular genetic approaches, and brain imaging techniques. Issues of rigor and reproducibility are introduced (e.g., Schönbrodt & Perugini's [corridor of stability](#) for correlations), and meta-analyses and large-*N* studies are emphasized, particularly those that have overturned earlier versions of the scientific canon (examples [1](#) and [2](#)). [Readings](#) come from some of the most exciting researchers working in the field today and include landmark empirical reports and reviews from top-tier journals in biomedicine and the social sciences (e.g., *Science*, *Nature*, *Psychol Bull*, *Annual Reviews*, *Nature Reviews*) as well as lighter, more intuitive commentaries, essays, and interviews drawn from the popular press (*NYT Magazine*, *Discover*, *Time*, *The Guardian*) and [social media](#). For my two most recently developed courses (Psychology 489A and 614), many of the foundational readings are drawn from a 2018 edited volume, [The Nature of Emotion](#), that I co-developed with an eye to creating an accessible, unified framework for teaching emotion and affective neuroscience. Across courses, my overarching emphasis is an interdisciplinary perspective, in which research at different levels of analysis, acquired using different techniques, species, or populations, is seen as complementary and mutually informative. Reaction papers and 'flash' talks (some live, others [prerecorded](#)) provide additional opportunities for students to learn to synthesize and critically evaluate evidence and develop engaging presentations.

**Continuing Education and Instructional Development.** I am committed to becoming a stronger teacher. My classes have been immensely rewarding and generally very successful, with [student evaluations](#) at or above campus benchmarks and consistently strong [peer evaluations](#). I have adapted my instructional materials for guest lectures and continuing education workshops (e.g., Association of Practicing Psychologists of Montgomery and Prince George's Counties, Maryland) and shared them with colleagues at institutions around the world<sup>2</sup>. Some of the most personally satisfying evaluations of my class were sparked by sharing course materials ("That's one bad ass class you've got there," Brent Roberts, Past President of the Association for Research in Personality, *personal communication*, 10/5/2017; "Thanks so much for the awesome slides—and for featuring our work," Brian Knutson, Past President of the Society for Neuroeconomics, *personal communication*, 12/2/2017).

Like science, teaching is always a work in progress. I have taken advantage of [continuing education workshops](#) organized by the Dean of Undergraduate Studies and Teaching and Learning Transformation Center at UMD.

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<sup>2</sup> As one example, the learning materials that I developed for Psychology 614 have been shared with colleagues at Brown, Fordham, Iowa, Johns Hopkins, Michigan, NIMH, Pittsburgh, Southern Arizona VA Health Care System, Stanford, Texas A&M, UC Berkeley, UC Davis, UC Riverside, UC Santa Barbara, UCLA, University of Toronto Mississauga, Virginia, Mannheim (Germany), University Medical Center Hamburg-Eppendorf (Germany), Otago (New Zealand), Haifa (Israel), McGill (Canada), University of British Columbia (Canada), University of Guelph (Canada), Norwegian University of Science and Technology (Norway), Universitat Autònoma (Spain), and the Indian Institute of Technology (India).

Each semester, I carefully refine my courses based on pupil and peer teaching evaluations and update the material covered in the classroom and readings to reflect the most current state of the science. In recent years, I have also instituted ‘postmortem’ brainstorming sessions with my Teaching Assistant to identify additional opportunities for optimizing the design and implementation of the undergraduate courses (e.g., modifying grading policies to promote deeper engagement and mastery). In the Fall of 2015, I incorporated formal [Learning Objectives](#) for each module to increase the efficiency of self-study and learning. I regularly use Clicker polls and other active-learning techniques to encourage attendance and engagement. More recently, I have experimented with techniques aimed at stimulating student-driven discussions and camaraderie, including in-class [‘Discussion Kickstarters’](#) and an [on-line variant](#) suitable for larger undergraduate classes.

**Creating an Equitable and Inclusive Learning Environment for a Diverse Student Body.** UMD is one of our nation’s most diverse campuses, and I have increasingly incorporated best-practice policies and materials aimed at cultivating a welcoming, equitable, and respectful learning environment for all of my students, regardless of their ethnoracial background or economic circumstances (cf. [Mobbs & Tashjian Plos Computational Biol 2022](#)). I now include a formal [diversity statement](#) in my syllabi and have updated images, examples, and [exam questions](#) to depict individuals from a variety of genders, ethnoracial groups, and backgrounds. Student [feedback](#) on these small changes has been encouraging. The dream of obtaining a college education is increasingly beyond the financial reach of many American families, and these financial barriers are often more pronounced for students from under-represented minority (URM) groups, exacerbating longstanding educational disparities (cf. [Gee...& Shackman Ann Rev Clin Psychol 2022](#)). To help mitigate these challenges, I have eschewed traditional textbooks—which all too often are sterile, outdated, and cost hundreds of dollars—and made all of the readings for my undergraduate courses and most of the readings for my graduate seminars available for free on Canvas. Graduate students in financial need are explicitly encouraged to request a free e-copy of [The Nature of Emotion](#)—no questions asked.

**Training and Mentorship Outside of the Classroom. Faculty Mentorship.** I regularly provide formal and informal professional mentorship, encouragement, and technical support to junior faculty at Maryland (Drs. Charpentier, Gard, Hamilton, Magidson, Xie) and other institutions (e.g., Dr. Andrew Fox, UC-Davis; Dr. Regina Lapate, UCSB; Dr. Jamie Hanson, Pitt). Mentorship covers all areas of academic psychology and neuroscience, from student recruitment and teaching to grant writing and the tenure process. Professor Magidson wrote that I am “always available for moral support, advice, and general camaraderie” (*personal communication, 2/22/2023*). Professor Lapate emphasized that I “provided thoughtful advice on balancing demands as early-career faculty; including how to plan and strategize for grant submissions while starting up a lab in the and balancing those with manuscript submissions...[and]extensive input and guidance on teaching (including kindly sharing materials) as I navigated teaching for the first time” (*personal communication, 2/22/2023*). Professor Charpentier highlighted my “willingness to answer my endless questions, chatting on zoom, meeting with me when I visited campus...[and] your guidance through the grad admission process, from sending me your list of interview questions through discussing specific applications” (*personal communication, 2/27/2023*). Most recently, I provided a mid-career mentee with guidance on how to organize equitable and inclusive faculty searches (building on [search](#) and [promotion policies](#) that I helped develop at UMD).

**Staff and Graduate Student Mentorship.** At UMD, I have supervised 3 staff scientists, 1 masters-level administrator, 7 full-time post-baccalaureate researchers, 2 postdoctoral fellows, 1 VA Clinical Research Intern, 5 Ph.D. students (Clinical Psychology and NACS), and 3 Master of Professional Studies in Clinical Psychological Science (‘MPS’) students. I have co-mentored Ph.D. students in the Departments of Hearing & Speech Sciences and Human Development & Quantitative Methodology, served as an expert technical Consultant on a recently completed NIH NRSA Fellowship (F31-AA027937), and have served as a formal mentor for early-career researchers—both faculty and trainees—at conferences (e.g., ADAA, SoBP). *As detailed in my CV*, my staff and trainees regularly publish in high-impact journals (e.g., *American J Psychiatry, Ann Rev Clin Psychol, Psychol Sci, Neurosci & Biobehav Rev*), disseminate their research at international scientific meetings, and receive competitive intra- and extramural awards, including the Provost’s Excellence Award for Professional Track Faculty, NSF Graduate Research Fellowship, NSF COMBINE Fellowship, McNair Fellowship, Wylie Dissertation Award, Flagship Fellowship, President’s Fellowship, Society for Social Neuroscience Reproducible Science

Award, and various other travel and poster awards. Their work has been highlighted by the [Society for Neuroscience](#) and featured in [Maryland Today](#). My Ph.D. students have all made timely progress through their respective degree programs, and the clinical students have obtained externships and internships at prestigious sites (e.g., Children's National Hospital, NIMH, Dell Children's Medical Center, Johns Hopkins). In total, I have served on 18 Ph.D. committees at UMD, 5 Ph.D. committees at other institutions (UC-Davis; University of Victoria, Canada; University of Haifa, Israel; University of Turku, Finland; Radboud University, Netherlands), 12 masters committees, 6 Neuroscience and Cognitive Science (NACS) Program student committees, and 14 qualifying examination committees (10 outside of Psychology). In several cases, these committee assignments have evolved into more formal scientific collaborations (e.g., [Alfini...Shackman & Smith SCAN 2020](#)).

***Undergraduate Mentorship.*** Every year, my laboratory provides training opportunities for roughly a dozen undergraduate research assistants (RAs) each year (~100 in total since coming to UMD). Some volunteer, some participate in exchange for course credit (PSYC 479), and some are involved in specialized training programs (e.g., Biological Sciences Honors Internship, Biology Honors Program, Integrated Life Sciences Honors Program, Research Internship in Science and Engineering Scholarship Program, and Snider Undergraduate Research Engagement Program). I have supervised several senior theses and capstone projects through the Department of Biology and Smith Undergraduate Research Engagement Fellowship Program. Several of my RAs have received competitive awards (e.g., BSOS Undergraduate Researcher of the Year, Maryland Center for Undergraduate Research Summer Scholars Award, and Phi Kappa Phi Study Abroad Grant). RAs have presented their work at local and international scientific meetings (e.g., APS, ABCT) and, on occasion, served as co-authors (†) on publications (e.g., [Shackman, Weinstein †, Hudja †, Bloomer † et al. \*Emotion\* 2018](#)).

***Strengthening Diversity, Equity, and Inclusiveness.*** I have actively sought out opportunities to enhance the diversity and inclusiveness of the STEM training pipeline (cf. [Gee...& Shackman \*Ann Rev Clin Psychol\* 2022](#)). Paralleling the UMD student body and surrounding community, many of the RAs in our lab are from under-represented minority (URM) groups. More than half are women. I have mentored URM RAs via several targeted 'accelerator' programs (e.g., the Psychology Research Empowerment Program; Summer Research Initiative Fellowship Program; and NIH-sponsored [Mid-Atlantic Neuroscience Diversity Scholars Program](#), R25-NS119644). I have also hosted visiting URM trainees from Howard University and Wellesley College's Career Education Program. With my support and encouragement, several former post-baccalaureate trainees from URM backgrounds have gained admission to prominent Clinical Psychology Ph.D. programs (e.g., Vanderbilt, Penn). I myself have actively sought to recruit URM Ph.D. applicants, working to secure UMD President and Flagship fellowships to entice them. I also currently serve as Co-Sponsor of an on-going NIMH NRSA Diversity Fellowship (F31-MH132280).

***Trainee Outcomes.*** [Trainee outcomes are outstanding.](#) My former postdoc (J. Hur) is now an Assistant Professor at Yonsei University—1 of the 3 top ('SKY') research institutions in S. Korea. Other former trainees are now successful staff scientists (McLean Hospital/Harvard Medical School), data scientists (CapOne), physicians, pharmacists, postdocs (Children's National, UT-Austin, Johns Hopkins, University of Toronto), MD/Ph.D. students (e.g., Vanderbilt, Penn, Drexel, Duke, Emory, Maryland), and NIH Postbaccalaureate Intramural Research Training Award (IRTA) Fellows.