CURRICULUM VITAE

#### Margeaux (Schade) Gray, Ph.D., RPSGT

*Updated 04/19/2021*

Office: 259HHD; 814-863-5800

Mobile: 484-336-3064

Email: margeaux@psu.edu

**Education**

01/2017 Doctor of Philosophy, *West Virginia University, Morgantown, WV*

Department: Psychology

Program Area: Behavioral Neuroscience

Advisor/Mentor: Hawley E. Montgomery-Downs, Ph.D.

05/2014 Master of Science, Behavioral Neuroscience, *West Virginia University, Morgantown, WV*

Department: Psychology

Program Area: Behavioral Neuroscience

Advisor/Mentor: Hawley E. Montgomery-Downs, Ph.D.

02/2009 Bachelor of Science, *Dickinson College, Carlisle, PA*

Majors: Neuroscience and Psychology

**Current Position**

07/2020 **Assistant Research Professor**, *Pennsylvania State University, State College, PA*

– presentSleep, Health and Society Co-Laboratory (https://hhd.psu.edu/bbh/sleep-health-and-society)

Department: Biobehavioral Health

Supervisor: Orfeu M. Buxton, Ph.D.

Affiliate: Center for Healthy Aging (CHA; <https://healthyaging.psu.edu/people/mmg58>)

Intellectually contributed to theoretical, protocol, and data analysis components of funded [NIH (NIA) R44 (SBIR), NSF Phase II, and SBIR (NIA) Phase II] and other [NIH (NIA) P01, NSF] grants with a clinical-translational focus. Supported other grant-funded research with sleep-related clinical and data expertise [NIH (NIMH)].

Led the transition of funded grants from conceptual plans into active data collection on human subjects in inpatient and field-based paradigms involving polysomnography (PSG), including generating laboratory standard operating procedures and Institutional Review Board (IRB) submissions. Completed three human subjects research projects as primary coordinator and executor of data collection, including two in collaboration with industry professionals (SBIR/STTR) and one multidisciplinary, multi-institutional (UofA, sub-PI Daniel Taylor, Ph.D.) project focused on insomnia and healthy aging.

Primary IRB point of contact for time-sensitive initial and subsequent (ongoing) phases of multidisciplinary COVID-19 research under the Data4Action collaborative effort at Penn State. Expanded the specific details of applications and modified human research protection documents based on broader study conceptualization by senior faculty, to obtain and maintain IRB approval.

Lab Registered Polysomnographic Technologist (RPSGT), including duties such as clinical-quality PSG data collection, staging and scoring PSG records to AASM standards, and training personnel on PSG data collection/software.

Collaborated as an author in the preparation of peer-reviewed manuscripts and presented clinical laboratory research at international conferences. Volunteered teaching and service to the Department.

# Other Research Experience

02/2017 **Postdoctoral Research Scholar**, *Pennsylvania State University, State College, PA*

– 06/2020Sleep, Health and Society Co-Laboratory (https://hhd.psu.edu/bbh/sleep-health-and-society)

Department: Biobehavioral Health

Supervisor: Orfeu M. Buxton, Ph.D.

Affiliate: Center for Healthy Aging (CHA; <https://healthyaging.psu.edu/people/mmg58>)

*refer to Current Position for details*

08/2012 **Graduate Research Assistant**, *West Virginia University, Morgantown, WV*

– 12/2016 Program Area: Behavioral Neuroscience

Supervisor:Hawley E. Montgomery-Downs, Ph.D.; Sleep and Sleep Disorders Laboratory

Proposed, designed and completed a prospective, randomized dissertation with intervention that was outside the scope of the laboratory PI’s research program to evaluate the impact of sleep fragmentation (simulating the rate of disruption at obstructive sleep apnea clinical threshold without systemic oxygen desaturation) on next-day pressure pain and its relation to sustained attention.

Collaborated with the medical device industry to design an evaluation of the validity of a sleep monitoring device and led preparation of the peer-reviewed manuscript product.

Performed clinical quality polysomnography, multiple sleep latency testing, activity monitoring, and infant sleep classification by direct observation.

Synthesized extant scientific literature, identified gaps in the literature and generated research questions to address those gaps, identified appropriate methodological and statistical techniques to answer research questions, interpreted data and disseminated research outcomes, contributed to grant proposals, and critically evaluated and presented peer-reviewed articles.

07/2013 **Hearing Perception and Cognition** **Lab Affiliate**,*West Virginia University, Department of*

– 01/2017 *Neurobiology and Anatomy, Morgantown, WV*

Supervisor:James W. Lewis, Ph.D. (Neuroscience Dept.)

Led the re-evaluation of event-related potential (ERP) electroencephalographic data by identifying, researching, and applying an analysis technique not yet applied in this lab to strengthen a manuscript (submitted to Hearing Research, see below).

01/2015 **Anxiety, Psychophysiology, and Pain Research Lab Affiliate**, *West Virginia University, Department*  – 01/2017 *of Psychology, Morgantown, WV*

Supervisor:Daniel W. McNeil, Ph.D. (Psychology Dept.)

Resourcefully identified a pain-related behavioral measure (pressure algometer) applied regularly in this lab for application in my dissertation project to generate an interdisciplinary collaboration.

# Teaching Experience

02/2017 **Guest Lecturer** (recurring), *Pennsylvania State University, Dept. of Biobehavioral Health, State College, PA*

– presentSpecial Topics on Sleep (BBH497), undergraduate course: “Sleep and Pain”

08/2015 **Graduate Teaching Assistant**, *West Virginia University, Dept. of Psychology, Morgantown, WV*

– 05/2016 Supervisors:Ashley B. Petrone, Ph.D.; Miranda N. Reed, Ph.D.; “Biological Foundations of

& 08/12 Behavior” (Psyc301)

– 05/13 Primary laboratory instructor, comprised of didactic & practicum, for 6 lab sections (about 150 students) per semester. Taught the interpretation and reporting of statistical outcomes in a research context of computer-based laboratory simulations. Managed all logistical portions of the course, including attendance and grading records.

Substantially re-designed the laboratory portion of the course for spring 2013, including creation of lecture content, selecting appropriate demonstrations, grading criteria, and lab manual adaptations.

Delivered three full lectures in the primary instructor’s absence (specifically on the topics of neuronal mechanisms and gonadal endocrine function).

Of 67 evaluations in the final semester, received 98.5% positive overall ratings, 97% positive ratings on the delivery of complex concepts, and 97% positive ratings on clarity/organization during instruction.

06/2011 **Polysomnography Instructor**, *Sanford-Brown Institute, Monroeville, PA*

– 04/2012Supervisor:Kimberly Yannachione, RRT-SDS, RPSGT

Lecture and lab instructor for eleven polysomnography courses from introductory to advanced, and lecture instructor for one Allied Health course, managing classrooms of up to 28 adult students.

Developed curricula and created assessments for four 10-week (up to 80 hour) PSG courses being taught for the first time.

**Publications**

***In Preparation***

Mathew, G. M., Strayer, S. M., Ness, K. M., Schade, M. M., Nahmod, N. G., Buxton, O. M., & Chang, A-M. (*under review*). Interindividual differences in attentional vulnerability moderate cognitive performance during sleep restriction and subsequent recovery sleep in healthy young men. *Scientific Reports*.

*French CONSTANCES population-based cohort collaboration*

Schade, M. M., Lee, S., Buxton, O. M., Sembajwe, G., & Berkman, L. Sleep affects the impact of work schedules on pain presentation and progression.

Schade, M. M., Lee, S., Buxton, O. M., Sembajwe, G., & Berkman, L. Physicality at work is differentially associated with facets of Sleep Health.

Lee, S., Schade, M. M., Buxton, O. M., Sembajwe, G., & Berkman, L. Facets of Sleep Health contribute to the relationship between chronic pain and cognitive function.

Lee, S., Buxton, O. M., Sembajwe, G., Schade, M. M., & Berkman, L. Facets of Sleep Health contribute to the relationship between shift work and cognitive function.

***Peer-Reviewed Original Reports***

Chen, T., Lee, S., Schade, M. M., Saito, Y., Chan, A., & Buxton, O. M. (2018).Longitudinal relationship between sleep health and pain symptoms among community-dwelling older adults in Japan and Singapore. *SLEEP,* <https://doi.org/10.1093/sleep/zsy219>.

Schade, M. M., Bauer, C. E., Murray, B. R, Gahan, L., Doheny, E. P., Kilroy, H., Zaffaroni, A., & Montgomery-Downs, H. E. Sleep validity of a non-contact bedside movement and respiration-sensing device (2019). *J Clin Sleep Med, 15(07),* 1051-1061. <http://dx.doi.org/10.5664/jcsm.7892>.

Commentary: Rapoport, D.M. (2019). Non-Contact sleep monitoring: Are we there yet? *J Clin Sleep Med., 15(07), 935-6.* [*http://dx.doi.org/10.5664/jcsm.7864*](http://dx.doi.org/10.5664/jcsm.7864)*.*

Commentary: Hunasikatti, M. (2019). Non-contact sensors: Need for optimum information is more important than convenience. *J Clin Sleep Med*, *15(11)*, 1707.

Response to Commentary: Schade, M. M. & Montgomery-Downs, H. E. (2019). Utility encompasses both clinical translation and ecologic validity. *J Clin Sleep Med, 15(11)*, 1709.

Ness, K. M., Strayer, S. M., Nahmod, N. G., Schade, M. M., Chang, A. M., Shearer, G. C., & Buxton, O. M. (2019). Four nights of sleep restriction suppress the postprandial lipemic response and decrease satiety. *J Lipid* Res, *60(11)*, 1935-1945. doi: 10.1194/jlr.P094375

Bauer, C. E., Lewis, J. W., Brefczynski-Lewis, J., Frum, C., Schade, M. M., Haut, M. W., & Montgomery-Downs, H. E. (2020). Breastfeeding duration is associated with regional, but not global, differences in white matter tracts. *Brain Sciences*, *10(1)*, 19-30. <https://doi.org/10.3390/brainsci10010019>

Roberts, D. M., Schade, M. M., Mathew, G. M., Gartenberg, D., & Buxton, O. M. (2020). Detecting sleep using raw data from multisensor consumer-grade wearables, relative to wrist actigraphy and polysomnography. *SLEEP, 43(7)*. <https://doi.org/10.1093/sleep/zsaa045>

Schade, M. M., Mathew, G. M., Roberts, D. M., Gartenberg, D., & Buxton, O. M. (2020). Enhancing slow oscillations and increasing N3 sleep proportion with supervised, non-phase-locked pink noise and other non-standard auditory stimulation during NREM sleep. *Nat Sci Sleep, 12, 411-429*. <https://dx.doi.org/10.2147%2FNSS.S243204>

Talkington, W., Donai, J., Kadner, A.; Layne, M., Forino, A., Wen, S., Gao, S., Gray, M. M.; Ashraf, A., Valencia, G., Smith, B., Khoo, S., Gray, S., Lass, N., Brefczynski-Lewis, J., Engdahl, S., Graham, D., Frum, C., & Lewis, J. (2020). Electrophysiological evidence of early cortical sensitivity to human conspecific mimic voice as a distinct category of natural sound. *Speech, Language, and Hearing Research*. <https://doi.org/10.1044/2020_JSLHR-20-00063>

Arnold, C. R. K., Srinivasan, S., Herzog, C. M., Gontu, A., Bharti, N., Small, M., Rogers, C. J., Schade, M. M., Kuchipudi, S. V., Kapur, V., Read, A., Ferrari, M. J. (2021). SARS-CoV-2 seroprevalence in a university community: A longitudinal study of the impact of student return to campus on infection risk among community members. *medRxiv*. <http://doi.org/10.1101/2021.02.17.21251942>

Mathew, G. M., Strayer, S. M., Bailey, D. S., Buzzell, K., Ness, K. M., Schade, M. M., Nahmod, N. G., Buxton, O. M., Chang, A.-M. (2021). Changes in subjective motivation and effort during sleep restriction moderate interindividual differences in attentional performance in healthy young men. (In Press) *Nat Sci Sleep*.

***Books/Chapters and Other Work***

Schade, M. M., Bauer, C. E., Warren, C. N., & Montgomery-Downs, H. E (2016). Synopsis of sleep in infants, children and adolescents. In S. R. Pandi-Perumal (Ed.), *Synopsis of Sleep Medicine.* Waretown, NJ: Apple Academic/CRC Press.

Schade, M. M. & Montgomery-Downs, H.E. (2017). Polysomnography. In A. E. Wenzel (Ed.), *The SAGE Encyclopedia of Abnormal and Clinical Psychology*. Thousand Oaks, CA: SAGE Publications, Inc.

**Abstracts**

Schade, M. M., Thoman, E. B., & Montgomery-Downs, H. E. *Acute effects of unanesthetized circumcision on neonatal sleep behavior.* Poster presented at the annual meeting of the Associated Professional Sleep Societies 2013, Baltimore, MD.

Schade, M. M. & Montgomery-Downs, H. E. *Unveiling early changes in neonatal sleep microarchitecture: Contribution of unanesthetized surgery.* Poster presented at the annual meeting of the Associated Professional Sleep Societies 2014, Minneapolis, MN.

Lewis, J. W., Talkington, W. J., Smith, B., Khoo, S., Frum, C., Graham, D. W., & Schade, M. M. *Auditory evoked potentials reveal harmonic structure as a signal attribute.* Poster presented at the annual meeting of the Society for Neuroscience 2014, Washington, DC.

Schade, M. M. & Montgomery-Downs, H. E (2015). *Cycle-based evaluation of neonatal sleep architecture indicates differing sleep pressures than window-based observation.* Developmental Psychobiology, 57.

Poster presented at the annual meeting of the Associated Professional Sleep Societies 2015, Seattle, WA. Poster presented at the annual meeting of the International Society for Developmental Psychobiology 2014, Washington, DC.

Schade, M. M. & Montgomery-Downs, H. E. *Unique pre-sleep movement patterns at 6 weeks postpartum.* Poster presented at the annual meeting of the Associated Professional Sleep Societies 2015, Seattle, WA.

Arias, M. C., Schade, M. M., Hayes, S., McNeil, D. W., Crout, R. J., Foxman, B., Marazita, M. L., Maurer, J. L., Neiswanger, K., & Weyant, R. J. *Maternal depression is associated with infant sleep awakenings among women in Appalachia.* Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies 2015, Chicago, IL.

Schade, M. M., Clegg-Kraynok, M., Montgomery-Downs, H. E. *Sleep and recreational psychostimulant use.* Poster presented at the annual meeting for the Society for Neuroscience 2015, Chicago, IL.

Schade, M. M. & Montgomery-Downs, H. E. *Experimental fragmentation modeling low-level OSA does not alter perceived pressure-pain threshold or tolerance.* SLEEP, 40, A159.Poster presented at the annual meeting of the Associated Professional Sleep Societies 2017, Boston, MA.

Schade, M. M., Bauer, C. E., Murray, B. R, Gahan, L., Doheny, E. P., Kilroy, H., Zaffaroni, A., & Montgomery-Downs, H. E. *Sleep validity of a non-contact bedside movement and respiration-sensing device.* J of Sleep and Sleep Disorders Res, 40, A290-291. Poster presented at the annual meeting of the Associated Professional Sleep Societies 2017, Boston, MA.

Schade, M. M., Roberts, D. M., Gartenberg, D., Mathew, G. M., & Buxton, O. M. *Auditory stimulation during sleep transiently increases delta power and all-night proportion of NREM stage 3 while preserving total sleep time and continuity.* Nanosymposium oral presentation at the annual meeting for the Society of Neuroscience 2018, San Diego, CA.

Roberts, D. M., Schade, M. M., Mathew, G. M., Gartenberg, D., Buxton, O. M. *Development of a momentary sleep versus wake classification algorithm using balanced data from two multisensory consumer wearable devices.* Poster presented at the annual meeting for the Society of Behavioral Sleep Medicine 2019, Birmingham, AL.

**Invited Talks**

10/2012 **Invited Group Lecture**, *United States Penitentiary – Hazelton, Preston County, WV*

Presented sleep disorder topics to trainee clinicians practicing in a maximum-security penitentiary.

04/2013 **Invited Group Lecture**, *The Village at Heritage Point, Morgantown, WV*

“Sleep and Healthy Aging”

Topics directed toward an audience of older-adult retirement community residents.

09/2013 **Invited Speaker**, *West Virginia Sleep Society Annual Conference, Wheeling, WV*

“Demystifying the EEG: Signal source and trace”

Topics directed toward an audience of practicing clinicians and registered sleep technologists.

4/2016 **Invited Speaker**, *U92 WWVU-FM Radio, Morgantown, WV*

“Community Feedback: Psychobiology of Sleep”

Broadcasted interview with topics directed toward a lay audience regarding college community perceptions of sleep.

11/2018**Oral Presentation**, Schade, M. M., Roberts, D. M., Gartenberg, D., Mathew, G. M., & Buxton, O. M. “Auditory stimulation during sleep transiently increases delta power and all-night proportion of NREM stage 3 sleep while preserving total sleep time and continuity.”

Nanosymposium oral presentation at the annual meeting of the Society for Neuroscience 2018, San Diego, CA.

12/2019 **Invited Speaker**, *Dickinson College Neuroscience Club, Carlisle, PA*

“Current Research in Sleep and Career Development”

Topics directed toward an undergraduate audience majoring in Neuroscience.

10/2020 **Invited Speaker**, *Osher Lifelong Learning Institute (OLLI), University Park, PA*

“Systematic Auditory Stimulation for Sleep Improvement”

Topics directed toward an older-adult community audience.

05/2021 **Invited Speaker**, *Sleep Research Society Trainee Symposia Series [APSS/SLEEP 2021]*

“Sleep and Pain”

Co-lecture with Key Opinion Leader (KOL) on the topic, Dr. Monika Haack

**Grant Support**

05/17 Name of Project: Non-pharmacological improvement of sleep structure in midlife and older adults

– 04/18 (NSF-SBIR)

Principal Investigator: Daniel Gartenberg

Source of Funding: Mobile Sleep Technologies L.L.C.

Total Award Amount: $113,233

Role: Project Leader (point person for project logistics and execution); RPSGT

05/18 Name of Project: Non-pharmacological improvement of sleep structure in older people (NIH-NIA)

– 04/19 Principal Investigator: Daniel Gartenberg

Source of Funding: Mobile Sleep Technologies L.L.C.

Total Award Amount: $347,058

Role: Project Leader (point person for project logistics and execution); RPSGT

07/19 Name of Project: Facilitated Research Award for Aging Study Baseline Sleep Data

– 06/20 Principal Investigator: Martin Sliwinski (U-02); Orfeu Buxton (Facilitated Award)

Source of Funding: Penn State Social Science Research Institute (SSRI) Facilitated Award, via NIA U-02 (U2CAG060408) for the Mobile Monitoring of Cognitive Change (M2C2)

Total Award Amount: $26,880

Role: Project Leader (point person for project logistics and execution); RPSGT

04/20 Name of Project: A non-pharmacological multi-modal therapy to improve sleep and cognition and – 03/22 reduce mild cognitive impairment risk. [“EcoSleep”] (NIH-NIA SBIR Phase II, R44 AG056250)

Principal Investigator: Daniel Gartenberg; Sub-Award PI: Orfeu Buxton

Source of Funding: Proactive Life, Inc. (Sub-Award)

Total Award Amount: $2,478,346; Sub-Award Amount: $972,559

Role: Personnel (point person for sub-award project logistics and execution); RPSGT

08/20 Name of Project: Multimodal study of infra-slow propagating brain activity. (NIH-NIMH R01, – 07/21 1R01MH123247-01)

Principal Investigator: Xiao Liu

Total Award Amount: $1,280,354 (through 2023)

Role: Personnel (point person for EEG data processing and analysis); RPSGT

03/20Name of Project: Data4Action

– *present* Principal Investigator: Susan McHale; Andrew Read

Source of Funding: The Pennsylvania State University SSRI, CTSI, & Provost (Internal)

Total Award Amount Requested: $10,800

Role: Personnel (point person for IRB)

# Professional Reviews

Circulation (Co-Review with O.M. Buxton, Ph.D., 06/2017)

Journal of Neurophysiology (Co-Review with O.M. Buxton, Ph.D., 09/2017 and 12/2017)

Sleep Health (08/2019)

Journal of Clinical Sleep Medicine (Co-Review with O.M. Buxton, Ph.D., 01/2020)

Physiology and Behavior (08/2020)

# Clinical Employment

04/09 **Registered Polysomnographic Technologist (RPSGT)**, *Z-Sleep Diagnoztics, Manhattan, KS*

– 04/11 Supervisor: Sheila R. Rogge, RN

Technical Director and primary scoring technologist of a 4-bed sleep lab.

Communicated the purpose of, and procedures involved in, a sleep study (PSG) to sleep lab patients (pediatric through geriatric). Performed PSG hookups and recordings for nighttime patients; prepared for and executed MSLT/Narcolepsy and MWT testing.

Administered CPAP, BiPAP, Adaptive Servo-Ventilation, and supplemental oxygen to patients indicating sleep disordered breathing or nocturnal hypoxemia, based on analysis and interpretation during data acquisition.

Scored sleep studies to American Academy of Sleep Medicine (AASM) standards for future physician interpretation and diagnosis; created thorough data summaries to be included in the final study report.

Instructed patients of proper Positive Airway Pressure (PAP) mask fitting techniques, cleaning, and care of PAP durable medical equipment. Ensured patient understanding of, and compliance with, PAP therapy through patient education and follow-up care. Liaison for discussing individual patient data with their primary care physician as needed.

**Clinical Licensure**

06/10

– present Registered Polysomnographic Technologist (RPSGT, exp. June 2025)

# Professional Organization Membership

Pennsylvania Sleep Society (PASS) – *member*, 2015-2019

PsiChi – *member*, 2013-present

Sleep Research Society (SRS) – *member*, 2012-present

Society for Neuroscience (SfN) – *member*, 2014-2019

West Virginia Sleep Society (WVSS) – *member*, 2012-2019

*Elected board member,* 2013-2015

*Scholarship chair,* 2014-2015

Developed and implemented a scholarship program for first-time conference attendees and continuing technologist education during tenure.

**Academic References**

Orfeu M. Buxton, Ph.D. (*current supervisor*)

Associate Professor, Penn State Department of Biobehavioral Health

206 Biobehavioral Health Building

University Park, PA 16802

814-867-5707

orfeu@psu.edu

Hawley E. Montgomery-Downs, Ph.D.

Associate Professor, WVU Department of Psychology: Behavioral Neuroscience Training Program

53 Campus Drive,

1124 Life Sciences Building

Morgantown, WV 26506

304-293-6606

Hawley.Montgomery-downs@mail.wvu.edu

James W. Lewis, Ph.D.

Assistant Professor, WVU Department of Neurobiology and Anatomy: Sensory and Cognitive Training Programs

One Medical Center Drive

PO Box 9229, Health Science Center

Morgantown, WV, 26506

304-293-1517

jwlewis@hsc.wvu.edu

Albert S. Berrebi, Ph.D.

Assistant Vice President for Research, WVU Department of Neurobiology and Anatomy

WVU Centers for Neuroscience, PO Box 9303

Morgantown, WV 26506

304-293-2357

aberrebi@hsc.wvu.edu

**Clinical References**

Sheila R. Rogge, R.N.

Owner and Manager, Z-Sleep DiagnoZtics

8831 Quail Lane Suite 301

Manhattan, KS 67432

785-537-1130

Kimberly Yannachione, RRT-SDS, RPSGT

724-561-3776

Kimberly\_yannachione@yahoo.com