

Curriculum Vitae
SARAH E. MENNENGA, PHD

Contact Information

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Additional Information

Place of birth: Urbana, IL, USA

Faculty Appointment

July 2023 – Present | Research Assistant Professor | School of Life Sciences | Arizona State University | Phoenix, AZ
Sept 2020 – June 2023 | Research Assistant Professor | Psychiatry | New York University Grossman School of Medicine | New York, NY

Postdoctoral Training

Jan 2016-Aug 2020 | Postdoctoral Researcher | Psychiatry | New York University Grossman School of Medicine | New York, NY

Education

May 2010 | BS | Major: Psychology; Minor: Philosophy | Arizona State University | Tempe, AZ
Dec 2012 | MA | Psychology; Behavioral Neuroscience | Arizona State University | Tempe, AZ
Dec 2015 | PhD | Psychology; Behavioral Neuroscience; Focus: Quantitative Psychology | Arizona State University | Tempe, AZ

Research Activities

I perform translational rodent and human research aimed at using psychedelic drugs to treat anxiety, mood, and substance use disorders. With Drs. Michael Bogenschutz and Stephen Ross at NYU Langone, I helped complete and publish results from two pivotal clinical trials utilizing psilocybin-assisted psychotherapy to treat alcohol use disorder and mood/anxiety symptoms associated with a life-threatening cancer diagnosis, as well as a number of ancillary long-term follow-ups and supplementary analyses exploring potential mechanism of psilocybin-induced change. Following the formation of the NYU Langone Center for Psychedelic Medicine, and launch of the Center's Psychedelic Research Training Program, I had the opportunity to set up an independent research program within the laboratory of Dr. Tanya Sippy in NYU Langone's Neuroscience Institute. The goal of this research was back-translation to rodent models for probing mechanisms underlying clinical findings with psychedelics. To this end, I developed models of chronic-stress-induced anxiety- like behaviors and home cage alcohol preference, within which I probed the effects of the lysergic acid diethylamide (LSD) on behavior and neuromodulator release via fiber photometry in freely moving mice. Work with Dr. Candace Lewis at Arizona State University aims to build on these findings by establishing a translational research program in which epigenetic changes associated with psychedelic use in humans can be probed in animal models.

Bibliography

Peer-reviewed Publications

1. Acosta JJ, Mayer LP, Braden BB, Nonnenmacher S, **Mennenga SE**, Bimonte-Nelson HA. The cognitive effects of conjugated equine estrogens depend on whether menopause etiology is transitional or surgical. *Endocrinology* 2010;151(8):3795-3804. doi: [10.1210/en.2010-0055](https://doi.org/10.1210/en.2010-0055)
2. Braden BB, Garcia AN, **Mennenga SE**, Acosta JJ, Villa S, Bimonte-Nelson HA. Cognitive-impairing effects of medroxyprogesterone acetate in the rat: independent and interactive effects across time. *Psychopharmacology* 2011;218(2):405-18. doi: [10.1007/s00213-011-2322-4](https://doi.org/10.1007/s00213-011-2322-4)
3. Digby G, Noetzel M, Bubser M, Utley T, Walker A, Byun N, Lebois E, Xiang Z, Sheffler D, Cho H, Davis A, Nemirovski N, **Mennenga SE**, Camp B, Bimonte-Nelson H, Bode J, Italiano K, Morrison R, Daniels S, Niswender C, Olive M, Lindsley C, Jones C, Conn PJ. Novel allosteric agonists of M1 muscarinic acetylcholine receptors induce brain region-specific responses that correspond with behavioral effects in animal models. *Journal of Neuroscience* 2012;32(25):8532– 8544. doi: [10.1523/JNEUROSCI.0337-12.2012](https://doi.org/10.1523/JNEUROSCI.0337-12.2012)
4. Engler-Chiurazzi E, Talboom JS, Braden BB, **Mennenga SE**, Andrews M, Handa R, Bimonte-Nelson HA. Tonic estrone treatment impairs spatial memory and does not impact number of basal forebrain cholinergic neurons in the surgically menopausal middle-aged rat. *Hormones and Behavior* 2012;62(1):1-9. doi: [10.1016/j.yhbeh.2012.04.004](https://doi.org/10.1016/j.yhbeh.2012.04.004)
5. **Mennenga SE**, Baxter LC, Grunfeld IS, Brewer GA, Aiken LS, Engler-Chiurazzi EB, Camp BW, Acosta JJ, Braden BB, Schaefer KR, Gerson JE, Lavery CL, Tsang CWS, Hewitt LT, Kingston ML, Koebele SV, Patten KJ, Ball BH, McBeath MK, Bimonte-Nelson HA. Navigating to new frontiers in behavioral neuroscience: Traditional neuropsychological tests predict human performance on a rodent-inspired radial-arm maze. *Frontiers in Behavioral Neuroscience* 2014; 8:294. doi: <https://doi.org/10.3389/fnbeh.2014.00294>
6. **Mennenga SE**, Koebele SV, Mousa AA, Alderete T, Tsang CWS, Acosta JJ, Camp BW, Demers LM, Bimonte-Nelson HA. Pharmacological blockade of the aromatase enzyme, but not the androgen receptor, reverses androstenedione-induced cognitive impairments in young surgically menopausal rats. *Steroids* 2015;99:16-25. doi: [10.1016/j.steroids.2014.08.010](https://doi.org/10.1016/j.steroids.2014.08.010)
7. **Mennenga SE**, Gerson JE, Koebele SV, Kingston ML, Tsang CWS, Engler-Chiurazzi EB, Baxter LC, Bimonte-Nelson HA. Understanding the cognitive impact of the contraceptive estrogen Ethinyl Estradiol: tonic and cyclic administration impairs memory, and performance correlates with basal forebrain cholinergic system integrity. *Psychoneuroendocrinology* 2015;54:1-13. doi: [10.1016/j.psyneuen.2015.01.002](https://doi.org/10.1016/j.psyneuen.2015.01.002)
8. **Mennenga SE**, Gerson JE, Duncley T, Bimonte-Nelson HA. Harmin treatment enhances short-term memory in old rats: dissociation of cognition and the ability to perform the procedural requirements of maze testing. *Physiology and Behavior* 2015;138:260–265. doi: [10.1016/j.physbeh.2014.09.001](https://doi.org/10.1016/j.physbeh.2014.09.001)
9. Ross S, Bossis A, Guss J, Agin-Liebes G, Malone T, Cohen B, **Mennenga SE**, Belser A, Kalliontzis K, Babb J, Su Z, Corby P, Schmidt BL. Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial. *Journal of Psychopharmacology* 2016; 30(12):1165–1180. doi: [10.1177/0269881116675512](https://doi.org/10.1177/0269881116675512)
10. Hiroi R, Weyrich G, Koebele SV, **Mennenga SE**, Talboom JS, Hewitt LT, Lavery CN, Mendoza P, Jordan A, Bimonte-Nelson HA. Benefits of hormone therapy estrogens depend on estrogen type: 17 β -estradiol and conjugated equine estrogens have differential effects on cognitive, anxiety-like, and depressive-like behaviors and increase tryptophan hydroxylase-2 mRNA levels in dorsal raphe nucleus subregions. *Frontiers in Neuroscience* 2016; 10. doi: <https://doi.org/10.3389/fnins.2016.00517>

11. Koebele SV, **Mennenga SE**, Hiroi R, Quihuis AM, Hewitt LT, Poisson M, Mayer LP, Dyer CA, Aiken LS, Demers L, Carson C, Bimonte-Nelson HA. Cognitive Changes Across the Menopause Transition: A Longitudinal Evaluation of the Impact of Age and Ovarian Status on Spatial Memory. *Hormones and Behavior* 2017;87:96–114. doi: [10.1016/j.yhbeh.2016.10.010](https://doi.org/10.1016/j.yhbeh.2016.10.010)
12. Braden BB, Andrews MG, Acosta JI, **Mennenga SE**, Lavery CN, Bimonte-Nelson HA. A comparison of progestins within three classes: Differential effects on learning and memory in the aging surgically menopausal rat. *Behavioural Brain Research* 2017;322:258-268. doi: [10.1016/j.bbr.2016.06.053](https://doi.org/10.1016/j.bbr.2016.06.053)
13. Campbell ANC, Barbosa-Leiker C, Hatch-Maillette M, **Mennenga SE**, Pavlicova M, Scodes J, Saraiya T, Mitchell SG, Rotrosen J, Novo P, Nunes EV, Greenfield SF. Gender differences in demographic and clinical characteristics of patients with opioid use disorder entering a comparative effectiveness medication trial. *The American Journal on Addictions* 2018;27(6):465-470. doi: [10.1111/ajad.12784](https://doi.org/10.1111/ajad.12784)
14. Willeman M, **Mennenga SE**, Siniard AL, Corneveaux JJ, De Both M, Hewitt LT, Tsang CWS, Caselli J, Braden BB, Bimonte-Nelson HA, Huentelman MJ. The PKC- β selective inhibitor, Enzastaurin, impairs memory in middle-aged rats. *PLOS ONE* 2018;13(6). doi: <https://doi.org/10.1371/journal.pone.0198256>
15. Malone TC, **Mennenga SE**, Guss J, Podrebarac SK, Owens LT, Bossis AT, Belser AB, Agin-Liebes G, Bogenschutz MP, Ross S. Individual Experiences and Trajectories of Change in Cancer Patients Following Psilocybin-Assisted Psychotherapy. *Frontiers in Pharmacology* 2018;9(256). doi: <https://doi.org/10.3389/fphar.2018.00256>
16. Bogenschutz MP, Podrebarac SK, Duane JH, Amegadzie SS, Malone TC, Owens LT, Ross S, **Mennenga SE**. Clinical Interpretations of Patient Experience in a Trial of Psilocybin-Assisted Psychotherapy for Alcohol Use Disorder. *Frontiers in Pharmacology* 2018;9(100). doi: <https://doi.org/10.3389/fphar.2018.00100>
17. Agin-Liebes GI, Malone T, Yalch MM, **Mennenga SE**, Ponté KL, Guss J, Bossis AP, Grigsby J, Fischer S, Ross S. Long-term follow-up of psilocybin-assisted psychotherapy for psychiatric and existential distress in patients with life-threatening cancer. *Journal of Psychopharmacology* 2020;34(2):155-166. doi: [10.1177/0269881119897615](https://doi.org/10.1177/0269881119897615)
18. Regis A, Meyers-Ohki SE, **Mennenga SE**, Greco PP, Glisker R, Kolaric R, McCormack RP, Rapp RC, Bogenschutz MP. Implementation of strength-based case management for opioid-dependent patients presenting in medical emergency departments: rationale and study design of a randomized trial. *Trials*. 2020;21(1):761. doi: <https://doi.org/10.1186/s13063-020-04684-6>
19. Koebele SV, **Mennenga SE**, Poisson ML, Hewitt LT, Patel S, Mayer LP, Dyer CA, Bimonte-Nelson HA. Characterizing the effects of tonic 17 β -estradiol administration on spatial learning and memory in the follicle-deplete middle-aged female rat. *Horm Behav*. 2020; 24;126:104854. doi: [10.1016/j.yhbeh.2020.104854](https://doi.org/10.1016/j.yhbeh.2020.104854)
20. Barbosa-Leiker C, Campbell ANC, Pavlicova M, Scodes J, Burlew AK, Hatch-Maillette M, **Mennenga SE**, Mitchell SG, Novo P, Nunes EV, Rotrosen J, Greenfield SF. Substance Use and Mental Health in Emerging Adult Vs Older Adult Men and Women With Opioid Use Disorder. *Am J Addict*. 2020;29(6):536-542. doi: <https://doi.org/10.1111/ajad.13059>
21. Ross S, Agin-Liebes G, Lo S, Zeifman RJ, Ghazal L, Benville J, Corso SF, Real CB, Guss J, Bossis A, and **Mennenga SE**. Acute and Sustained Reductions in Loss of Meaning and Suicidal Ideation Following Psilocybin-Assisted Psychotherapy for Psychiatric and Existential Distress in Life-Threatening Cancer. *ACS Pharmacology & Translational Science*. 2021;4(2):553–562. doi: <https://doi.org/10.1021/acsptsci.1c00020>
22. Koebele SV, Hiroi R, Plumley ZMT, Melikian R, Prakapenka AV, Patel S, Carson C, Kirby D, **Mennenga SE**, Mayer LP, Dyer CA, Bimonte-Nelson HA. Clinically used hormone

formulations differentially impact memory, anxiety-like, and depressive-like behaviors in a rat model of transitional menopause. *Frontiers in behavioral neuroscience*. 2021;15. doi:

<https://doi.org/10.3389/fnbeh.2021.696838>

23. Podrebarac SK, O'Donnell KC, **Mennenga SE**, Owens LT, Malone TC, Duane JH, Bogenschutz MP. Spiritual experiences in psychedelic-assisted psychotherapy: Case reports of communion with the divine, the departed, and saints in research using psilocybin for the treatment of alcohol dependence. *Spirituality in Clinical Practice*. 2021;8(3), 177–187. doi: <https://doi.org/10.1037/scp0000242>
24. Bogenschutz MP, McCormack R, Rapp R, Meyers-Ohki S, **Mennenga SE**, Regis A, Kolaric R, Glisker R, Greco PP. A randomized clinical trial of strengths-based case management to link emergency department patients to opioid use disorder treatment. *Journal of Substance Abuse Treatment*. 2022; 138(108745). doi: <https://doi.org/10.1016/j.jsat.2022.108745>
25. Bogenschutz MP, Ross S, Bhatt S, Baron T, Forcehimes AA, Laska E, **Mennenga SE**, O'Donnell K, Owens LT, Podrebarac S, Rotrosen J, Tonigan JS, Worth L. Percentage of heavy drinking days following psilocybin-assisted psychotherapy vs placebo in the treatment of adult patients with alcohol use disorder: a randomized clinical trial. *JAMA Psychiatry*. 2022; 79(10), 953-962. doi:[10.1001/jamapsychiatry.2022.2096](https://doi.org/10.1001/jamapsychiatry.2022.2096)
26. O'Donnell KC, **Mennenga SE**, Owens LT, Podrebarac SK, Baron T, Rotrosen J, Ross S, Forcehimes AA, Bogenschutz MP. Psilocybin for alcohol use disorder: Rationale and design considerations for a randomized controlled trial. *Contemporary Clinical Trials*. 2022; 123(106976). doi: <https://doi.org/10.1016/j.cct.2022.106976>.
27. Paschen-Wolff M, Greenfield SF, Kathryn McHugh R, Burlew K, Pavlicova M, Choo T-H, Barbosa-Leiker C, Ruglass LM, **Mennenga S**, Rotrosen J, Nunes EV, Campbell ANC. Clinical and psychosocial outcomes by sex among individuals prescribed buprenorphine-naloxone (BUP-NX) or extended-release naltrexone (XR-NTX) for opioid use disorder. *The American Journal on Addictions*. 2023;1-9. doi: <https://doi.org/10.1111/ajad.13463>

Peer-reviewed reviews

1. **Mennenga SE**, Bimonte-Nelson HA. Translational cognitive endocrinology: Designing rodent experiments with the goal to ultimately enhance cognitive health in women. *Brain Research* 2013; Jun 13;1514:50-62.
2. O'Donnell KC, **Mennenga SE**, Bogenschutz MP. Psilocybin for Depression: Considerations for Clinical Trial Design. *Journal of Psychedelic Studies* 2019;3(3):269-279.

Non peer-reviewed publications

1. **Mennenga SE**. Dose and delivery method impact cognitive outcome of Ethinyl Estradiol administration in the surgically menopausal rat [thesis]. Tempe (AZ): Arizona State Univ.; 2012.
2. **Mennenga SE**. On the Cognitive Impact of Endogenous and Exogenous Hormone Exposures Across the Lifespan [dissertation]. Tempe (AZ): Arizona State University; 2015.
3. Lewis CR, McMurray M, Mennenga SE, Helms Tillery S. Editorial: What is up with psychedelics anyway? *Frontiers in Neuroscience*. 2023; 17. doi: <https://www.frontiersin.org/articles/10.3389/fnins.2023.1161868>

Book Chapters, Books

1. **Mennenga SE**, Bimonte-Nelson HA. The importance of incorporating both sexes and embracing hormonal diversity when conducting rodent behavioral assays. In: Bimonte-Nelson HA, editor. *The Maze Book*. Springer Science+ Business Media New York; 2015. 299-321.
2. **Mennenga SE**, Bogenschutz MP. Classic psychedelics for treatment of alcohol use disorder. In: Grob, C editor. *Handbook of Medical Hallucinogens*. Guildford Press New York; 2021. 474-492.

Abstracts

1. McBeath MK, Baxter LC, Grunfeld IS, Camp BW, **Mennenga SE**, Brewer GA, Bimonte-Nelson HA. Human Strategies Used to Navigate a Real-World 50-Foot Diameter 11-Arm Radial-Arm Maze. *Journal of Vision* 2013;13(9):958.
2. Koebele SV, **Mennenga SE**, Hiroi R, Hewitt LT, Quihuis AM, Mayer LP, Dyer CA. Bimonte-Nelson HA. A longitudinal evaluation of age, ovarian follicular depletion, and spatial memory performance in a rat model of transitional menopause. *Maturitas* 2015;81:234.
3. Koebele SV, **Mennenga SE**, Patel S, Hiroi R, Hewitt LT, Quihuis AM, Mayer LP, Dyer CA, Demers LM, Bimonte-Nelson HA. Menopause and the aging brain: Evaluating relationships between circulating ovarian hormone levels and choline acetyltransferase-containing neurons in the basal forebrain. *Experimental Gerontology* 2017;94:111-112.
4. Amegadzie S, **Mennenga SE**, Podrebarac S, Duane H, Ross S, Bogenschutz M. Psilocybin-Assisted Treatment for Alcohol Use Disorder: A Clinical Perspective. *American Journal on Addictions* 2018;27(4):317.

Invited Talks and Teaching of Peers

- **Fall 2017** | Invited lecturer | Fundamentals of Addiction | Neurobiology of Sex Differences in Addiction | Addiction Psychiatry Fellows | NYU Grossman School of Medicine | Bellevue Hospital | New York, NY
- **01/13/2015-05/05/2015** | Small-group lecture and research for advanced students | Supervised Teacher | Psychology | PSY 498/591; Neurobiology of Learning and Memory | Advanced Undergraduates/Graduate Students | Arizona State University | Tempe, AZ
- **02/08/2018** | Invited Speaker | Translational Research Training in Addictions for Racial/Ethnic Minorities (TRACC) Seminar | Underrepresented racial/ethnic minorities in translational addiction research | City College of New York; Columbia University Medical Center; NY State Psychiatric Institute; NIH/NIDA | New York, NY
- **07/07/2020** | Invited Speaker | Columbia University Summer Immersion Program | Psychedelic Research | High School Students | Columbia University | New York, NY
- **07/14/2020** | Invited Speaker | Columbia University Summer Immersion Program | Psychopharmacology and Drug Development | High School Students | Columbia University | New York, NY

Mentoring and Advising

Fall 2010-Spring 2011 | **Itamar Grunfeld** | Arizona State University Barrett Honors College | Graduate Advisor for Publication of Honor's Thesis: Navigating to New Frontiers of Translational Cognitive Neuroscience: The Human Radial Arm Maze, Sex and Hormones | Current Academic title: Graduate Student (PhD) | City University of New York

Fall 2011-Spring 2012 | **Julia Gerson** | Arizona State University Barrett Honors College | Graduate Advisor for Honor's Thesis: Estrogen metabolites and memory: Using ethinyl estradiol in the rodent as a model for understanding estrogen's effects on cognition | Current Academic title: Postdoctoral Researcher | University of Michigan

Spring 2013-Spring 2014 | **Abeer Mousa** | Arizona State University Barrett Honors College | Graduate Advisor for Honor's Thesis: Understanding the Impact of Phytoestrogens on Memory and the Cholinergic System | Current Academic title: Graduate Student (MD) | The University of Arizona College of Medicine

Spring 2017-Spring 2018 | **Lindsey Owens** | Clinical MA in Psychology and Education; Columbia University | Master's Thesis Advisor: Religious Affiliation, Spirituality, and Psilocybin-induced

Mystical Experiences in End-of-life Populations | Current Academic title: Clinical Research Coordinator
| New York University School of Medicine

Professional Service

August 2016-Present | Member | NIDA Clinical Trials Network Gender Special Interest Group (GSIG)

August 2019-Present | Member | NIDA Clinical Trials Network Publications Committee

Spring 2009 | Planning committee member | Arizona Psi Chi Chapter Conference

Dec 2008 – May 2010 | Editorial Assistant | American Journal of Orthopsychiatry (APA)