Sarah Hennessy, PhD
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SUMMARY

Cognitive Neuroscience PhD researcher specializing in music cognition with over 10 years of experience in behavioral science and data analysis. Expert in quantitative methods, including experimental design, statistical analysis, A/B testing, and causal inference that transform complex data into actionable product insights. Proven experience analyzing music listener behavior and evaluating AI-based music interventions at scale to optimize user engagement and product strategy.

SKILLS

Methods: Causal inference, randomized-control trials, experimental design, model performance metrics, quantitative and qualitative research methods, longitudinal analysis, surveys, usability testing, A/B testing, user segmentation, LLM evaluation, hierarchical linear modeling, non-parametric and robust statistics, dimensionality reduction, classification
Programming Languages and Tools: R, Python, Matlab, SQL, Docker, DBeaver, Tableau, AWS, QuickSight, Qualtrics
Communication: Executive reporting, cross-functional collaboration, investor interviews, publication writing

EXPERIENCE

Postdoctoral Research Scientist
University of Arizona, Department of Psychology September 2024 – Present

- Led end-to-end research projects on human behavior, emotion, and memory, applying advanced statistical methods
- Utilized and evaluated large language models for their efficacy in categorizing user-generated text based on standard psychological assessments, collaborating cross-functionally with engineers, linguists, and social scientists.
- Created experimental protocols, survey instruments, and interactive dashboards to share insights with collaborators
- Secured $25,000 in competitive funding to test user responses to emotionally personalized content

Data and Research Scientist
Rubato Life (Music health technology startup) April 2022 – September 2023

- Designed and analyzed trials (1m + datapoints) to assess impact of AI-based personalized music interventions, directly informing product optimization, market goals, and investor presentations
- Delivered weekly performance analyses to leadership team, identifying model limitations and recommending optimizations for AI-driven personalized music interventions
- A/B tested mobile UX prototypes, optimizing in-app data visualizations based on user engagement metrics
- Built scalable data visualizations of key metrics using Tableau and QuickSight for investor reporting

Music Cognition Researcher
University of Southern California, Brain and Creativity Institute September 2019 – August 2024

- Conducted 10+ studies on human behavior and experience with music, media, and health tools, including 3 randomized-control trials and 3 longitudinal studies
- Developed personalized music-recommendation app using Spotify API for experimental research (*Soundslikethis.us*), collaborating with music therapists and engineers
- Applied surveys, interviews, neuroimaging, and psychophysiological monitoring to assess user experience
- Analyzed user-generated data with R and Python for causal relationships to inform publications
- Managed $200k+ in research funding and a team of 80 mentees

Research Manager
USC Brain and Creativity Institute, Brain and Music Project April 2017 – September 2019

- Supervised music cognition research with children and families, combining observational, survey, and longitudinal data
- Presented research findings to community stakeholders, helping shape public engagement strategy

EDUCATION

University of Southern California | *Ph.D., M.A., Brain and Cognitive Sciences*
Occidental College| *B.A., Psychology (Honors)*; Minor: *Ethnomusicology (Magna Cum Laude*)

SELECTED PUBLICATION HIGHLIGHTS

Hennessy, S., et al., (2025). Music-evoked nostalgia activates default mode and reward networks across the lifespan. *Human Brain Mapping.*
Klus, J., **Hennessy, S.,** et al., (2025). Modeling Memories, Predicting Prospections: Automated Scoring of Autobiographical Detail Narration using Large Language Models. *Behavior Research Methods*.
Hennessy, S., et al., (2024). Unique affective profile of music-evoked nostalgia: An extension and conceptual replication of Barrett et al., 2010. *Emotion.*
Hennessy, S., et al., (2022). Speech-in-noise perception in musicians and non-musicians: a multi-level meta-analysis. *Hearing Research.*
Hennessy, S., et al., (2021). Music and mood regulation during the early-stages of the COVID-19 pandemic. *PLOS One.*