

Madison S. Barker, PhD

User Experience Researcher | Mixed-Methods | Data Driven Insights

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SUMMARY & OBJECTIVE

- With a PhD in Psychology & nearly a decade of experience in mixed-method user research and behavioral science, I specialize in understanding how people think, communicate, and interact with the world. My work has relied on developing novel methodologies, creative study design, and rigorous mixed-methods analysis. I've led research teams, mentored students, and collaborated cross-functionally to deliver actionable insights. Skilled in Python, R, SQL, Tableau, and advanced statistical modeling, I focus on reproducibility and translating complex data into clear, compelling stories for diverse audiences. I am seeking a mission-driven role where I can combine research design, quantitative & qualitative analysis, and team leadership to build inclusive, data-informed decisions that precipitate real impact.

SKILLS

Data Science & Programming: MATLAB, Python (PsychoPy, pandas, NumPy, scikit-learn, statsmodels), R (lme4, ggplot2), Excel, SQL, AWS, Git.

Machine Learning: Regression (linear, logistic), Classification, Clustering (k-means, decision trees, random forest), Predictive Modeling, PyTorch.

NLP: spaCy (prosody, text classification, NER), NLTK, WhisperAI (speech-to-text), Praat, Audacity.

Computer Vision: OpenCV (image annotation, object detection, segmentation), SegmentAnything.

Research Methods & Experimentation:

- Experimental & Statistical Methods: A/B Testing, Statistical Analysis, Regression Modeling, Causal Inference.
- Survey & Behavioral: Survey Design (Qualtrics), Focus Groups, User Interviews, Longitudinal Research, eyetracking (remote & in person).
- UX & Usability: Moderated and Unmoderated Usability Testing, Card Sorting/Tree Testing, Prototype Evaluation.

Data Collection & Management: Large-Scale Data Collection, Annotation Pipelines, Inter-coder Reliability, IRB Protocol, Participant Recruitment & Management.

Domain Expertise: Psycholinguistic Research, Qualitative Research, Language Production, Cognitive Psychology, Decision-Making, Cross-Functional Collaboration.

EXPERIENCE

Graduate Researcher – UC Davis, Department of Psychology

September 2019 – March 2025

- Designed and implemented end-to-end research studies (online surveys, usability-style tasks, and eye-tracking experiments) to investigate language production and decision-making, applying both qualitative and quantitative methods.
- Collected, cleaned, validated, & analyzed large datasets (100k+ datapoints) using R, Python, with a focus on reproducibility, automation, and scalable data pipelines.
- Developed innovative methodologies to transform open-ended and qualitative responses into structured, analyzable data, applying advanced statistical modeling (mixed-effects, regression, clustering) to generate actionable insights.
- Led cross-functional collaboration by training and supervising research assistants, mentoring undergraduate thesis projects, and aligning lab teams on best practices for data management and methodological rigor.
- Communicated research findings to diverse audiences through peer-reviewed publications, technical reports, data visualizations (ggplot2, seaborn, Shiny, Tableau), and conference presentations.
- Supported compliance and operational processes by contributing to IRB renewals, grant applications, and departmental knowledge sharing.

Graduate Teaching Assistant – UC Davis, Department of Psychology

September 2019 – December 2024

- Delivered instructional support for courses with 300+ students, including leading lectures, exam reviews, and discussion sections; provided one-on-one guidance in office hours tailored to student needs and career goals.
- Evaluated and graded assignments and exams (including APA-style writing and research projects), maintaining accuracy and efficiency across large enrollments using digital gradebook systems and Scantron.
- Developed course materials such as writing guidelines, rubrics, and updated policies for emerging technologies (e.g., use of generative AI in academic work).
- Mentored students in research design, literature review, and data analysis, training them to critically read, synthesize, and communicate scientific findings.
- Ensured smooth course operations by managing gradebooks, providing timely email communication, and collaborating with faculty to refine course structure and instructional practices.

Research & Statistical Consultant – Washington University in St. Louis, Department of Anesthesiology

June 2024 – September 2024

- Collaborated with physician-researchers to enhance their understanding of research design, ethical practices, and data collection principles.
- Delivered training and guidance on statistical workflows and best practices to support ongoing projects and improve reproducibility.
- Provided hands-on support in writing R/Python code, establishing coding structure/documentation, and running analyses (t-tests, ANOVAs, regressions).
- Advised on the ethical use of AI in coding and research, helping to align projects with compliance and confidentiality standards.

Post-Baccalaureate Researcher – UW Madison, Department of Psychology

June 2018 – August 2019

- First authored a supplemental “study guide”, translating technical cognitive science into plain-language summaries, discussion questions, and a glossary.
- Built information architecture for the guide (chapter distillations, cross-refs, navigation), and curated hyperlinked resources (papers, pop-culture examples, videos) to deepen comprehension and engagement.
- Collaborated with the PI to scope, draft, edit, and typeset web-ready content; ensured consistency, accuracy, and citation integrity across chapters and endnotes.
- Applied audience research principles (prior knowledge, cognitive load, scaffolding) to improve readability and learning outcomes.

Undergraduate Researcher – UW Madison, Department of Psychology

January 2016 – May 2018

- Designed & executed award-winning honors thesis on language processing, managing IRB protocols, participant recruitment, and cross-institutional collaboration.
- Programmed experimental tasks in PsychoPy and collected and analyzed behavioral data (RTs, error rates) in Python & R, and maintained reproducible workflows.
- Published findings in a peer-reviewed outlet and presented research at academic conferences, showcasing strong communication and collaboration skills.

EDUCATION

PhD in Psychology – University of California, Davis

March 2025

Dissertation: Multi-Utterance Language Production in Children and Adults (PI: Fernanda Ferreira, PhD).

Keywords: Language Production, Eye Movements, Vision-Language Interactions, Event Processing.

MA in Psychology – University of California, Davis

December 2021

Thesis: Multi-Utterance Language Production.

BA in Journalism – University of Wisconsin, Madison

May 2018

Strategic Communications Track: Persuasive Storytelling, Stakeholder Communication, Campaign Planning, Media Relations, and Audience Research.

Honor's Thesis: Investigating Sublexical Semantics in Written Mandarin Chinese (PI: Mark Seidenberg, PhD).

CERTIFICATIONS

- **Qualitative Research** - University of California, Davis via Coursera
- **SQL for Data Science** - University of California, Davis via Coursera
- **Fundamentals of Visualization with Tableau** - University of California, Davis via Coursera
- **Social & Behavioral Research** - University of California, Davis via CITI Program
- **Responsible Conduct of Research** - University of California, Davis via CITI Program

