

Erfan Jaripour

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Education

B.Sc. in Psychology, Islamic Azad University, Tehran, Iran

2021–2025

GPA: 19.55/20

Thesis: *Relationship Between Psychological Disorders and Defense Mechanisms in Adolescents*

Supervisor: Dr. Hamid Reza Vatankhah

Selected Coursework: Cognitive Psychology; Experimental Psychology; Descriptive Statistics; Inferential Statistics; Psychometrics; Research in Psychology; Neurological Sciences

Research Interests

Computational Cognitive Science; Cognitive Modeling; Working Memory; Learning and Adaptive Behavior; Decision-Making; Reinforcement Learning

Research Experience

Independent Computational Research Projects

Trial-by-Trial Behavioral Adaptation in a Restless Bandit Task

August 2026

- Analyzed trial-level decision-making data from 965 participants completing a four-arm restless bandit task to characterize behavioral adaptation across repeated trials.
- Modeled payoff-maximizing choice, obtained reward, reaction time, and choice switching using logistic and linear mixed-effects models accounting for individual differences.
- Evaluated nonlinear trial trajectories and payoff-environment interactions, with model comparison and robustness analyses across alternative model specifications.
- Developed a reproducible R workflow using Quarto and renv, with scripted preprocessing, documented analytical decisions, and version-controlled analyses.

Repository: github.com/erfanjaripour/trial-by-trial-behavioral-adaptation

Hierarchical Bayesian Modeling of Visual Working Memory Precision

July 2026

- Analyzed 37,824 trial-level observations from three continuous-report visual working-memory experiments involving 13 participants to investigate the effect of memory load on precision and individual differences.
- Developed hierarchical Bayesian models with von Mises likelihoods, including null, linear, and nonlinear formulations with participant-level partial pooling.
- Evaluated model adequacy, predictive performance, convergence, and robustness using posterior predictive checks, LOO-CV, sensitivity analyses, and participant-influence diagnostics.
- Implemented a fully reproducible workflow in Python using PyMC, NumPyro, and ArviZ, with scripted preprocessing, version-controlled analyses, and documented computational environments.

Repository: github.com/erfanjaripour/hierarchical-bayesian-working-memory

Stroop Interference: A Behavioral and Computational Analysis

June 2026

- Analyzed trial-level Stroop task data from 81 participants to quantify interference effects and individual differences in behavioral performance.
- Conducted data cleaning, quality control, descriptive and inferential analyses, effect-size estimation, and robustness analyses using Python.
- Implemented a computational simulation to reproduce observed condition-level behavioral patterns.

- Developed a reproducible workflow for preprocessing, statistical analysis, visualization, and manuscript preparation.

Repository: github.com/erfanjaripour/stroop-interference

Publications & Preprints

Jaripour, E. (2026). *Trial-by-Trial Behavioral Adaptation in a Restless Bandit Task: A Mixed-Effects Modeling Approach*. Research Square Preprint.

Jaripour, E. (2026). *Hierarchical Bayesian Analysis of Memory Load Effects on Visual Working Memory Precision*. Research Square Preprint.

Jaripour, E. (2026). *Stroop Interference in Reaction Time and Accuracy: A Behavioral and Computational Analysis*. Research Square Preprint.

Technical & Research Skills

Programming & Scientific Computing

Python; R; scientific computing; numerical methods; Linux/command-line

Statistical & Quantitative Methods

Mixed-effects/multilevel models; Bayesian inference; effect-size estimation; Monte Carlo simulation; robust statistical analysis

Computational & Cognitive Modeling

Computational cognitive modeling; Bayesian cognitive modeling; reinforcement learning; decision-making models; working-memory modeling; hierarchical cognitive modeling; parameter estimation; model selection; posterior predictive evaluation

Research Computing & Reproducibility

Git/GitHub; Jupyter; Quarto; LaTeX; Conda; renv; reproducible workflows

Honors & Awards

Top-Ranked Psychology Student, Islamic Azad University	2021–2025
Tuition Waiver Scholarship, Islamic Azad University	2024
Outstanding Academic Performance Award, Islamic Azad University	2023

Languages

Persian (Native)

English (Professional Working Proficiency)