Qihao He

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EDUCATION

Peking University

B.S. in Psychology, School of Psychological and Cognitive Sciences (SPCS)   **Sep. 2022 – Present**

- **Average Score:** 90.4/100 | **GPA:** 3.79/4.00 | **Rank:** 1/43
- **Core Courses:** Cognitive Psychology (92), Experimental Psychology (92), Physiological Psychology (94), Physiology (91), Developmental Psychology (97), Fundamentals and Frontiers of Systems Neuroscience (94)

LL.B. in Sociology, Department of Sociology (Double Major)   **Sep. 2024 – Present**

RESEARCH EXPERIENCE

Dynamic Reconstruction of Facial Emotion Representation Templates in Social Anxiety

Independent Researcher   **May 2024 – Present**

Supervisor: *Dr. Yujia Peng, Peking University | Supported by 2024 President's Research Fund, Peking University*

- Investigated how individuals with high and low social anxiety (SA) perceive dynamic facial expressions. Adopted a data-driven approach to create dynamic facial stimuli based on the Facial Action Coding System (FACS) and the Generative Model of 3D Faces (GMF).
- Designed and programmed the task; collected behavioral data ($N = 70$). Code | Demo.
- Applied generalized linear mixed models, Bayesian hierarchical modeling and regression hierarchical drift diffusion model (HDDM) to examine how facial dynamics predicted emotion judgments and revealed group differences.
- Reconstructed group-specific perceptual templates for positive and negative emotions using reverse correlation.

Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation

Independent Researcher   **Nov. 2024 – Present**

Supervisor: *Dr. Sheng Li, Peking University | Supported by 2025 Beijing Natural Science Foundation*

- Employed the Judgment of Relative Direction (JRD) paradigm to investigate how individuals utilize multi-level spatial cues to construct and shift between reference frames in scene memory and navigation. Code | Demo.
- Designed two behavioral experiments using panoramas with regular ($N = 36$) and irregular ($N = 24$) street layouts. Implemented computer vision models (e.g., GIST, subband entropy) to examine the influence of low-level features and spatial layouts.
- Developed a virtual city environment in Unity and collected behavioral data ($N = 24$) to prepare for an fMRI study. Integrated CV models with Representational Similarity Analysis (RSA) and Multivoxel Pattern Analysis (MVPA) to examine how scene-selective regions (PPA, OPA, RSC) represent layouts, heading, and reference frame shifts.

Training Metacognitive Calibration with Optimal Confidence Feedback

Independent Researcher   **Mar. 2025 – Sep. 2025**

Supervisor: *Dr. Dobrobir Rahnev, Georgia Institute of Technology*

- Explored whether trial-level optimal confidence feedback improves confidence calibration in perceptual decision-making more effectively than traditional correct/incorrect feedback. Experiment | Code.
- Implemented Monte Carlo simulations within a visual discrimination task to combine task difficulty with estimated participant noise and deliver trial-level optimal confidence feedback. Programmed the online experiment.
- Applied Signal Detection Theory (SDT) and HDDM to compare pre- vs. post-training changes in perceptual sensitivity, decision criterion and metacognitive sensitivity (meta-d'), assessing the efficacy of different feedback mechanisms for enhancing metacognitive calibration.

Human–Machine Comparison in Face Identity Processing

Summer Research Intern   **May 2025 – Present**

Supervisor: Dr. Zili Liu, University of California, Los Angeles (UCLA)

- Investigated differences between human observers and deep convolutional neural networks (DCNNs) in face identity processing across tasks involving twin identification and age-related face memory. Applied psychometric modeling and human-AI comparison.
- Twin Identification: Analyzed behavioral data ($N = 225$) on human identification twins under varying levels of adversarial distortion. Tuned deep learning models for comparison.
- Age-related Face Memory: Programmed and deployed an online recognition task using MORPH Longitudinal Database faces across different ages. Collected and analyzed behavioral data ($N = 152$) under identity- vs. image-based memory conditions. Experiment | Code.

TEACHING EXPERIENCE

Cognitive Psychology

*Teaching Assistant | **Instructor:** Prof. Sheng Li, Peking University*   **Sep. 2025 – Present**

- Organized student literature presentation sessions on perception, attention, memory, conceptual processing, language, decision making and reasoning.
- Graded quizzes, midterm and final examinations.

SOCIAL WORKS & VOLUNTEERING

Committee Member | Liaison Department, Student Union of SPCS	Sep. 2022 – Jun. 2023
Committee Member | Arts & Sports Department, Student Union of SPCS	Sep. 2022 – Jun. 2023
Admissions Volunteer | Beijing Admissions Team, Peking University	Dec. 2022 – Jul. 2023
Student Volunteer | Teaching and Outreach Program at Deyang No. 5 High School, SPCS	Jul. 2023 – Jun. 2023
Student Volunteer | "Leading New Swallows" Social Practice Program, Peking University	Dec. 2024 – Mar. 2025

HONORS & AWARDS

Xiaomi First-Class Scholarship (Top 2%), *Peking University*	Sep. 2025
Leo Koguan Scholarship (Top 2%), *Peking University*	Dec. 2024
First-Class Academic Scholarship, *Peking University*	Oct. 2025
First-Class Academic Scholarship, *Peking University*	Sep. 2024
Award for Merit Student (Top 5%), *Peking University*	Sep. 2025
Award for Merit Student (Top 5%), *Peking University*	Dec. 2024
Award for Community or Public Service, *Peking University*	Dec. 2023

PROFESSIONAL SKILLS

Coding

- MATLAB, R, Python, JavaScript, HTML, CSS, C#, Stata

Research Method

- **Behavioral:** Experimental design (Psychtoolbox, jsPsych, Unity); psychophysics; reverse correlation
- **Computational:** Statistical Modeling (ANOVA, mixed-effects, mediation, moderation, factor analysis); Cognitive Modeling (signal detection theory, drift diffusion model, Bayesian inference); Machine Learning & Computer Vision (deep convolutional neural networks, e.g., DeepFace, ArcFace; feature-based encoding, e.g., GIST, subband entropy; classification and prediction)
- **Neuroimaging:** fMRI (SPM; SVM, MVPA, RSA); EEG (time-window analysis, cluster-based permutation)

English Proficiency

- TOEFL iBT 106