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:** 90.5/100 | **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**

FUNDING

Beijing Natural Science Foundation, Qiyan Undergraduate Research Grant QY25138, *Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation*

- **Period:** Jul. 2025 – Jun. 2026 | **Role:** Principal Investigator (Undergraduate) | **Total Amount:** 50,000 CNY

CONFERENCE PAPERS & PRESENTATIONS

Papers

- Liu, J.†, **He, Q.**†, & Liu, Z. (submitted). Imperceptible? Testing Face Privacy Claims with Twins and Doppelgangers. *The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026*. (†co-first authors)

Presentations

- **He, Q.**, Wang, Y., Zhang, Z., Zhang, Y., Li, Z., Chen, C., Jack, R., Zhan, J., & Peng, Y. (accepted). Dynamic Reconstruction of Facial Emotion Representation in Social Anxiety. *Australasian Mathematical Psychology Conference 2026*.

MANUSCRIPTS IN PREPARATION

- **He, Q.**, & Li, S. (in preparation). Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation.

RESEARCH EXPERIENCE

Dynamic Reconstruction of Facial Emotion Representation in Social Anxiety

Independent Researcher **May 2024 – Present**

Supervisor: *Dr. Yujia Peng, 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*

- 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 ($N = 45$) and irregular ($N = 26$) 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 internal 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 two tasks. Applied psychometric modeling and human-AI comparison.
- Twin Identification: Analyzed behavioral data (N = 272) on human identification twins under varying levels of adversarial distortion. Benchmarked 5 state-of-the-art deep learning models (e.g., AdaFace) 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 WORK & 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* | "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 Outstanding Undergraduate Research, *Peking University* Nov. 2025

- 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 (DCNNs, e.g., AdaFace, 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