

Huaiyu Liu

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[Twitter](#) • Website • [Google scholar](#) • [ResearchGate](#) • [OSF](#)

Research interests

Reinforcement learning (RL), Bayesian statistics, Food choice, Behavioral training, Open Science, Data visualization

Education

- 2018 – present **Ph.D.** Experimental Social Psychology Radboud University (NL)
Major courses: Publishing & Presentation skills, Mixed-effects models, Bayesian statistics, Computational modeling
- 2014 – 2017 **Msc.** Social and Personality Psychology Southwest University (CN)
Major courses: Structural Equation Model, Research Methods for Social Psychology, Advanced Statistics in SPSS
- 2010 – 2014 **B.A.** Science and Technology of Plants Sichuan Agricultural University (CN)
Major course: Plant physiology, Statistics, Biology and Chemistry, Linear algebra, Advanced mathematics



Research experience

- 2020.11 – present **Amplifying the effect of Go/NoGo training on food choice by incorporating reinforcement learning principles**
- **Graduate project**
 - Supervisors: Harm Veling, Rob W. Holland, Jens Blechert
 - Two preregistered studies ([Study 1](#), [Study 2](#))
 - **Design phase**
 - Novel reinforcement learning food Go/NoGo training
 - Program novel tasks in *PsychoPy*
 - Conduct Bayesian Power Simulation for multilevel design
 - **Analysis phase**
 - Bayesian multilevel modeling in *R*
 - Custom hierarchical reinforcement learning modeling in *Stan*
 - Model comparison on various candidate models
 - Visualizing results on both individual and group levels
- 2019.10 – 2021.10 **Scrutinizing the workhorse underlying NoGo devaluation: A Pavlovian bias value-updating account**
- **Graduate project**
 - Supervisors: Harm Veling, Rob W. Holland
 - Two preregistered studies ([Study1](#), [Study 2](#))
 - **Design phase**
 - Two novel Go/NoGo trainings with mirror task structures
 - Program novel tasks in *PsychoPy*
 - Conduct Power Simulation for multilevel design
 - **Analysis phase**
 - Multilevel modeling in *R*
 - Both Bayesian and Frequentist approaches
 - Visualizing results on both individual and group levels
- 2019.1 – 2021.2 **Devaluation of NoGo stimuli is both robust and fragile**
- **Graduate project**
 - Supervisors: Harm Veling, Rob W. Holland, Jens Blechert
 - Three preregistered studies ([Study1](#), [Study2](#), [Study3](#))
 - **Design phase**
 - Three novel tasks
 - Novel RTs-measurement
 - Attention-boosted Go/NoGo training
 - Two-phase Go/NoGo training
 - Program novel tasks in *PsychoPy*
 - Conduct Power Simulation for multilevel design
 - **Analysis phase**
 - Multilevel modeling in *R*
 - Both Bayesian and Frequentist approaches
 - Visualizing results on both individual and group levels
- 2022.2 – present **How does go/no-go training change behavior? A value-based decision making perspective**
- **Cooperation project**
 - Authorship: 3rd
 - **Contribution**
 - Help conceptualize new account
 - Pavlovian bias value updating account
 - Manuscript review and editing
- 2020.10 – present **Understanding prejudice through the lens of reinforcement learning**
- **To-be-determined**
Cooperation project (4 studies, OSF); authorship: to-be-determined
 - Provide the Python script for all experimental tasks
 - Aid setting up experiments (stimuli type, amount of trials and blocks, number of training conditions, trial structure etc.)

such as the stimuli type, numbers of training conditions and blocks, and trial structure

- Aid power analysis by providing relevant tutorials
- Check the R script of data analysis for the sake of transparency, replicability, and reproducibility
- Explore the data using four candidate reinforcement learning models, respectively

2020.4 – 2021.2 **How can food choice best be trained? Approach-avoidance versus go/no-go training**

- **Cooperation project**
 - Authorship: 3rd
 - [One preregistered study](#)
- **Contribution**
 - Bayesian multilevel modeling in *R*
 - Visualizing results on both individual and group levels
 - Manuscript review and editing

2020.6 – present **Can the go/no-go training effect be generalized to untrained stimuli: The effect of training on stimulus versus category level on generalization to untrained food stimuli**

- **Cooperation project**
 - Authorship: 2nd
 - [One preregistered study](#)
- **Contribution (design phase)**
 - Aid construct hypotheses
 - Aid model specification
 - Program novel tasks in *PsychoPy*
 - Conduct Power Simulation for multilevel design
- **Contribution (analysis phase)**
 - Bayesian multilevel modeling in *R*
 - Visualizing results on both individual and group levels

2019.4 – 2019.9 **Updating the p-curve analysis of Carbine and Larson with results from preregistered experiments**

- **Cooperation project**
 - Authorship: 3rd
 - [One preregistered meta-analysis](#)
- **Contribution**
 - Manuscript review and editing

2018.12 – present **Health Brain Study consortium**

- [Multi-labs collaboration project](#)
- **Contribution**
 - Design novel food choice task
 - Program behavioral tasks in *PsychoPy*

Teaching experience

2021.12 **Research master course *Learning & Motivation* in behavioral science institute at Radboud University**

- **Introduce reinforcement learning**
 - Core characteristics
 - Applications in multiple domains
 - Mathematical equations
- **Introduce Bayesian statistics**
- **Tutorials**
 - Implement reinforcement learning models in *Stan*
 - Bayesian multilevel modeling in *R*

2022.6 **Guest lecturer in Vrije Universiteit Amsterdam Summer School**

- **Introduce Bayesian statistics**
 - Prior, likelihood, posterior, 95% HDI, etc.
 - Bayesian multilevel modeling in *R*

Supervising experience

2019.3 – 2020.3 **Nudging healthy food choices (*research master project*)**

- **Research master project**
- **Supervision**
 - Software and Formal analysis
 - Program tasks in *PsychoPy*
 - Power analysis for multilevel design
 - Multilevel modeling in *R*
 - Data visualization in *R*
 - Preregistration and Data-collection
 - Manuscript review and editing

2019.11 – 2020.9 **Taste or Health: Which Mindset Heightens the Effects of Food Go/No-Go Training?**

- **Distinguished Bachelor project**
- **Supervision**
 - Conceptualization and Methodology
 - Novel health/taste food Go/NoGo training
 - Novel health/taste food choice task
 - Software and Formal analysis

- Program tasks in *PsychoPy*
- Power analysis in GPower
- rmANOVA and *t*-test in *SPSS*
- Multilevel modeling in *R*
- Data visualization in *R*
- Preregistration and Data-collection
- Manuscript review and editing

Skills

Languages

- Chinese ★★★★★
- English ★★★★★
- Korean ★★☆☆☆

Statistics

- Reinforcement learning models ★★★☆☆
- Bayesian Estimation and Testing ★★★★★
- Multilevel-Modeling ★★★★★
- (Generalized) Linear regression ★★★★★

Programming

- R ★★★★★
- Python & PsychoPy ★★★★★
- Stan ★★★★★

Publications

Published articles

Veling, H., Verpaalen, I. A., **Liu, H.**, Mosannenzadeh, F., Becker, D., & Holland, R. W. (2021). How can food choice best be trained? Approach-avoidance versus go/no-go training. *Appetite*, 163, 105226. DOI: <https://doi.org/10.1016/j.appet.2021.105226>

Veling, H., Chen, Z., **Liu, H.**, Quandt, J., & Holland, R. W. (2020). Updating the p-curve analysis of Carbine and Larson with results from preregistered experiments. *Health psychology review*, 14(2), 215-219. DOI: <https://doi.org/10.1080/17437199.2019.1669482>

Fernández, G., & Healthy Brain Study consortium. (2021). Protocol of the Healthy Brain Study: An accessible resource for understanding the human brain and how it dynamically and individually operates in its bio-social context. *Plos one*, 16(12), e0260952. DOI: <https://doi.org/10.1371/journal.pone.0260952>

Invited Revision

Liu, H., Holland, R. W., Blechert, J., Quandt, J., & Veling, H. (2022). Devaluation of NoGo stimuli is both robust and fragile. *Cognition and Emotion*.

In Preparation

Liu, H., Quandt, J., Zhang, L., Kang, X., Blechert, J., Lent, Tijts van, Holland, R. W., & Veling, H. (in prep). The value of learning with and without reward and punishment: Food choice as an example.

Liu, H., Duque Osorno, V., Holland, R. W., & Veling, H. (in prep). Scrutinizing the workhorse underlying NoGo devaluation: A Pavlovian bias value-updating account

Veling, H., Daniela, B., **Liu, H.**, Quandt, J., & Holland, R. W. (in prep). How does go/no-go training change behavior? A value-based decision making perspective

Conferences

- 2021.12 **Dutch Association for Social Psychology (ASPO)**
- Give a [knowledge clip](#) of one [preregistered study](#)
- 2022.6 **Dutch Association for Social Psychology (ASPO)**
- Give a presentation

- 2018.9 – present **Department Brown Bag Lunch meeting**
- Present progress of Ph.D. projects once a year
 - Present experimental results 6 times

- 2018.9 – present **Department Lab-group meeting**
- Present progress of Ph.D. projects two times a year
 - Present experimental results 20 times

Activities

- 2022.6 **6th European Summer School on Computational and Mathematical Modeling of Cognition (attendee)**
- 2022.1 **Department Lab-group talk: How to implement reinforcement learning models in social science (organizer)**
- 2022.2 – present **Amsterdam People Analytics Community (member)**
- 2021.11 – present **Computational Modeling of Cognition and Behavior (Journal club; member)**
- 2021.11 – present **Chinese Computational Psychiatry Network (member)**
- 2021.11 – present **Computational psychiatry online journal club (member)**
- 2019.1 – present **Society for the Improvement of Psychological Science (SIPS; member)**
- 2018.12 – present **Radboud University weekly mixed-effects models meeting (member)**
- 2018.12 – present

Dutch Association for Social Psychology (ASPO; *member*)
European Meeting of Human Fear Conditioning (EMHFC; *member*)

Interest

Clarinet (amateur level 10) • K-pop (dancing, singing, TV-dramas, movies) • Cooking (Chinese & Korean) • Photograph