

HOYOUNG DOH

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RESEARCH INTERESTS

Judgement and Decision-Making, Learning, Computational Modeling

EDUCATION

Seoul National University

2020 - 2022

M.A. in Psychology

Advisor: Dr. Woo-Young Ahn

Thesis: Revealing the mechanism of Pavlovian influence on instrumental learning with mouse-tracking and computational modeling.

Seoul National University

2014 - 2020

B.A. in Psychology, Minor in Brain-Mind-Behavior

Thesis: Revealing the interaction between Pavlovian and instrumental systems: A simulation study with novel computational models and behavioral tasks

RESEARCH EXPERIENCE

Seoul National University

2020 - present

Graduate Student, Research Assistant

Advisor: Dr. Woo-Young Ahn

- Investigated within-trial dynamics of Pavlovian-instrumental conflict with mouse-tracking and drift-diffusion modeling
- Studied the effect of working-memory load on Pavlovian-instrumental conflict using behavioral analysis and computational modeling
- Analyzed how distress tolerance measured in a laboratory task is associated with stress-induced smoking behaviors during a smoking cessation clinic, using linear mixed-effects models
- Ran model-based fMRI and fNIRS analyses using reinforcement learning task data

Seoul National University

2019 - 2020

Undergraduate Research Assistant

Advisor: Dr. Woo-Young Ahn

- Led a simulation study for validating new reinforcement learning tasks and models to investigate the relationship among Pavlovian, model-free, and model-based systems.

PUBLICATIONS

Doh, H.*, Jeong, Y.*, Park, H., Lee., D. & Ahn, W.-Y. (in preparation). Revealing the time-course of Pavlovian-instrumental conflict using mouse-tracking and drift diffusion modeling.

Chang, R. S.*, **Doh, H.***, & Ahn, W.-Y. (in preparation). Daily stress, laboratory stress reactivity, and smoking behaviors following a quit attempt.

Park, H., **Doh, H.**, Park, H., & Ahn, W.-Y. (submitted). The neurocognitive role of working memory load when Pavlovian motivational control affects instrumental learning. [bioRxiv](#).

Hur, J., Yang, J., **Doh, H.**, & Ahn, W.-Y. (2020). Mapping fNIRS to fMRI with Neural Data Augmentation and Machine Learning Models. *NeurIPS 2020 BabyMind Workshop*. [pdf](#).

* indicates equal contribution

CONFERENCE PRESENTATIONS

Doh, H.*, Jeong, Y.*, Park, H., Lee, D. & Ahn, W.-Y. (accepted). Revealing the time-course of Pavlovian-instrumental conflict using mouse-tracking and drift diffusion modeling. *Poster Spotlight at the Society for Neuroeconomics (SNE) Annual Meeting, Arlington, VA.*

Park, H., **Doh, H.**, Park, H., & Ahn, W.-Y. (2022). The neurocognitive role of working memory load when motivation affects instrumental learning. *Poster at the Computational and Systems Neuroscience (COSYNE) Annual Meeting, Lisbon, Portugal.*

Doh, H.*, Jeong, Y.*, Park, H., & Ahn, W.-Y. (2020). Dissecting the mechanism of Pavlovian bias with the orthogonalized Approach/Withdrawal task and mouse-tracking. *Talk at the 53rd Annual Meeting of the Society for Mathematical Psychology, Virtual online conference.*

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GRANTS AND SCHOLARSHIPS

SNU Graduate Research Grant in Social Sciences (\$2,500)	2021
SNU Graduate Student Instructor Scholarship (2 semesters, full-funded)	2020 - 2021
SNU Alumni Association Scholarship (6 semesters, full-funded)	2015 - 2019
Samsung Dream Class Mentoring Scholarship (\$2,000)	2014

HONORS AND AWARDS

Runner-up in SNU Brain-Mind-Behavior Research Presentation	2019
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TEACHING EXPERIENCE

Computational Psychiatry Course (CPC) Zurich	2021
Tutorial on Reinforcement Learning (in English)	Teaching Assistant

- Prepared guidelines for installing the hBayesDM package and running test code in several environments
- Answered questions from students and helped them with troubleshooting before, during, and after the tutorial

Seoul National University	2020
Computational Modeling (graduate course, in English)	Teaching Assistant

- Graded all assignments, wrote solution code, and provided individual feedback
- Held office hours to help students with the term project

OTHER EXPERIENCE

Software Package Contribution (hBayesDM)	2022
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- Validated reinforcement learning drift diffusion models (RL-DDMs) using Stan, including parameter recovery and posterior predictive checks. [Blog post](#).
- Implemented RL-DDMs in the hBayesDM package

Study Groups	2019 - 2021
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- Led a study group covering textbooks and classic papers on computational modeling (e.g., reinforcement learning models, drift diffusion models, general tips for computational modeling)
- Participated in study groups and student-led courses on subjects including reinforcement learning, mathematical cognition, stochastic processes, and fMRI

ACADEMIC SERVICE

Manuscript Review

eLife (with advisor Dr. Woo-Young Ahn)

RELEVANT COURSEWORK

Neuroeconomics

- Judgement and Decision-Making, Principles of Economics, Cognitive Processes, Brain-Mind-Behavior, Neuroscience, Biology

Computational Modeling

- Computational Modeling, Datascience and Reinforcement Learning, Probabilistic Brain, Dynamics and Cognitive Models

Math and Statistics

- Advanced Psychological Statistics, Multivariate Analysis, Linear Algebra, Math and Programming for Machine Learning

TECHNICAL SKILLS

Programming

- **Python** (Numpy, Pandas, PsychoPy, Matplotlib, Jupyter)
- **R** (Tidyverse, ggplot, R Markdown)
- **MATLAB** (SPM12)
- **Stan**
- **Git, GitHub, LaTeX**

Last Update: August 2nd, 2022