

DI LIU (AURORA)

School of Psychology
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EDUCATION

Beijing Normal University Psychology in the school of Psychology • GPA: 4.00/4.00, 95.27/100 (rank: 1/130)	Beijing, China 9.1 2019 – Ongoing
Lady Margaret Hall, Oxford University Psychology in the Department of Experimental Psychology	Oxford, Britain 9.5 2022 – 12.3 2022

SELECTED AWARDS

Jul. 2022.	Jindong foundation – Talent Excellence Program (¥150,000)
Oct. 2020 & Oct. 2021.	National Scholarship (¥8000, awarded for outstanding academic performance, top 0.2%)
Oct. 2020 & Oct. 2021.	The First-Class Jing Shi Scholarship (honor, top 10%)
Oct. 2020 & Oct. 2021.	Merit Students (¥1000, awarded for comprehensive development, 6 out of 130)
Sep. 2020, 2021, & 2022.	The First-Class scholarship of Beijing Normal University (¥5000)
Oct. 2021.	The First-Class scholarship of competition winner (¥3000)
Nov. 2019.	Freshman Scholarship of Beijing Normal University (¥5000, top 5%)

PUBLICATIONS

Manuscript in Preparation

- Liu, D.**, Wang, X., Zheng, Q., Xin C., & Bi, Y. (in preparation). Mapping emotional knowledge representational structure and its prediction of emotional well-being. Manuscript to be submitted to *Emotion*
- Li, Z., Lu, H., **Liu, D.**, & Gendron, M. (in preparation). Active emotion vocabulary is associated with emotion segmentation ability. Manuscript to be submitted to *Nature Human Behavior*

RESEARCH INTERESTS

Language and Conception; Emotional knowledge; Development of categorization; Acquisition of knowledge

RESEARCH EXPERIENCE

<u>Yanchao Bi's concept Lab - Beijing Normal University</u> Research assistant to Professor Yanchao Bi, supervisor for doctors, Changjiang Scholar	September, 2019 – Ongoing
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Project Name: Verbal Knowledge Predicts the Individual Traits in Sociality and Morality

June, 2020 – June, 2021

Funded by IDG/MCGOVERN Institute for Brain Research and Beijing Normal University (Campus sponsored)

- This project aimed at exploring individualistic representational knowledge structure and uncovering its connection with other non-verbal traits, including the morality and sociality.
- Accountable for literature review, material process, data collection, analysis pipeline construction, and report writing. We adopted methodologies including training SVM model and applying RSA to behaviour data.

Project Name: Emotional knowledge representational structure and its prediction of emotional well-being

June, 2021 – June, 2022

This is a **National-funded** project

- Based on my previous attempts in understanding the knowledge representation on an individual-level, I went further in exploring the individualistic organization of emotional concepts in mind. Do people tend to understand emotional words and experiences differently? If yes, then what information can that diversity tell us? By adopting a clustering approach, we are tackling these two major questions at the moment.
- Completely in charge of writing the proposal and arranging materials for this project. This project has won a school-level award for experimental design, and I'm responsible for recruiting the participants (N = 300), analyzing data together with two teammates, designing the poster, and giving the presentation. An initial manuscript has been completed, and will be submitted to journal after polishing.

Affective Science and Culture Lab - Yale University

May, 2021 – Ongoing

Research assistant to Professor Maria Gendron, assistant professor

Project Name: Emotional segmentation: a new methodology to detect emotional differentiation ability

May, 2021 – Present

- We aimed at uncovering the individual difference in recognizing and segmenting emotions in movie clips. This project also targets at finding possible correlations between emotional segmentation and self-report subjective emotional experience.
- As my first remote RA project, I devoted the whole summer time to it. Starting from writing basic R script and helped with cleaning raw data files, I kept making more contributions and later became one of the core researchers in this program. I was in charge of writing two major data processing scripts with R, and took lead in writing a manuscript for data analysis which will later become a part of the publication.
- For this project, I was challenged to learn R within a week, and I made it. This gave me confidence to approach more programming language (e.g., Python) I had more experience with factor analysis, reliability and validity test via this project as well.

Project Name: Correlation between emotional granularity in literacy and real-life experience

September, 2021 – Ongoing

- What is the relationship between sentimental words we use and real emotions that we experience? This study centered on analyzing the diary data and granularity scores to answer this research question. We're working with empirical data as well as some meta-analysis to acquire more information about this less-studied field.
- I am in charge of developing research hypothesis and analytical approaches for this project. I learned how to compute NLP analysis via R, VOCABULATE and TAEELS. Besides, I took lead in building analysis pipeline and writing report for the study.

Language and Cognition Lab - Stanford University

September, 2021 - Ongoing

Research assistant to Professor Michael C. Frank, director

Project Name: How language and culture influence reasoning development in children

September, 2021 – Ongoing

- Exploring the cultural difference in developmental process of reasoning. We focus on describing possible influence of language in children's cognitive styles.
- Having been attracted by developmental psychology for a long time, this is my first time to officially join one. I am the captain of data collection in Chinese restrict, and will further participate in the coding process, pipeline building and report writing.

Lab for cognition development - Beijing Normal University

December, 2021 – June, 2022

Research assistant to Professor Yinghe Chen, supervisor for doctors

Project Name: Children's adoption of proportional reasoning contributes to the alter of number line representations

December, 2021 – June, 2022

- The alter of number line representation has always been a hot topic in the field, here, we aim at reviewing the existing literature, and further explore the mechanism underlying the alternation. We propose that the adoption of proportional reasoning might be one factor contributing to the development of representational patterns.
- After taking a course about numeric knowledge representation in infancy and children, I became intrigued by this topic, and joined Chen's Lab for a practice. I'm accountable for the literature review, setting up experiment using Psychtoolbox in MATLAB, and will be involved in analyzing the data and writing the paper.

Computational Audition - Princeton University & Max Planck Institute for Empirical Aesthetics in Frankfurt

July, 2022 – November, 2022

Research assistant to Professor Robert D. Hawkins and Nori Jacoby

Project Name: Semantic metamers: developing a new approach to study individual difference in representations

July, 2022 – November, 2022

- How to systematically explore individual variance in conceptual representations? This project aims at developing an approach to identify the very stimuli (e.g., an emotional face) that elicit the most ambiguous concept in the population.
- I'm in charge of paradigm design, implementation, data analysis, and results documentation. The project is mostly written in JavaScript and Python.

Individual Exploration

Project Name: How language arrives at a converging stage: a dynamic model

This is a course project that I initiated for a modeling class, it is still being developed at the current stage.

- By postulating that language evolve with communication through a converging process, I initiated a dynamic model by simulating a population of N, each starting with a individualistic word repertoire of M, the effectiveness of communication E, and a personality parameter of openness O via MATLAB.
- The results suggests that the community will converge to share a similar word corpus after communicating with each other. And if some words were intendedly repeated for a few more times by some individuals in the beginning, these words will murder the diversity of expressions, and become the only survivors in the shared corpus after communication.

Project Name: Do mice have “concept” of shape in mind? Evidence from a radical six arm maze experiment

This is a course project for advanced physiological psychology. The project gained 100 points in the final.

- Can mice represent information about shape in mind? How abstract can that representation be? I designed a training-test experiment using radical six arm maze, with doors of 3 different shapes (circle, triangle and rectangle) at the entrance of each arm. Distribution of the shapes is randomized, and a blue box was placed at the end of each arm to hold food. In the training trials, only boxes at the end of arms with a circle door are filled with yellow mealworm as food reward. Training lasts for 6 days, and we tested whether the mice have represented circle shape as a signal for food in the test trials on the 7th day.
- Results showed that if tested with door shapes, mice enter the circle arm significantly more frequently; however, when tested with stickers of the same shapes, mice failed to identify the circle arms. Possible inference is that they can only represent shape information in a concrete form, that cannot switch to other “modalities”.
- I was fully in charge of experiment design and data analysis. And together with two teammates, we built the hand-made maze and completed the training process.

SKILLS

Programming	JavaScript, Python, MATLAB (experienced with setting up experiment with Psychtoolbox & data analysis), R (experienced with data analysis, figure production & especially familiar with NLP and clustering) Also have experience with decoding models, see: https://github.com/AuroraLiuDi/Decoding-scripts-for-sharing
Data analysis	SPSS (skilled and experienced), JASP (familiar with Bayesian analysis)
Experience	Behavioral data collection (especially familiar with children participants); f-MRI data collection; Enthusiastic about adopting new methodologies, e.g., having learnt representation similarity analysis, RVR and SVM within a week;
Languages	TOEFL 115 (reading 29; listening 30; speaking 27; writing 29); GRE 332 (verbal 162; quant 170).

TEACHING ASSISTANT RELATED EXPERIENCE

Student teaching assistant work:

- In charge of helping professors prepare teaching materials (including PowerPoint files about text book and extended materials), delivering and collecting coursework, organizing group discussion, and helping students get prepared for the final examination in a one-to-one manner.
- Specific working experience include:
Student teaching assistant of *Abnormal Psychology*
Student teaching assistant of *Introduction to Psychology*
Student teaching assistant of *Children emotional well-being and development*

OTHER RELEVANT EXPERIENCE

Organizer of psychology academic events

As the head of the Academic Department of Student Union at home institution, I have taken charge of organizing various academic events to disseminate psychology knowledge, including academic lectures, salons, and fun science activities. My job is to design the process of the activity, writing proposals for it, advertise the event together with teammates, and writing summary of the content. Some featured examples are listed below:

- Neuroscience Lecture: what is nerve concussion
- Scientific Salon: see into the eyes of children with Autism, what does their world look like?
- Cognition Lecture: cognitive style of the elderly
- Interesting outdoor exhibition: introduction to classic instrument of psychology field

Volunteer experience as a psychology student

Psychology volunteer teacher

July, 2020 - August, 2020

Shangshui First High School is located in an under-developed city of Henan province. I worked as a volunteer teacher to kids (grade 7 and 8) there during summer holiday, 2020. My classes include: learning English in a psychology way, and introduction to brain science.

Psychology support ambassador to left-behind children

June, 2020 – Ongoing

I am deeply involved in the program “Blue Envelope”, and have built strong emotional connection to two left-behind children via hand-written letters. Using psychology knowledge, I helped kids dealing with emotional problems, finding motivations to study, and handling conflicts with friends.