



Prof. Bolton Chau's Study on the Influence of Distractors in Decision Making

People often make irrational decisions when faced with seemingly irrelevant options. For instance, patients might disregard their doctors' medical advice in favor of information obtained from social media, while salespeople may deliberately display sold-out items to influence consumer behavior. Our study explores how changing the value of distractor options can parametrically affect irrational decision-making. This aims to address ongoing debates among scientists about whether a higher-valued distractor facilitates or hinders optimal choice.

We designed a cognitive task in which participants chose between gambles with different monetary values and probabilities, represented by rectangular bars, in the presence of an unchoosable distractor (Figure 1a). When comparing options, individuals may evaluate attributes separately or combine them to assess overall value. We employed computational models to fit participants' choice behavior and identified that they used a mix of additive (attribute-level comparison) and multiplicative (overall value comparison) strategies during decision-making (Figure 1b).

Notably, our findings revealed a relationship between decision-making strategies and the influence of distractors on irrational decision-making. Our computational model estimates the extent to which each participant relied on additive and multiplicative strategies. Leveraging this estimate, we found that a positive distractor effect (facilitating optimal choice) was associated with those using the multiplicative approach, while a negative effect (hindering optimal choice) was observed in those using the additive approach (Figure 2). Our results align with recent behavioral and neuroscience research suggesting that multiple distractor effects can coexist.



Prof. Bolton Chau and Dr. Jing Jun Wong

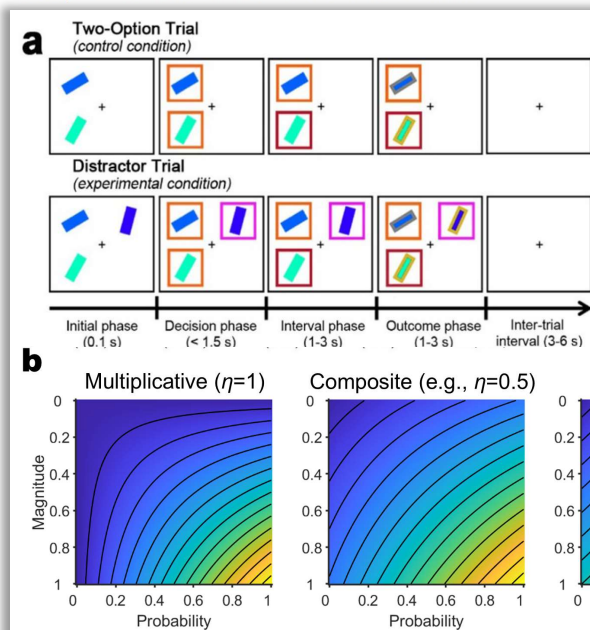
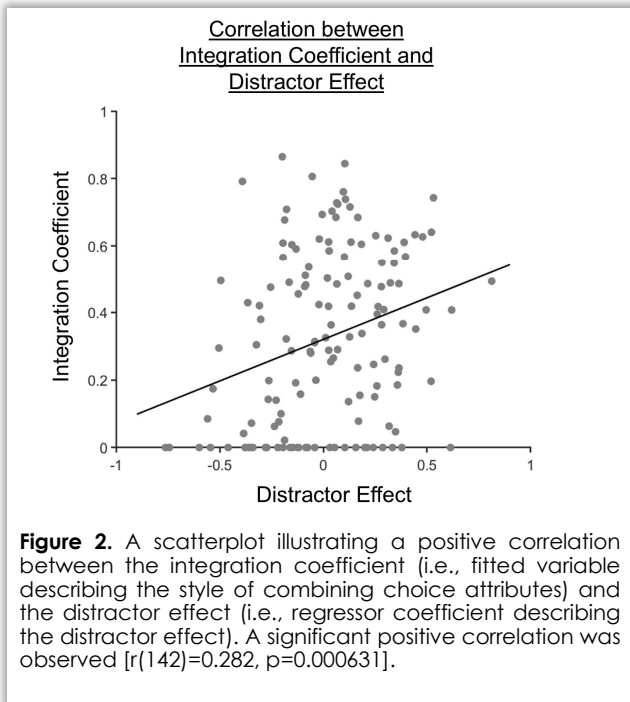


Figure 1. (a) On the control Two-Option Trials, participants were presented with two options associated with different levels of reward magnitude and probability, each in the form of a rectangular bar surrounded by an orange box. On the experimental Distractor Trials, three options were presented. Two options were subsequently surrounded by orange boxes indicating that they could be chosen, while a third option was surrounded by a purple box indicating that it was an unchoosable distractor.

(b) Plots illustrating utility estimated using (left) a purely multiplicative rule and (right) a purely additive rule (here assuming equal weights for probability and magnitude). By comparing their corresponding plots, differences in the utility contours are most apparent in the bottom-left and top-right corners. This is because in the multiplicative rule a small value in either the magnitude or probability produces a small overall utility (blue colours). In contrast, in the additive rule the two attributes are independent – a small value in one attribute and a large value in another attribute can produce a moderate overall utility (green colours). (Middle) Here, we included a composite model that combines both rules. The composite model involves an integration coefficient η that controls the relative contributions of the multiplicative and additive rules.



Publication related to the article:

- Wong JJ, Bongioanni A, Rushworth MFS, Chau BKH. Distractor effects in decision making are related to the individual's style of integrating choice attributes. *Elife*. 2024 Sep 24;12:RP91102. doi: 10.7554/eLife.91102. PMID: 39316515; PMCID: PMC11421849. <https://elifesciences.org/articles/91102>

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"UBSN Best Paper" Award 2025 Is Now Open for Application!

UBSN has established an annual "UBSN Best Paper" award to acknowledge and honour UBSN users for their outstanding papers published in academic journals in the past year. The aim is to promote neuroscience research and help advance the quality of research conducted by UBSN PIs.

- Timeline:
 - Submission deadline: **31 March 2025**
 - This year's results will be announced on 7 Jun 2025
- Awards:
 - Gold Award (1 awardee): \$2000** for using UBSN equipment (If the group plans to use Human MRI with an approved project, it will be upgraded to **\$16000**)
 - Silver Award (1 awardee): \$1000** for using UBSN equipment (If the group plans to use Human MRI with an approved project, it will be upgraded to **\$8000**)
 - Bronze Award (1 awardee): \$500** for using UBSN equipment (If the group plans to use Human MRI with an approved project, it will be upgraded to **\$4800**)



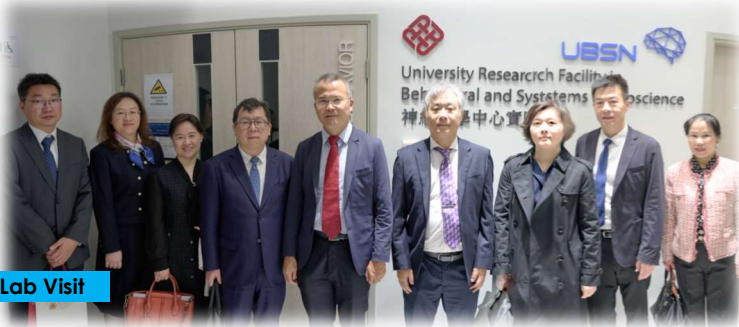
For eligibility, selection criteria, application form, and other information:

<https://www.polyu.edu.hk/ubsn/news-and-events/news/2025/ubsn-best-paper-award-2025-is-now-open-for-application/>

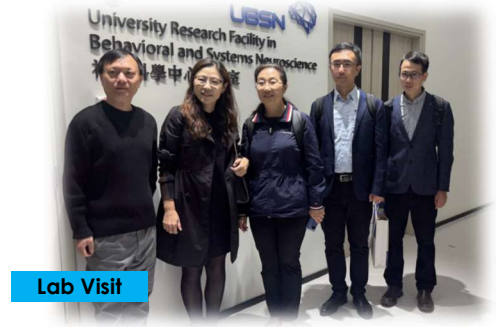
For any enquiries, please contact Dr. Celia Dong (E-mail: celia.dong@polyu.edu.hk), Tel: 2766 5384

Recent events at UBSN

In December, UBSN had the honour to welcome visitors from Southern Medical University. We were also thrilled to welcome visitors from Beijing Institute of Technology.

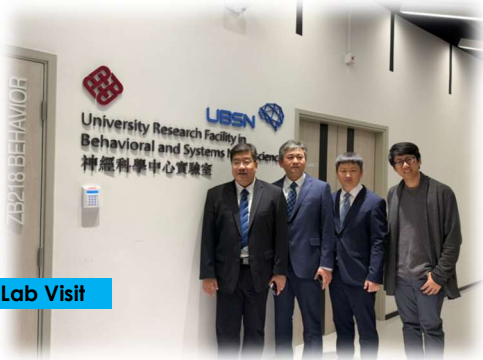


Visitors from Southern Medical University



Visitors from Beijing Institute of Technology

Later the same month, UBSN had visitors from Sir Run Run Shaw Hospital of Zhejiang University School of Medicine.



Visitors from Sir Run Run Shaw Hospital of Zhejiang University School of Medicine

In March, UBSN hosted a workshop titled "Geodesic High Dense EEG and Transcranial Electrical Neuromodulation" with MagstimEGI.



Geodesic High Dense EEG and Transcranial Electrical Neuromodulation Workshop

Instructor: MagstimEGI

At UBSN, we hope to bring users useful knowledge regularly and inspire more innovative research at PolyU. If you have any requests or suggestions on an equipment, drop us a message!

For more UBSN news and events, visit our website:

<https://www.polyu.edu.hk/ubsn/news-and-events/>

Upcoming Events at UBSN

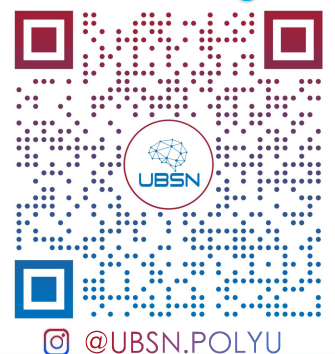
On 7th and 8th of June, UBSN and RIO are going to host the first Neuroscience Conference and Workshops! Distinguished keynote speakers and plenary speakers are invited to give seminars and share with you all their insights in neuroscience research!

On the other hand, UBSN regularly hosts seminars and workshops featuring UBSN equipment, let us know if you have any particular areas of interests!

Stay tuned by checking out our website:

<https://www.polyu.edu.hk/ubsn/news-and-events/>

Follow on Instagram:



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Have any questions? Interested in using our equipment? Please contact us!

Website: <https://www.polyu.edu.hk/ubsn>

E-mail: ubsn.enquiry@polyu.edu.hk

University Research Facility in
Behavioral and Systems Neuroscience

UBSN Neuroscience Conference & Workshops 2025

📅 7 & 8 June 2025 (Sat & Sun)

🕒 9:30 - 18:00

📍 Block Z,
The Hong Kong Polytechnic University

- 2/F Podium Exhibits
- Rm Z209, Z211 Seminars
- Rm ZB216-218 Lab Tours

Program Highlights

- ▶ Seminars from Keynote Presenters
- ▶ Seminars from Plenary Presenters
- ▶ Full-day Workshops with Certificate
- ▶ UBSN Poster Presentations
- ▶ UBSN Lab Tours introducing various equipment, e.g. Human 3T MRI, Mock MR, Human and Animal Electrophysiological and Behavioral equipment
- ▶ Vendor booths
- ▶ UBSN Best Paper Award, Best Poster Award
- ▶ UBSN Souvenirs (Fan, USB Drive, Travel Adaptor, etc)

Register Now



Keynote Speakers



Prof. Surjo R. SOEKADAR

Einstein Professor of Clinical Neurotechnology,
Head of Research Group Clinical Neurotechnology
(Clinical Neurotechnology Lab, Charité - Universitätsmedizin Berlin &
Applied Neurotechnology Lab, University of Tübingen, Germany)

Key Interests:

Brain-computer Interface, Brain-machine Interface, Brain Stimulation,
Neuroplasticity



Prof. Uri HASSON

Professor (Department of Psychology and Princeton Neuroscience
Institute, Princeton University, USA)

Key Interests:

NeuroAI, Human Cognitive Computation & Theory

Plenary Speakers



Prof. Yu ZHOU

Associate Professor,
Associate Chief Physician
(Neurovascular Center,
Changhai Hospital, Naval
Medical University, Shanghai,
China)



Dr. Calvin MAK

Deputy Chief of Service &
Consultant Neurosurgeon
(Queen Elizabeth Hospital,
Hong Kong, China)



Prof. Georg KRANZ

Associate Professor,
Presidential Young Scholar
(Department of Rehabilitation
Sciences, The Hong Kong
Polytechnic University,
Hong Kong, China)



Prof. Chun Liang HSU

Kuok Group Young Scholar,
Assistant Professor, Presidential
Young Scholar (Department of
Rehabilitation Sciences,
The Hong Kong Polytechnic
University, Hong Kong, China)

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