

# 2024 NeuroPsychoEconomics Conference Proceedings

<http://www.neuropsychoeconomics.org>

ISSN 1861-8243

## Imprint

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## Preface

This volume contains the abstracts of competitive papers and posters presented at the 20<sup>th</sup> NeuroPsychoEconomics Conference, held on June 6<sup>th</sup> and 7<sup>th</sup>, 2024, at Politecnico di Milano and organised by the Association for NeuroPsychoEconomics. The Association is committed to the promotion and dissemination of scientific research that spans the disciplines of neuroscience, psychology, economics, and their practical applications in fields such as marketing, management, organizational behaviour, and finance.

This year's conference, themed "Connecting the dots: The intersection of management, economics, neuroscience, and psychology" highlights the interdisciplinary nature of this field through six thematic tracks. These include consumer neuroscience, business and finance, methodological perspectives, decision-making, neuroeconomics, and service marketing, presenting both well-established and emerging research areas. The annual conference serves as a platform for scholars to present their research, engage in discussions, and exchange research ideas. One of the primary objectives of the conference is to provide scholars with constructive feedback that aids in the advancement of their research papers towards publication in high-quality journals.

Marking the 20<sup>th</sup> anniversary of this annual event, the conference features 26 research papers, demonstrating a broad spectrum of topics, theories, methodologies, and analytical tools. Also, this edition includes a symposium dedicated to neurofinance, an emerging area of interest for the Association and the academic community at large. The first 2024 keynote speech, entitled "The predictable brain - From stated responses, via neuroscience, to AI market predictions" is delivered by Thomas Zoëga Ramsøy, CEO and Founder of Neurons Inc, who is distinguished as one of the inaugural attendees of the early NeuroPsychoEconomics conferences. Additionally, a second keynote presentation titled "Mood, Mind, and Money: The Cognitive Processes Underlying Economic Decisions" is given by Benjamin Scheibehenne, Full Professor of Cognition and Consumer Behavior at the Karlsruhe Institute of Technology.

The Association for NeuroPsychoEconomics expresses its satisfaction with the ongoing development in the field and affirms that the conference continues to align closely with the Association's goals.

*Marco Mandolfo,  
President of the Executive Committee of  
the Association for NeuroPsychoEconomics*

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# Nudging healthier snack choices: A consumer neuroscience study on visual and olfactory interventions in university vending machines

Chiara Casiraghi, Simone Chiarelli, Alessandro Fici, Giuseppina Gifuni, Marco Bilucaglia, Alessandra Cecilia Jacomuzzi, Margherita Zito, Vincenzo Russo

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## Abstract

As students begin university, they often experience weight gain, making interventions in the academic environment crucial. Nudging, a subtle way to guide behavior shows promise in promoting healthier food choices; despite its success in school cafeterias, its application to vending machines remains limited. Our study aims to test the effectiveness of visual and olfactory nudges, alone and in combination, on university students' vending machine snack choices. Consumer neuroscience (Electroencephalography -EEG, skin conductance, and Eye-tracking) tools were employed to understand the cognitive and emotional effects of these nudges. 88 university students were exposed to different nudging conditions as they observed and selected snacks from a vending machine replica. Results showed that both visual and olfactory nudges significantly increased the selection of healthier snacks, while the combined condition did not. Skin conductance data suggested that the nudges may induce relaxation, which may promote healthier choices, while the EEG Approach-withdrawal Index (AWI) confirmed a lower cognitive orientation toward the snacks in the combined version. Eye-tracking data showed that healthy snacks' lower shelf positioning distracted attention from them; interestingly, the combined condition also delayed attention toward healthier products, suggesting this nudge condition's ineffectiveness. In conclusion, our study highlights the effectiveness of visual and olfactory nudges alone in promoting healthier vending machine snack choices among college students. However, combining sensory stimuli may reduce their effectiveness, suggesting the importance of using single sensory nudges. In addition, displaying healthier snacks at eye level may increase their visibility and attract students' attention, further promoting healthier choices. These findings have practical implications for designing interventions in academic settings to prevent weight gain and promote healthier eating behaviors among college students.



Association for  
NeuroPsychoEconomics



## CONNECTING THE DOTS: *The intersection of management, economics, neuroscience, and psychology*

*Conference Chair: Marco Mandolfo*

*Scientific and Organizing Committee: Andrea Bazzani, Lucrezia Fattobene, Aiqing Ling, Marco Barone, Debora Bettiga, Luis-Alberto Casado-Aranda, José Paulo Marques dos Santos, Leo van Brussel*

*Juries for Best Paper and Best Poster awards: Ale Smidts, Katsunori Yamada*



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Conference main sponsors:



# CONFERENCE PROGRAM

Thursday, June 6, 2024

- 1:00-2:00 PM: Registration  
Location: Main hall - Sala Consiglio (ground floor)
- 2:00-2:15 PM: Welcome note from the Conference Chair and the Director of the Department of Management Engineering of Politecnico di Milano  
*Marco Mandolfo*, Politecnico di Milano  
*Raffaella Cagliano*, Politecnico di Milano  
Location: Sala Consiglio
- 2:15-3:15 PM: Keynote speech I  
*Thomas Zoëga Ramsøy*, CEO and Founder of Neurons Inc.  
Location: Sala Consiglio
- 3:15-3:35 PM: Industry insights I  
*Davide Baldo*, IPSOS  
Location: Sala Consiglio
- 3:35-4:00 PM: Coffee break  
Location: Spazio Kaleidos
- 4:00-5:40 PM: **Session I**
- Track:** Consumer Neuroscience  
**Track chair:** Smidts, A.  
**Location:** Sala Consiglio
- 4:00 PM: *Hernández-Vergara, N. M., Casado-Aranda, L. A., Sánchez-Fernández, J.*  
Influencers vs. Experts: The power of source in the promotion of healthy habits through an fMRI study
- 4:20 PM: *Wang, M., Ling, A.*  
Predicting consumer purchase intention with different payment methods: A neuroforecasting approach with machine learning
- 4:40 PM: *Valesi, R., Laureanti, R., Ma, Q., Russo, V.*  
What role do different trailers play in shaping the experience and viewing of the same movie? A neuroscientific study on the effect of multiple trailers
- 5:00 PM: *Rossi, C., Fici, A., Bilucaglia, M., Casiraghi, C., Accardi, S., Zito, M., Russo, V.*  
Shopping in the metaverse: insight from a consumer neuroscience study
- 5:20 PM: *Casiraghi, C., Chiarelli, S., Fici, A., Gifuni, G., Bilucaglia, M., Jacomuzzi, A. C., Zito, M., Russo, V.*  
Nudging healthier snack choices: a consumer neuroscience study on visual and olfactory interventions in university vending machines

4:00-5:40 PM:

**Session I**

**Track:** Business & finance  
**Track chair:** Marques dos Santos, J. P.  
**Location:** Conference room 0.19

4:00 PM: *Bazzani, A., Magistrelli, G. M., Manfroni, G., Frumento, P., Faraguna, U., Turchetti, G.*

In human we do not trust. The impact of advisor humanization on young investors

4:20 PM: *Barone, M., Fattobene, L., Pomante, U., Ranalli, M.*

Unraveling financial advisors' success and behavior: The role of personal traits and emotional intelligence

4:40 PM: *Friederich, F., van Brussel, L., Genevsky, A., Martinovici, A.*

How price path characteristics influence the success of investment decisions

5:00 PM: *Li, J., Rossi-Lamastra, C., Manzi, C., Crapolicchio, E.*

Do female entrepreneurs prefer female business angels? Evidence from an Internet experiment

5:20 PM: *Bellora-Bienengräber, L., Mertins, L., Bassen, A., Tank, A.*

Making CSR count in performance evaluations: How the position of CSR measures, time pressure, and visual attention matter

5:45-6:30 PM:

Association for NeuroPsychoEconomics General Assembly  
Location: Sala Consiglio

8:00-11:00 PM:

Get-together over dinner (dinner covered by registration fee)  
Location: Osteria Brunello (Corso Garibaldi, 117, Milan)

## Friday, June 7, 2024

- 8:30-9:00 AM: Registration (continued)  
Location: Location: Main hall - Sala Consiglio
- 9:00-9:30 AM: Journal of Neuroscience, Psychology and Economics - Meet the Editor  
*Katsunori Yamada*, Kindai University  
Location: Sala Consiglio
- 9:30-10:30 AM: Keynote speech II  
*Benjamin Scheibehenne*, Karlsruhe Institute of Technology  
Location: Sala Consiglio
- 10:30-10:45 AM: Industry insights II  
*Francesca Marchionne*, iMotions  
Location: Sala Consiglio
- 10:45-11:15 AM: Coffee break  
Location: Spazio Kaleidos
- 11:15-12:45 PM: **Symposium**
- Theme:** Neurofinance: exploring the financial decision-making journey
- Organizers:** Barone, M., Bussoli, C., Brunetti, M., Carretta, A., Ceravolo, M. G., Farina, V., Filotto, U., Leonelli, L., Ling, A., Luzzi, S., Pomante, U., Ranalli, M.
- Session Chair:** Bonini, N.
- Location:** Sala Consiglio
- 11:15 AM: *Fattobene, L.*  
Introduction & presentation of the Italian Inter-universities' Association in Neuroeconomics BrainLine
- 11:25 AM: *Brunetti, M., Ceravolo, M. G., Farina, V., Fattobene, L., Filotto, U., Leonelli, L.*  
Human vs Algorithm advice: visual mechanisms in borrowing decisions
- 11:45 AM: *Barone, M., Bussoli, C., Carretta, A., Fattobene, L., Luzzi, S.*  
Calm down! The emotional impact of avatar in the financial profiling phase
- 12:05 AM: *Barone, M., Bussoli, C., Fattobene, L., Ling, A.*  
Attentional mechanisms of the same gender bias in equity crowdfunding: an eye-tracking study
- 12:25 AM: *Fattobene, L., Pomante, U., Ranalli, M.*  
Sustainability is in the eye of the beholder: the influence of the ESG label on attention and attractivity of investment products
- 12:45-2:00 PM: Poster session and lunch  
Location: Spazio Kaleidos (lunch) and conference room 0.18 (posters)

2:00-3:20 PM:

**Session II**

**Track:** Methodological perspectives

**Track chair:** Casado-Aranda, L. A.

**Location:** Sala Consiglio

2:00 PM: *Leeuwis, N., Broers, I., van Bommel, T., Alimardani, M.*  
A closer look at Frontal Alpha Asymmetry as an indicator of emotions; everything, all at once? or none at all?

2:20 PM: *Marques dos Santos, J. P., Marques dos Santos, J. D.*  
Exploring the brain paths of brand perception with fMRI and xAI (Explainable Artificial Intelligence)

2:40 PM: *Klumpp, M., Meiser, A., Polenghi, A., Mandolfo, M.*  
Welcome to the jungle – Evaluation and cross-validation of human data sources for analyzing human-centric manufacturing and logistics processes

3:00 PM: *Azevedo, M. I., Silva, D., Marques dos Santos, J. P.*  
Does brand preference arise in the first 200 ms? Part II: Participation of the C1-P1-N170 complex?

**Track:** Decision making

**Track chair:** Ling, A.

**Location:** Conference room 0.19

2:00 PM: *Tozzi, E., Rossi, R., Turner, S., Nairn, A.*  
Betting on emotions: unveiling children's psychophysiological responses to social media gambling ads and the influence of educational interventions

2:20 PM: *Dorigoni, A., Bonini, N.*  
Fast and wrong: An eye-tracking exploration on how low "cognitive reflection" people analyze and choose commercial packages with multi-dimensional prices

2:40 PM: *Murali Parthasarathy, K.*  
Temporal dependency modeling in lane-changing decisions using long short-term memory networks

3:00 PM: *Alvino, L., Hartung, L., Leszkiewicz, A.,*  
Mind meets tech: A review of consumer neuroscience and immersive technologies

3:20-3:50 PM:

Coffee break

Location: Spazio Kaleidos



3:50-5:10 PM:

**Session III**

**Track:** Neuroeconomics

**Track chair:** Fattobene, L.

**Location:** Sala Consiglio

3:50 PM: *Díaz-Gutiérrez, P., Declerck, C., Boone, C.*  
Disentangling the neural mechanisms underlying stereotyping vs. in/out-group categorization and their effect on fair behavior

4:10 PM: *van Brussel, L., Smidts, A., Boksem, M.*  
Split or steal? The neural correlates of judging others' intention to cooperate

4:30 PM: *Dantas, A. M., Bruggen, E., Sack, A., Jiao, P., Schuhmann, T.*  
A gut feeling: Exploring the effects of probiotics on risk-taking behavior using TMS and EEG

4:50 PM: *Ashton, L., Nebout, A., Kemel, E.*  
Hunger games: does hunger influence risk preferences?

3:50-5:10 PM:

**Session III**

**Track:** Service marketing

**Track chair:** Bazzani, A.

**Location:** Conference room 0.19

3:50 PM: *Costa-Feito, A., Rodríguez-Santos, C., González-Fernández, A. M., Bazzani, A.*  
Examining how cognitive and affective processing of promotional videos influence generation Z travel decisions

4:10 PM: *Bettiga, D., Mandolfo, M., Reali, P., Chirico, A., Sarcinella E. D., Lauro, V., Lamberti, L., Gaggioli, A.*  
Aesthetic emotions and tourism behaviours: impacts of interactive versus non-interactive virtual reality (VR) experiences

4:30 PM: *Lorandi, M., Di Dalmazi, M., Mandolfo, M., Noci, G.*  
VR immersive experiences in tourism: an EEG study

4:50 PM: *Costa-Feito, A., González-Fernández, A. M., Rodríguez-Santos, C., Marques dos Santos, J. P.*  
Exploring the dynamics of cognitive and affective processing in generation Z travel decision-making in urban destinations

5:15-5:30 PM:

Outlook to the 2025 NeuroPsychoEconomics Conference  
*Aiqing Ling*, UCD Michael Smurfit Graduate Business School  
Location: Sala Consiglio

5:30-6:00 PM:

Best-paper-of-the-conference award ceremony & Good-bye note  
*Marco Mandolfo*, Politecnico di Milano  
Location: Sala Consiglio

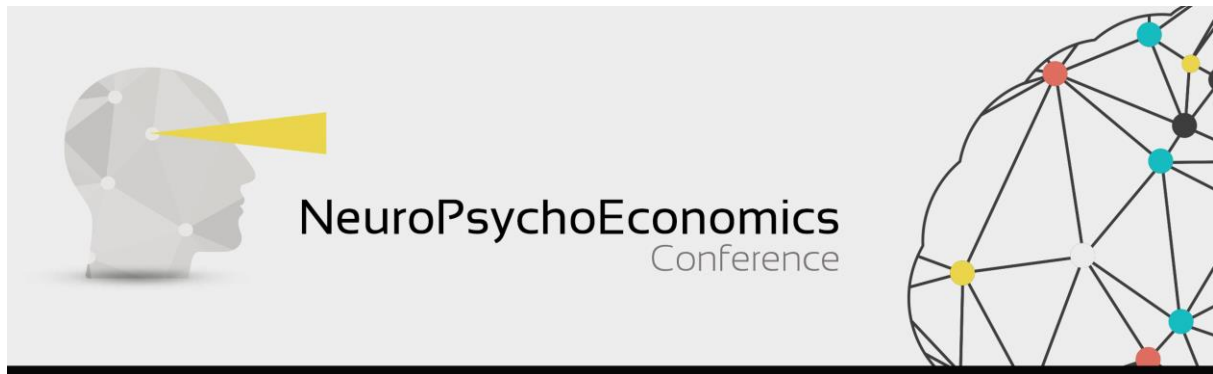
*The conference language is English.*

## POSTER PRESENTATIONS

Poster presentations will take place on Friday, June 7 from 12:45 to 2:00 PM (Location: Conference room 0.18).

Poster session presenters must hang their poster during the coffee break on June 7 at 10:45-11:15 AM at designated spaces and take them off again at the end of the poster session.

- P01** *Bussoli, C., Fattobene, L., Intini, S.,*  
Determinants of digital financial behavior
- P02** *Chiarelli, S., Casiraghi, C., Fici, A., Bilucaglia, M., Piccoli, F., Zito, M., Russo, V.*  
Cognitive and emotional underpinnings of eating: a consumer neuroscience approach
- P03** *Colautti, L., Robba, M. P., Antonietti, A., Iannello, P.*  
Disentangling the role of individual differences in older adults' financial decision making: A latent profile analysis
- P04** *Columbano, M., Zito, M., Russo, V.*  
The role of packaging cues on perceived environmental friendliness: A behavioral pilot
- P05** *Del Puppo, L., Mandolfo, M., Reali, P., Coelli, S.*  
Bridging heart and mind: Investigating emotional effects on heartbeat-evoked potential signals
- P06** *Díaz-Gutiérrez, P., Boone, C., Declerck, C.*  
OT shapes heuristic information-processing to solve coordination problems
- P07** *Gasulla-Tortajada, E., Duarte, P., C. Silva, S.*  
Sustainable consumption through the lens of neuroscience: A review and future research agenda
- P08** *Graziano, E. A., Musella, F., Petroccione, G.*  
Understanding cashless payment behavior during the COVID-19 pandemic: The role of financial literacy, media coverage anxiety, and gender moderation
- P09** *Javaheri, N., Doehring, N., Mulay, R., Erhard, P., Herrmann, M.*  
Predicting attributes of dietary decisions with the Nutri-Score
- P10** *Lorandi, M., Bettiga, D., Di Paolo, F., Noci, G.*  
Immersive touristic experiences through AR: A neurophysiological study on consumers
- P11** *Mulay, R., Doehring, N., Erhard, P., Javaheri, N., Herrmann, M.*  
Neural correlates of acute induced stress and decision-making under risk: an fMRI study
- P12** *Robba, M., Sorgente, A., Iannello, P.*  
Profiling socially responsible investors: going beyond classical antecedents of investment decision-making
- P13** *Seernani, D., Gregoret, L., Wilson, J.*  
In-Lab and remote webcam-based respiration: A promising candidate for neuromarketing?
- P14** *Yuksel, M., Miller, E., Iyer, E.*  
Spoilers in entertainment consumption
- P15** *Zubiel, M.,*  
Unlocking minds: Exploring the narrative economy through neuropsychological insights



## Nominees for Best Paper award

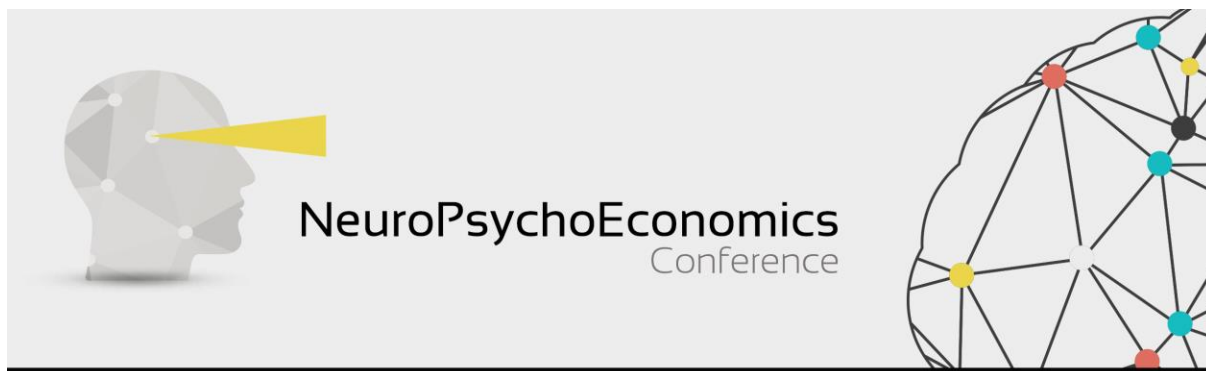
- *Dantas, A., Bruggen, E., Sack, A., Jiao, P., Schuhmann, T.* A gut feeling: Exploring the effects of probiotics on risk-taking behavior using TMS and EEG
- *Dorigoni, A., Bonini, N.* Fast and wrong: An eye-tracking exploration on how low “cognitive reflection” people analyze and choose commercial packages with multi-dimensional prices
- *Friederich, F., van Brussel, L., Genevsky, A., Martinovici, A.* How price path characteristics influence the success of investment decisions
- **Recipient of the Runner up – Best paper award:** *Hernández-Vergara, N. M., Casado-Aranda, L. A., Sánchez-Fernández, J.* Influencers vs. Experts: The power of source in the promotion of healthy habits through an fMRI study
- **Recipient of the Best paper award:** *Marques dos Santos, J. P., Marques dos Santos, J. D.* Exploring the brain paths of brand perception with fMRI and xAI (Explainable Artificial Intelligence)

## Nominees for Best Poster award

- *Colautti, L., Robba, M. P., Antonietti, A., Iannello, P.* Disentangling the role of individual differences in older adults’ financial decision making: A latent profile analysis
- **Recipient of the Best poster award:** *Díaz-Gutiérrez, P., Boone, C., Declerck, C.* OT shapes heuristic information-processing to solve coordination problems
- *Javaheri, N., Doehring, N., Mulay, R., Erhard, P., Herrmann, M.* Predicting attributes of dietary decisions with the Nutri-Score

## Juries for Best Paper and Best Poster awards

*Ale Smidts, Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands*  
*Katsunori Yamada, Kindai University, Japan*



## 2025 Call for submissions

We are happy to announce that submissions are now open for the 21st Annual NeuroPsychoEconomics Conference in **Dublin, Ireland**. The conference will be held on **June 5-6, 2025** at Michael Smurfit Graduate Business School, University College Dublin (<https://www.smurfitschool.ie>).

The **deadline for submissions** is **February 15, 2025**, 11:59pm CET.

The conference theme of 2025 is:

### **“Purposeful Choices: Leverage Interdisciplinary Business Research for Collective Good”**

Preferred topics address challenges in economics, management, marketing, finance, psychology and neuroscience include (but are not limited to):

#### **Trust, Collaboration, and Social Influence for Collective Good:**

- Exploring how corporate social responsibility initiatives shape corporate public reputation, consumer/investor engagement and long-term profitability
- Exploring the outcomes of collaborative efforts between corporations, consumers/investors, and communities in addressing social and environmental issues
- Analyzing the neuropsychological mechanisms that foster trust and loyalty in consumer/investors and corporate interactions
- Investigating the role of social norms and peer influence in promoting pro-social or pro-environmental behaviors

#### **Sustainable and Healthy Consumer Behavior:**

- Understanding the psychological drivers or hinders of sustainable and responsible consumption
- Examining the impact of sustainability-focused marketing or economic strategies on consumer choices and preferences and its underlying neuropsychological mechanisms
- Exploring consumer neuroscience applications in promoting healthy lifestyles and effective communication in healthcare
- Investigating how managing sustainable supply chains, considering factors like carbon emissions and climate change, influences consumer behavior

#### **Adoption, Application and Consequences of Technological Innovations:**

- Investigating factors that facilitate the adoption of technological innovations
- Assessing the accuracy, efficiency and reliability of human collaboration with technologies (such as AI, VR or automation technologies)
- Examining the ethical considerations and societal impact of new technologies and how potential biases could be mitigated
- Understanding the impact of technological innovations on consumers/investors' perceptions, preferences, emotions, and choices