IATBR 2018

Santa Barbara - California

16th July 2018

Keynote Opening talk

OUR IATBR:
45 years contributing to travel behaviour research

Elisabetta Cherchi

Newcastle University
UK | Malaysia | Singapore

School of Engineering

Acknowledgement

Thanks to Kostas Goulias

For organising this conference

… it promises to be another excellent IATBR conference

For inviting me to open the congress

… I am honoured to be the Chair of the IATBR and to be here to welcome you

Acknowledgement

Thanks to the IATBR officers and board members

… I have been involved in the IATBR organisation since 2010 as board member. In these 8 years I have had the pleasure to collaborate with great colleagues.

Current officers:

Pat Mokhtarian (Past Chair)
Kostas Goulias (Vice Chair)
Abdul Pinjari (Secretary/Treasurer)

Current Board Members:

Charisma Choudhury
Junyi Zhang
Matthew Roorda
Ricardo Daziano
Yusak Susilo

Previous officers:

Yoram Shiftan (Secretary/Treasurer & Chair)
Juan de Dios Ortúzar & Harry Timmermans (Co-Chairs)
Ram M. Pendyala (Chair)

Go to the IATBR website www.iatbr.org for all the names of those who greatly contributed to the IATBR (officers, board members, Lifetime winners and Eric Pas Prize awardees, conference organisers)

Elisabetta Cherchi

Acknowledgement

Thanks to all of you, IATBR members:

… You are the reason why the IATBR and this conference exists and it is so successful

The conference started in 1973 … 45 years ago

this is the 15th IATBR conference, BUT we had actually 17 conferences

The current name *International Association for Travel Behaviour Research* appeared in the 1991 conference in Quebec (Canada)

Before we were:

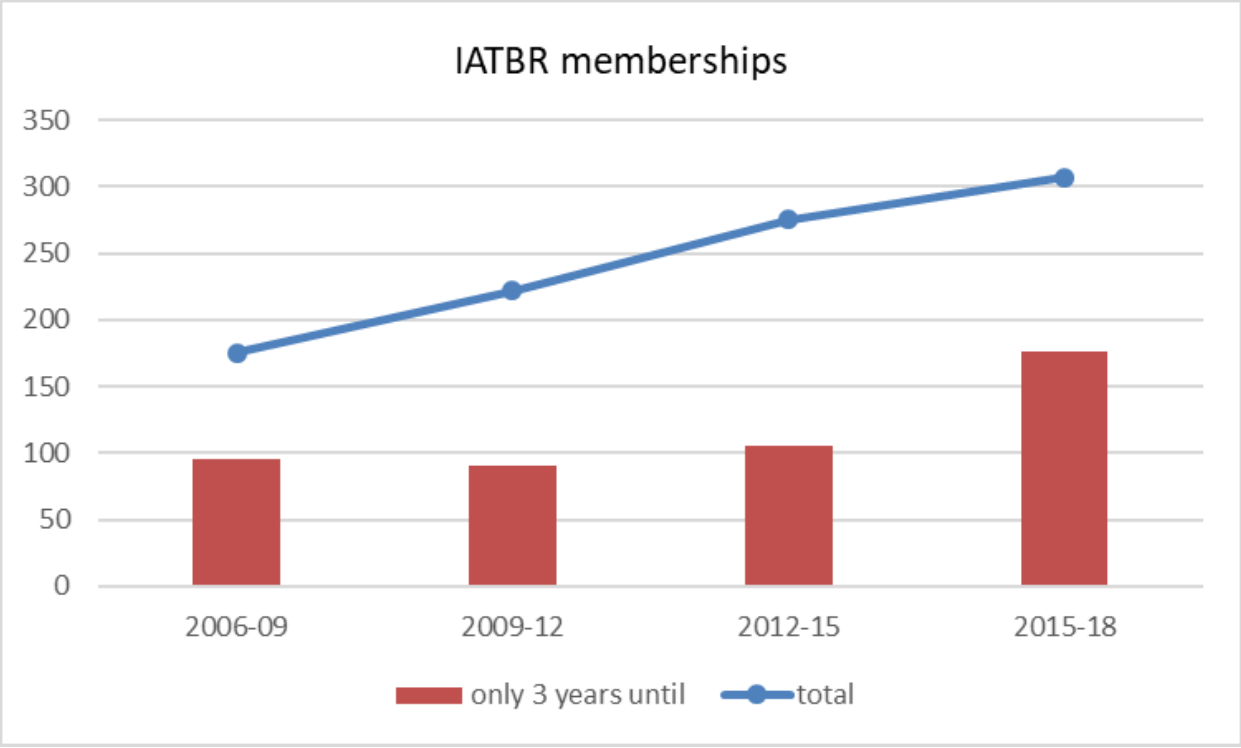
International Association for Travel Behaviour (in 1985 and 1987 conferences)

… and there was a *President* of the association!

Acknowledgement

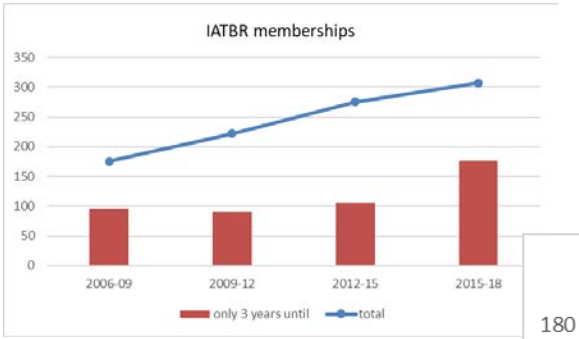
Between 2006 and 2018

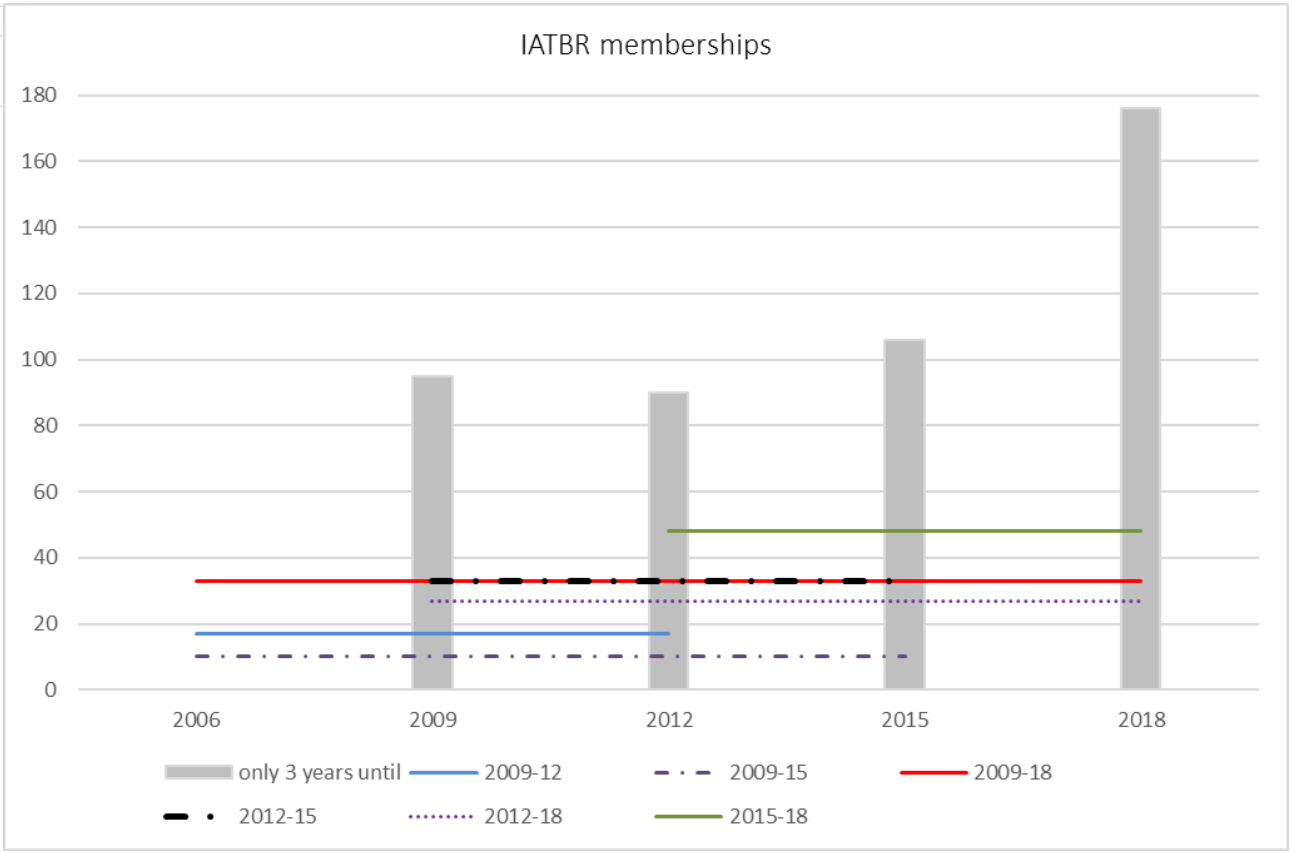
… 700 participants (not including the new participants to this 2018 conference)



Elisabetta Cherchi

Acknowledgement





Elisabetta Cherchi

Acknowledgement

Elisabetta Cherchi

Acknowledgement

Elisabetta Cherchi

45 years of research …

… on Travel Behaviour

This is a fascinating and extremely important area of research

Very complex and difficult to study

Where amazing advances have been produced

And the IATBR community has contributed significantly

… but understanding (travel) behaviour represents one of the key research challenges of our time

...Extremely important

1957 Nobel prize for the Literature

Albert Camus

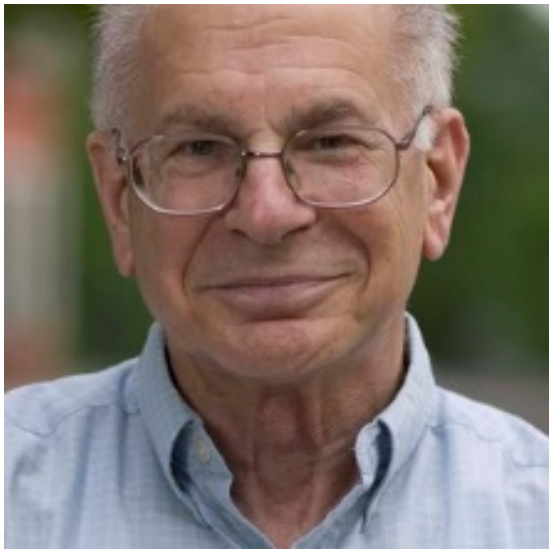
"Life is the sum of all your choices.
What are you doing now?"

The decision-making process before the choice can be very simple (rely on sensory filters), or involve complex cognitive processes like problem-solving.

...Extremely important

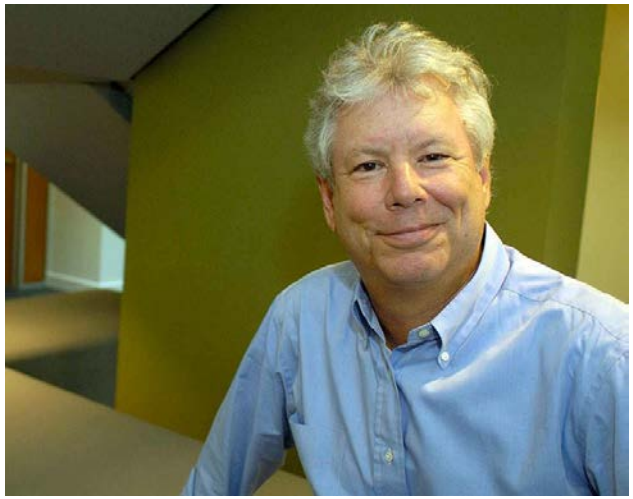
Daniel McFadden

2000 Nobel Prize
in Economics
Development of theory and methods for analysing discrete choice.



Daniel Kahneman

2002 Nobel Prize
in Economics
Behavioural models for individual choices under risk (prospect theory)



Richard Thaler

2017 Nobel Prize
in Economics
Consequences of limited rationality, social preferences, and lack of self-control, in individual decisions as well as market outcomes.

...Extremely complex

Our focus is transport behaviour, i.e. individuals who travel

Individuals' trips

...Extremely complex

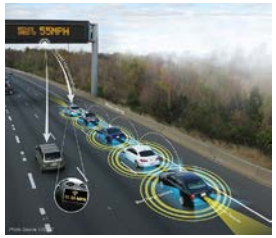
Our focus is transport behaviour, i.e. individuals who travel

But individuals are not in a bubble …

...Extremely complex

Our behaviour is affected by … almost everything around us!

New technology



Information

Family

Colleagues

Friends

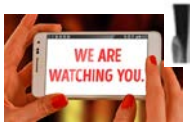
Watching others

Transport

Individuals' trips

Friends of friends

Been observed by others



Urban/economic environment

Activities performed

People we do not know

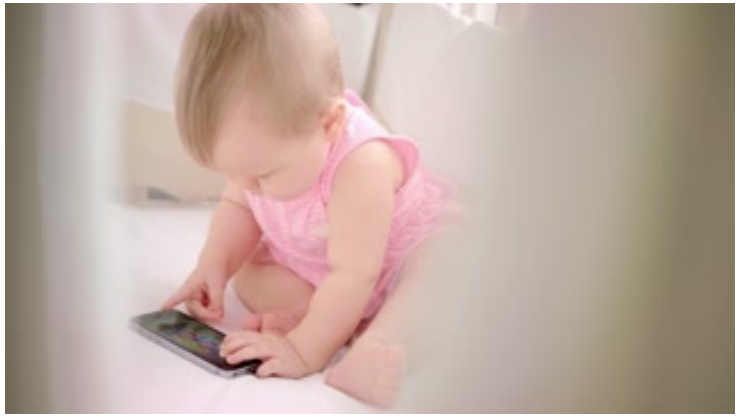
Elisabetta Cherchi

...Extremely complex

Our behaviour is affected by … almost everything around us!

And of course this complex system is not static, but evolves over time.
It changes and adapts to new developments (for example technology) that become available.

Some of us adapt much faster …



But we are all affected.

In UK, 47% of over 65 has a smartphone
(20% for people between 55-64 and 96% for people below 34)

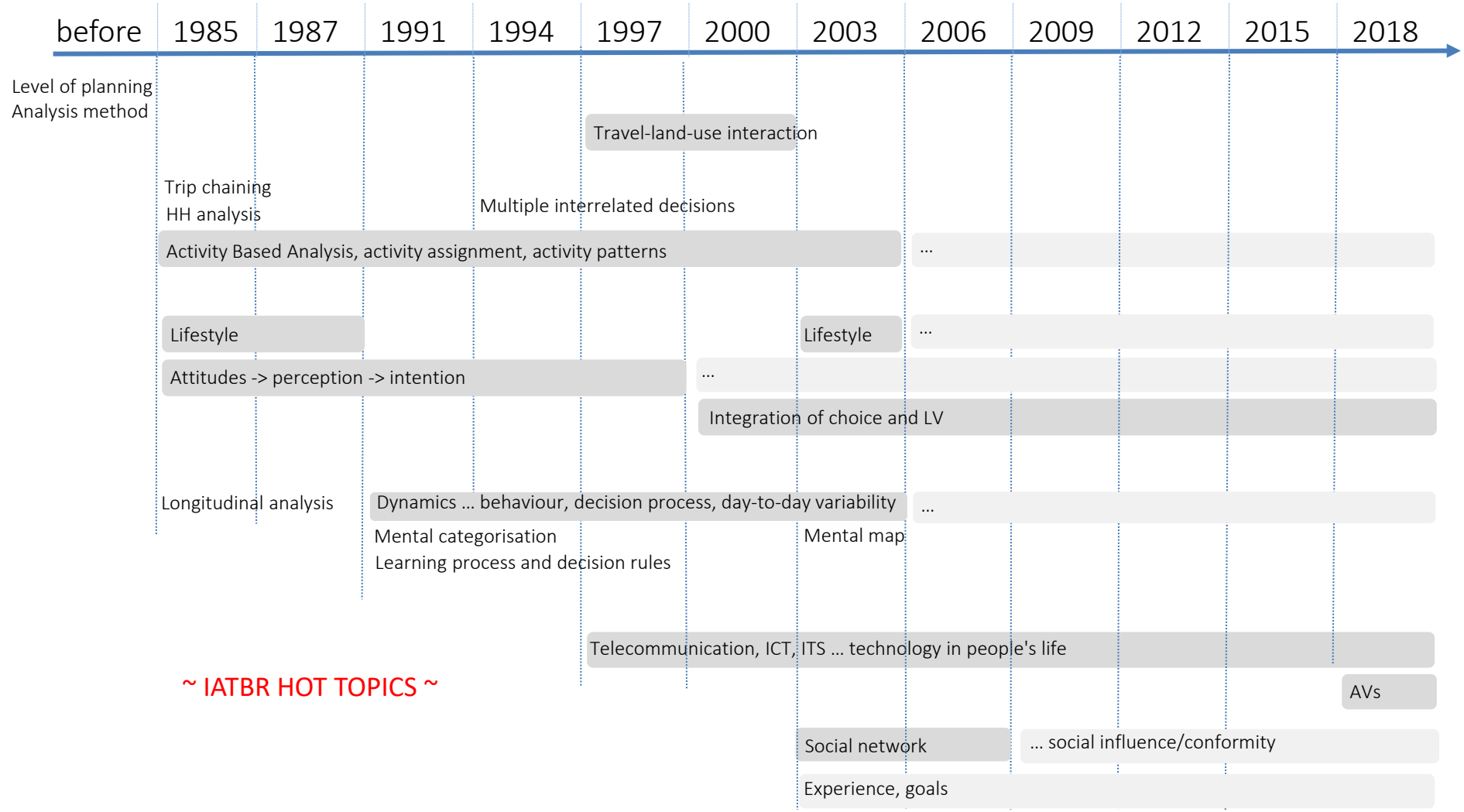
In U.S., 42% of the over 65 say they own smartphones.

But smartphone is the most adopted technology (% are lower of other technologies such as use the internet).

Tech adoption rates have been increasing for that demographic everywhere.

…IATBR contribution

Our behaviour is affected by … almost everything around us!



…IATBR contribution

IATBR 1985: Behavioural Research for Transport Policy,
Aad Ruhl, Chairman of the International Association for Travel Behaviour

"The main problem with behavioural research on transport is not so much that it is insufficiently advanced, but that is split into many different approaches, in some cases without intercommunication. Some approaches are dictated by mathematical considerations, others by types of data collection, and others again by the context in which they see people's travel. A policy maker wanting to obtain information from behavioural research would have considerable difficulty on deciding which stream to address and would obtain very different answers depending on which expert he or she contacts."

This is still true … to some extent.

BUT since 1985 the IATBR community has made immense progresses in integrating theories, data and contexts.

…IATBR contribution

More than that …

"Transport" is also probably the most interdisciplinary field of research!

The introduction of the IATBR book from the conference in 1997 says:

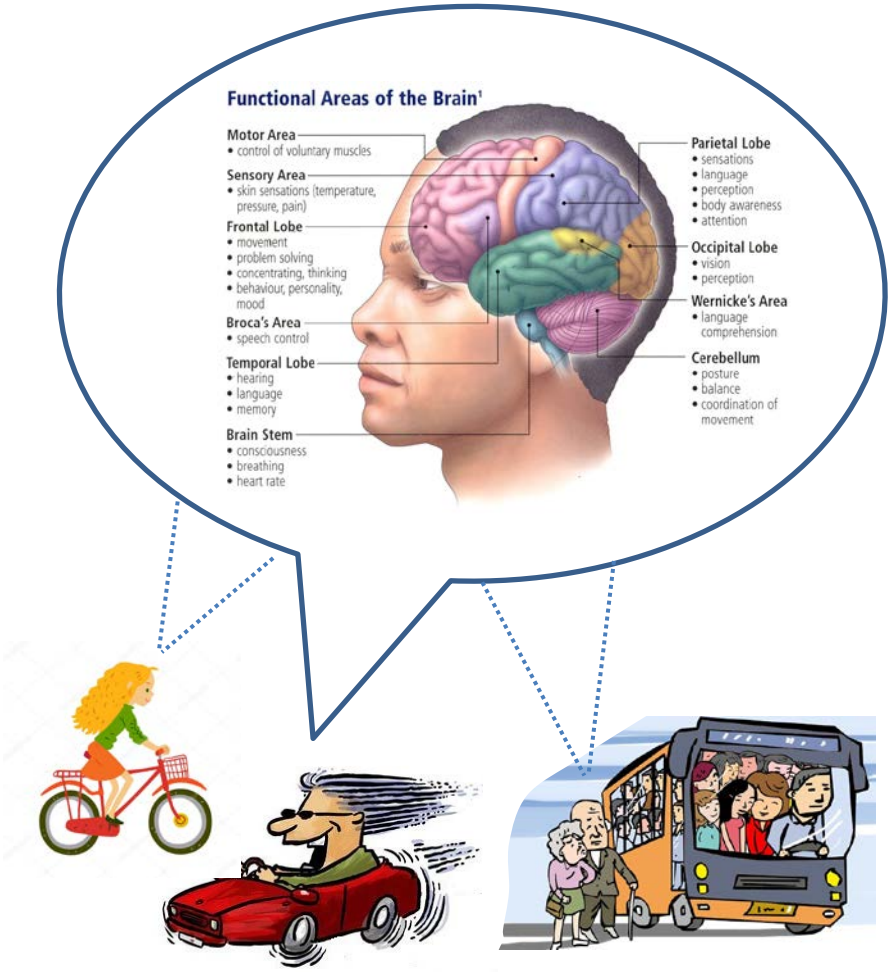
Through the interaction of disciplines like economics, psychology, sociology, statistics, artificial intelligence, management science, urban planning, geography and transportation systems engineering emerge new ideas and new approaches to grapple with the complexity of travel and activity behaviour."

Indeed this is what IATBR research has done in all these 45 years.

The IATBR community has provided a great contribution to the development of an integrated and unified theory of behaviour.

…More research challenges

Our behaviour is affected by … almost everything around us!
But ALSO inside us! And more disciplines we can draw from …



Neuroscientists assert that the brain is a highly efficient computational machine.

Your brain is (almost) perfect.
Read Montague (2007).

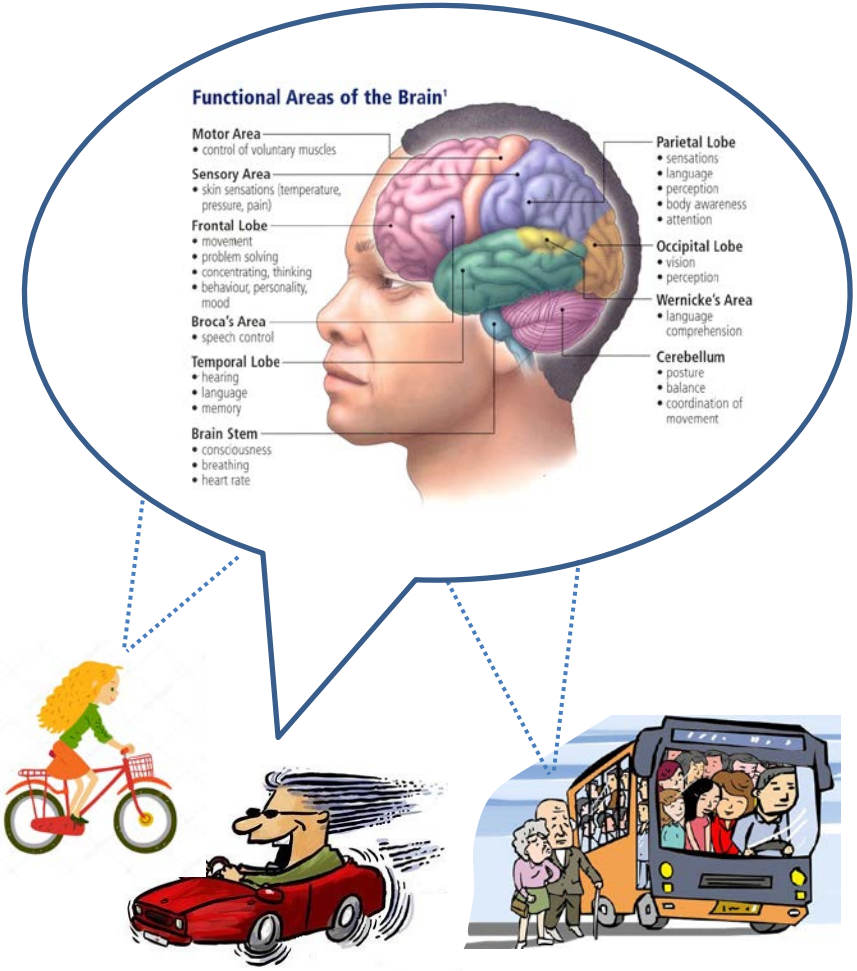
Our brains computes slowly and softly
-> Faster rates of computation consume more energy for unit time.

Our brain is as imprecise as possible and compresses everything
-> More space consumes more resources, even if only storage space.

Our brains stays off the lines
-> Any communication consumes energy

… More research challenges

Our behaviour is affected by … almost everything around us!
But ALSO inside us! And more disciplines we can draw from …



Based on this knowledge about how the brain works, neuroeconomists have been able to show that, for example:

"*there is a physiological basis for the cognitive anomalies such as loss aversion, the endowment effect … that psychologists have identified*."

Daniel McFadden.
Interview with Phil Thornton (2014)

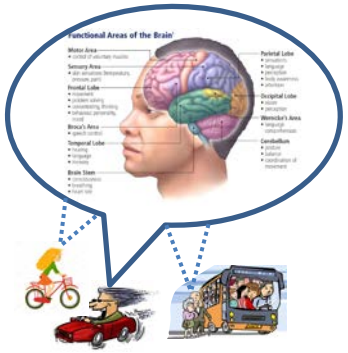
And also that

"*there are typically differences in the intensity of neural activation when subjects make real versus hypothetical choices*"

Colin Camerer and Dean Mobbs
Trends in Cognitive Science (2017)

… More research challenges

Our behaviour is affected by … almost everything around us!
But ALSO within us!



Colin Camerer and Dean Mobbs
"Differences in Behavior and Brain Activity during Hypothetical and Real Choices"
Trends in Cognitive Science (2017)

Evidences in five domains (sociality, morality, emotion, economic choice, and vision) showed that:

- In many cases studied, hypothetical choice tasks give an incomplete picture of brain circuitry that is active during real choice.
- Brain activation is stronger and more widespread under real choice conditions than in hypothetical conditions.

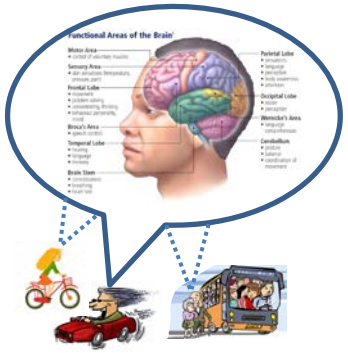
This means that:

- more functions are involved in a real choice setting and
- most stimuli used to study human behaviour are not likely to evoke all the functional human responses that are present in natural, dynamic contexts.

"In a nonchoice domain such as motor actions, brain scans typically show substantial overlap between activity during imagined and real movements."

…More research challenges

Our behaviour is affected by … almost everything around us!
But ALSO within us!



For examples:

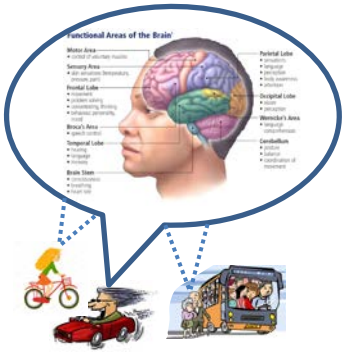
Consumer Choice.
Consumers typically report a probability of choosing to buy a product, which is higher compared with the actual purchase.

There are neural differences between hypothetical and real purchases.

- Simply anticipating the prospect of actually owing the product activates distinct areas in the brain (such as reward anticipation, emotion, etc.), even though the visual images of the product is exactly the same.
- For more complex and meaningful objects respondents use more visual working memory (which means that the brain holds visual information in an active state, making it available for cognitive processing).

… More research challenges

Our behaviour is affected by … almost everything around us!
But ALSO within us!



Significant differences were also found in

Forecast of innovation (EV, AV)

Personal Choice Forecasting

Choices that have real consequences in the future.

It is possible that current brain activity treats the choice similar to a hypothetical one, by not mentally simulating exactly what the real future experience will be like.

Social network Social conformity

Social Interactions

During live social interactions, compared with recorded ones, there is more activity in many cortical mentalizing regions, indicating a more functions are activated.

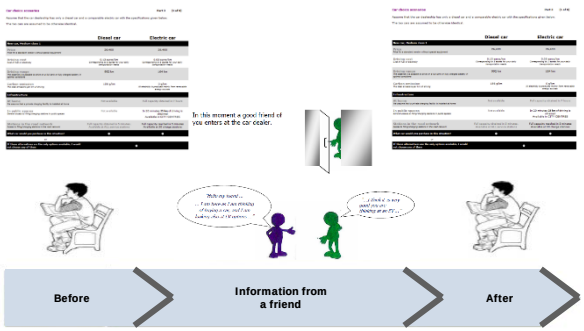
… More research challenges

I have recently been working on the impact of Social Conformity in the choice of EV, using Stated Choice experiments:

Cherchi, E. (2017) A stated choice experiment to measure the effect of social conformity in the preference for electric vehicles. *Transportation Research* A 100, 88-104

… More research challenges

Stated Choice experiment to measure Informational Conformity



Measure real behaviours

BUT this is not always feasible

=> innovations not yet in the market

Improve the hypothetical experiments

Correction for true life interaction bias:

e.g. a spectatorial approach

Correction for the stimulus:

e.g. making it as real as possible

Correct a posteriori the bias

Some studies found up to 50% overestimation of WTP in hypothetical versus real choices. They were able to measure the part of the hypothetical bias related to the over-weighted price and found that once controlled for this bias, there was less differences in the neural activity between real and hypothetical choices.

Brain-as predictor approach

Found that viewers' brain activation while watching a set of commercials predicted the success of the commercials better than viewers' reports of the ads' effectiveness.

45 years of research …

… on Travel Behaviour

This is a fascinating and **extremely important** area of research

Extremely complex and difficult to study

Amazing advances have been produced

And the **IATBR community has contributed** significantly

… but understanding (travel) behaviour represents one of the key research challenges of our time

This is just an example, there are many more challenges

It is fascinating and stimulating to see how much is ahead … still to be studied and discovered

To conclude …

Do not wait for the changes to happen:

"get involved in the types of research and the bridge between economics and other disciplines and play a role in making this come true."

McFadden (2014)

Enjoy this conference …

Keep contributing to travel behaviour research!

Newcastle University
UK | Malaysia | Singapore

Many thanks