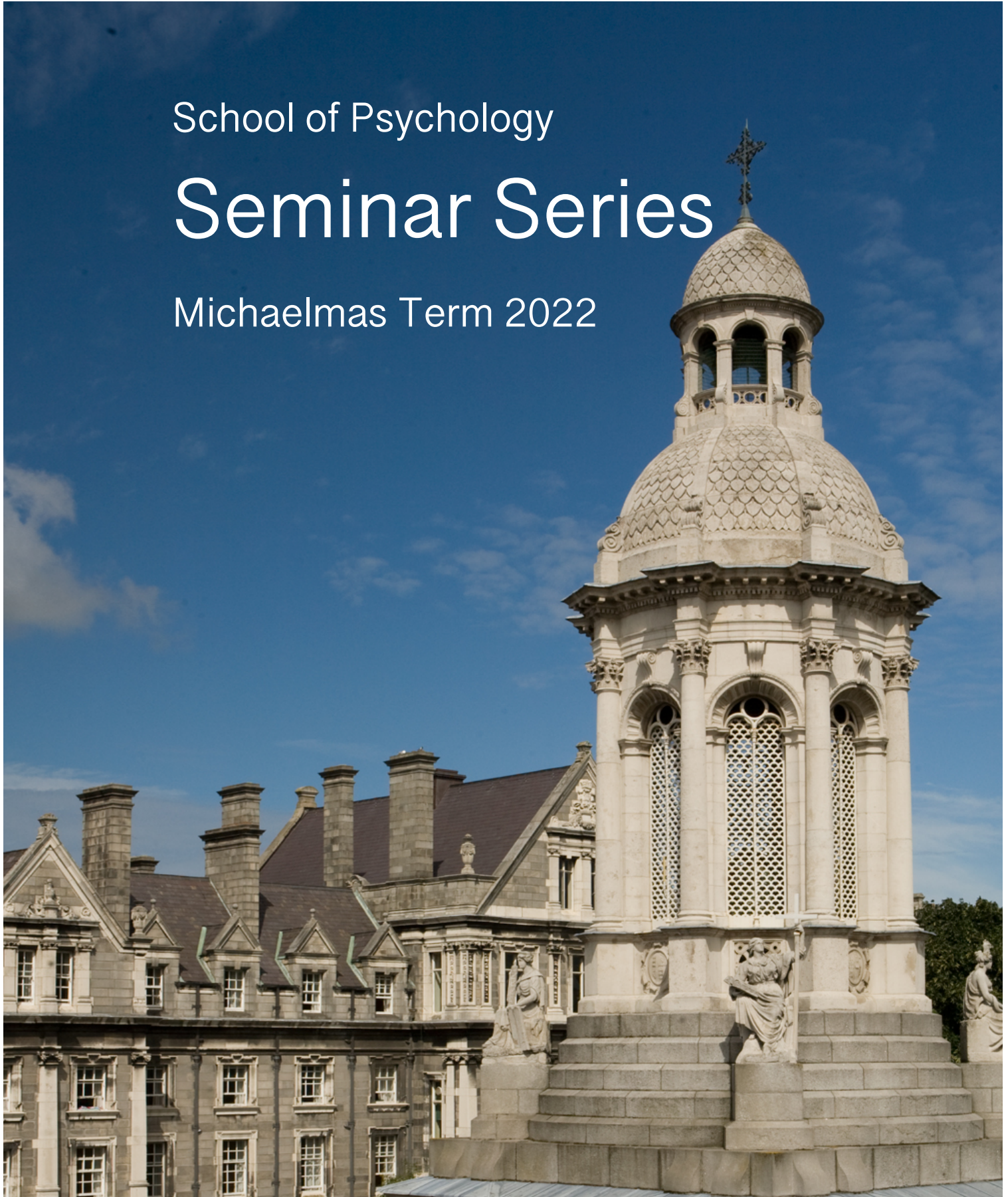**Trinity College Dublin**
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

School of Psychology

# Seminar Series

Michaelmas Term 2022

# LINE-UP AT A GLANCE

Sept 22nd, 2022, 1pm

**Professor Jonathan Bricker**, University of Washington

*From apps to chatbots: Developing and testing theory-driven digital interventions for cigarette smoking cessation*

Hosted by: Dr Rob Whelan

October 13th, 2022, 1pm

**Professor Robert Snowdon**, University of Cardiff

*Emotional Processing in Psychopathy and Trauma*

Hosted by: Dr Lorraine Swords

October 27th, 2022, 1pm

**Dr Eirini Karyotaki**, University of Amsterdam

*Internet based interventions for depression: Results of a series of individual patient data (network) meta-analyses.*

Hosted by: Dr Ladislav Timulak

November 10th, 2022, 1pm

**Professor Ben Gardner**, University of Surrey

*What's in a habit? Understanding the role(s) of habit in real-world behaviour*

Hosted by: Professor David Hevey

November 17th, 2022, 1pm

**Professor Dirk de Ridder**, University of Otago

*From phrenological single target to multifocal network neuromodulation*

Hosted by: Professor Sven Vanneste

December 8th, 2022, 1pm

**Dr Robert Wilson**, University of Arizona

*Information, randomization and simulation in exploration and exploitation*

Hosted by: Prof Sonia Bishop

*Talks will take place in-person in the Lloyd Building, LB11 and begin sharply at 1pm.*

*A light sandwich lunch with tea and coffee will be provided in the 3rd floor common room from 2pm, providing a chance to interact with the speaker, other staff, faculty, and students.*

# PROFESSOR JONATHAN BRICKER, UNIVERSITY OF WASHINGTON

## HOSTED BY DR ROBERT WHELAN

### From apps to chatbots: Developing and testing theory-driven digital interventions for cigarette smoking cessation

Globally, cigarette smoking is a leading cause of cancer and premature death. There are nearly 500 smartphone applications for smoking cessation which have been downloaded over 33 million times. And chatbots are an emerging digital platform for creating therapeutic interactions for stopping smoking. In this talk, I will provide the 9 years of history of the design, theory, development, and testing of a smartphone app called "iCanQuit" and more recently, a chatbot called "QuitBot", that were developed in my Health and Behavioral Innovations in Technology (HABIT) lab. Both digital platforms are driven by Acceptance and Commitment Therapy (ACT). I will then present the recent efficacy results from a large (N = 2415; 35% racial/ethnic minority; 50 US States) NIH-funded randomized controlled trial with 12-month follow-up (87% retention) that tested iCanQuit along with results on ACT-based mediators and for various vulnerable populations (e.g., low income). I will present the QuitBot randomized trial now underway and live demonstrate the Natural Language Understanding capabilities of this chatbot. I will conclude by discussing the implications of these digital platforms for mhealth and behavioral intervention research.

## BIOGRAPHY

Dr. Jonathan Bricker a professor of Public Health at the Fred Hutchinson Cancer Research Center, and the University of Washington in Seattle, Washington, he is founder and leader of the Health and Behavioral Innovations in Technology ("HABIT") Research Group, and a licensed clinical psychologist. His research group focuses on developing and testing innovative theory-based behavioral interventions for tobacco cessation and weight loss, especially those delivered in widely disseminable technology platforms. His current grants focus on testing a machine learning natural language processing "chat bot" for quitting smoking, several smartphone applications for tobacco cessation in the general population, among cancer patients, and among adolescents, and a weight loss telephone coaching program based on ACT. His TEDx talk has been viewed over 7 million times and his work has been featured in popular books, documentaries, and news outlets across the world.

# PROFESSOR ROBERT SNOWDEN, CARDIFF UNIVERSITY
### HOSTED BY DR LORRAINE SWORDS

## Emotional Processing in Psychopathy and Trauma

Many psychopathologies are associated with dysfunction in emotional processes. Psychopathy (a personality disorder associated with egocentricity and cold-heartedness) has been suggested to be underpinned by an inability to feel emotions (particularly threat), while Post-traumatic stress disorder (PTSD) has been suggested to be associated with a hypervigilance to emotion (particularly threat). Theories of which emotions might be affected, and what aspects of each disorder, will be explored via both psychophysiological (e.g., pupillometry) and behavioural methods.

## BIOGRAPHY

Bob Snowden was educated at York University (BSc) and Cambridge University (PhD) before completing post-doctoral work at MIT. He has been a professor at Cardiff University for over 20 years. His early work was in visual perception including both psychophysics and single-cell recording. He is lead author of the textbook "Basic Vision". His major interests now lie in the field of forensic psychology with emphasis on serious violence and sexual violence with respect to mental disorders (including psychopathy) and how dangerousness can be assessed. He also has interests in suicide, sexual attraction, trauma, and mental health literacy.

## DR EIRINI KARYOTAKI, VRIJE UNIVERSITEIT AMSTERDAM
### HOSTED BY DR LADISLAV TIMULAK

### Internet based interventions for depression: Results of a series of individual patient data (network) meta-analyses.

Depression affects hundreds of millions of people worldwide. Effective treatment may be more widely accessible at lower costs by digital treatments (e-health). Such interventions are delivered either with therapeutic guidance (guided) or purely self-guided (unguided). Given that not all patients respond to e-health, targeting the e-health interventions to those who are more likely to benefit will maximize treatment's outcomes and scalability. We thus aimed to examine predictors and moderators of treatment outcomes and adherence to e-health interventions. Further, we investigated the relative effectiveness of guided and unguided interventions. We have gathered and synthesized 14088 individual patient data (IPD) derived from 62 randomized trials on e-health interventions for depression. Based on this dataset, we have conducted a series of IPD (network) meta-analyses using either conventional IPD meta-analytic approaches (i.e., mixed models with patient nested within studies) or network meta-analytic techniques.

### BIOGRAPHY

Eirini Karyotaki is an Associate Professor of Clinical Psychology at the department of Clinical, Neuro- and Developmental Psychology, VU Amsterdam (VUA). Her research focuses on examining the effectiveness of psychotherapy in treating depression, with a special interest in alternative intervention delivery modes like digital interventions and task-sharing. Her research has focused on novel ways of analysing individual patient data to answer questions such as who benefits most from what type of treatment (precision medicine). Dr Karyotaki has specialised in conducting systematic reviews, including conventional and individual participant data meta-analyses, but also has performed epidemiological, effectiveness, and implementation research. She has been involved in several international projects, such as the WHO World Mental Health International College Student (WMH-ICS) Initiative and the development of treatment guidelines, such as the World Health Organization (WHO) Mental Health Gap Program (2016 & 2022). Along with research, Dr Karyotaki is the director of the research master's programme in Clinical and Developmental Psychopathology (VUA) and a lecturer in systematic reviews, diagnostic interviewing, and writing and presenting courses. She has (co) authored more than 100 peer-reviewed papers (see here).

# DR BENJAMIN GARDNER, UNIVERSITY OF SURREY
## HOSTED BY PROF DAVID HEVEY

## What's in a habit? Understanding the role(s) of habit in real-world behaviour

Writing in 1899, William James argued that 'ninety-nine hundredths, or possibly nine hundred and ninety-nine thousandths of our activity is purely automatic and habitual'. Much of our current understanding of habits — i.e., behaviours determined by learned associations between situations and actions performed in those situations — is based on controlled studies of people (or animals) learning simple behaviours of little relevance outside of the lab. Attempts to apply a habit perspective to more complex and meaningful human actions has resulted in some claims that appear to lack credibility; for example, that people can do 30 minutes of physical activity without any apparent awareness, or that people with strong habits will necessarily act in line with their habits even when they strongly intend not to. Drawing on a new distinction between habitual selection of action and habitual performance, and research on the relationship between habit and conscious preferences as influences on real-world behaviours, this talk reports recent work that aims to reconcile habit theory and its real-world application.

### BIOGRAPHY

Dr Benjamin Gardner (Reader in Psychology, University of Surrey, UK) is an expert in the psychology of real-world habitual behaviour. He has published over 150 research papers and book chapters, mostly exploring how the concept of 'habit' can be drawn on to understand and change everyday human behaviours, with especial focus on health-related behaviours. He has led funded research projects to develop novel habit-based interventions to reduce sedentary behaviour in office workers and older adults, and contributed habit and behaviour change expertise to funded work (e.g. MRC, NIHR) supporting health promotion among older adults, office workers, parents and children. Dr Gardner is co-Lead of the European Health Psychology Society Habit Special Interest Group, Deputy Editor of British Journal of Health Psychology, and holds editorial board positions at Health Psychology Review, International Journal of Behavioral Nutrition and Physical Activity, and Social Science & Medicine.

## PROFESSOR DIRK DE RIDDER, UNIVERSITY OF OTAGO
### HOSTED BY PROF SVEN VANNESTE

## From phrenological single target to multifocal network neuromodulation

Traditional neuromodulation, whether invasive or non-invasive, applies tonic stimulation in a single target to modulate brain activity in neurological and psychiatric disorders. When considering the brain as a complex adaptive Bayesian system, and applying network science approaches, symptoms and disorders are to be seen as emergent properties of (mal)adaptive network reconfigurations. This shifts neuromodulation from single target to network, i.e. connectivity-based, targeting, implementing multifocal stimulation.

Many psychological and psychiatric disorders are the result of a common set of pleiotropic genes, resulting in common network dysfunctions, both within and between the triple network components. These are perfect targets for novel network stimulation designs.

But multifocal targeting also requires appropriate novel neurostimulation designs built for the purpose, either increasing connectivity in hypoconnectivity or breaking hyperconnectivity. This multifocal advanced neuromodulation approach is being developed and tested clinically using both transcranial multinetwork noise stimulation and infraslow network neurofeedback. A further development involves the use of dissociative and psychedelic medication to initially dissolve misconfigured networks, which can subsequently be rebuilt by multinetwork stimulation. In the long run, preventing of relapse may be achieved by adding neurofeedback or pharmacological supplementary treatments.

### BIOGRAPHY

Dirk De Ridder, MD, PhD, is professor of Neurosurgery at the Dunedin School of Medicine, University of Otago in New Zealand and runs a private clinic in Belgium. His research is based on 2 pillars: 1. Network science, in which any symptom is the emergent property of a changed network, and 2. the Bayesian brain concept, i.e. considering the brain as a predictive machine that updates its predictions by active exploration of the environment through the senses, as a way to reduce the inherent uncertainty in a changing environment. His main research interest is the understanding and treatment of phantom perceptions (tinnitus, pain), especially by use of functional imaging navigated non-invasive and invasive neuromodulation techniques.  He has written 40 book chapters and more than 300 pubmed listed journal articles, a Google Scholar H-index of 74, with more than 20,000 citations and an i10 index of 249.

# DR ROBERT WILSON, UNIVERSITY OF ARIZONA
## HOSTED BY PROF SONIA BISHOP

## Information, randomization and simulation in exploration and exploitation

Many decisions involve a trade-off between exploring unknown options for information and exploiting known options for a more certain payoff. In this talk I will present evidence that people use two strategies to solve these explore-exploit dilemmas: directed exploration, driven by information, and random exploitation, driven by noise. These two strategies appear to rely on dissociable cognitive and neural processes, but I will show that they can arise from a single model based on mental simulation. This model accounts for the effects of uncertainty, time horizon, and the informativeness of feedback on directed and random exploitation as well as more recent findings suggesting that random exploitation is truly random. I will end with a discussion of our future work, including some of the work I hope to complete on sabbatical in Oxford, where we aim to study explore-exploit decisions in the real world.

## BIOGRAPHY

Bob Wilson is an Associate Professor of Psychology and Cognitive Science at the University of Arizona. Currently on sabbatical in Oxford, Bob is interested in the computational neuroscience of decision making, studying all kinds of choices from simple perceptual decisions to judgments about phishing emails. Outside of the lab, Bob is spending his sabbatical (slowly) running by the Thames and (also slowly) learning the piano.

Twitter: @NRDlab

January 26th, 2023, 1pm

**Professor Tali Sharot**, University College London

Hosted by: Dr Claire Gillan

February 9th, 2023, 1pm

**Professor Sophie Scott**, University College London

Hosted by: Professor Fiona Newell

February 23rd, 2023, 1pm

**Professor Sophie von Stumm,** University of York

Hosted by: Dr Kristin Hadfield

March 9th, 2023, 1pm

**Professor Lorraine Hope**, University of Portsmouth

Hosted by: Professor Shane O'Mara

March 23rd, 2023, 1pm

**Sarah Harrison,** Mental Health & Psychosocial Support Network

Hosted by: Dr Frederique Vallieres

April 6th, 2023, 1pm

**Dr Lorijn Zaadnoordijk (Postdoc Prize Winner),** Trinity College Dublin

Hosted by: Dr Claire Gillan

April 13th, 2023, 1pm

**Professor Steve Fleming,** University College London

Hosted by: Professor Redmond O'Connell