

The Convergent Innovation Webinar Series: Farm, Food and Diet

Inventing “One-World” Solutions for Lifelong Wellness and Sustainable Economic Growth

Can gamified interventions targeting altered cognitive processes in obesity change food valuation and consumption?

Abstract: Overweight and obesity are currently major health issues. Excessive weight and/or the regular consumption of an unhealthy diet create an inflammation in many organs, and the brain is no exception. Consistently with this so-called neuroinflammation, obesity has been reliably associated with impaired cognitive functions, in particular executive functions, i.e., processes involved in the control of behavior (e.g., working memory, inhibitory processes, cognitive flexibility). Current conceptual approaches as well as empirical data consistently argue that reduced inhibitory and memory control lead to overeating. This relationship would be mediated by increased cue-triggered “wanting” for food reward, i.e. increased desire to obtain food. Some authors have even suggested the existence of a « vicious circle » in obesity – i.e., the more an unhealthy diet is consumed, the more neuroinflammation occurs, the more cognitive alterations (e.g., inhibitory control), leading to increased “wanting” for food reward, and even more unhealthy eating, and in the long-term, weight gain. Restoring inhibitory control and/or healthier responses to food cues could consequently be important levers to reduce the regular consumption of an unhealthy diet. We will present here gamified interventions targeting an ‘action- to-valuation’ mechanism of action and their impact on food valuation and real-world consumption.

January 16, 2024

11:00 am EST

(2 hrs in length)

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Prof. Dr. **Géraldine Coppin** received her Ph.D. in psychology at the University of Geneva (2008-2012). She was then a postdoctoral fellow at Pierce Laboratory, Yale University (2012-2014), and the Max Planck Institute for Metabolism Research (2014-2015). She works at the University of Geneva as a Senior Researcher/Lecturer in Psychology (2015-2020). Since 2018 she is a Professor in Psychology at UniDistance Suisse. She studies the psychology and neurosciences of olfactory, flavor perception and food intake.



Hugo Najberg (PhD) is a researcher in cognitive neuroscience at the Laboratory of Neurorehabilitation Science of the University of Fribourg and co-founder of Neuria (neuria.ch), a research-based start-up developing gamified interventions to restore health cues. His research focuses on executive control training, mainly working on developing and validating a neurophysiologically-informed gamified intervention for behavioral change: The Diner. This intervention follows state-of-the-art gamification processes to create a rewarding and challenging environment.

Chair: Laurette Dubé (Scientific Director of MCCHE)

Co-Chair & Moderator: John G. Keogh (Professor of Practice, MCCHE; Founder, Shantalla Inc.)

PANEL DISCUSSION: A panel with scientists, business and policy leaders will discuss how scientific and technological developments and ontologies bridging farm, food and human behavior, can accelerate the design and long-term performance of convergence platforms ecosystems targeting achievable and time-bound real-world solutions placing human and environmental health at the core. This will advance the design of integrative digital architecture and governance framework to scale up how real-world data generated by individuals and institutions within and across disciplines and sectors can contribute to a World reset on convergence economy. Capitalizing on digital transformation of science and society, convergence economy takes a person-centered approach to bridging organizations and systems across sectors and jurisdictions, fully acknowledging that developed and developing worlds share the same planet, for world-scale transformation toward sustainable prosperity and affordable nutrition and health.

ABOUT THE SERIES: The **Convergent Innovation Webinar Series** features cutting edge science, technology and innovation in agriculture, food, environment, education, medicine and other domains of everyday life where grand challenges lie at the convergence of health and economics. Powered by data science, artificial intelligence, and other digital technologies, this disciplinary knowledge bridges with behavioural, social, humanities, business, economics, social, engineering, and complexity sciences to accelerate real-world solution at scale, be it in digital or physical contexts. Initiated in the agri-food domain, the series is now encompassing other grand challenges facing modern and traditional economies and societies, such as ensuring lifelong wellness and resilience at both the individual and population levels.



Chair: Laurette Dubé, initially trained as a nutritionist, also holds degrees in finances (MBA), marketing (MPS), and behavioral decision-making/consumer psychology (PhD). Dr. Dubé is Full Professor at the Desautels Faculty of Management, McGill University. Her research focuses on the study of affects, behavioral economics, and neurobehavioral processes underlying consumption, lifestyle, and health behavior. Her translational research examines how such knowledge can inspire effective interventions. She is also the founder and scientific director of the McGill Centre for the Convergence of Health and Economics, a unique initiative to push the boundaries of science to tackle societal and economic challenges and foster individual and collective health and wealth.



Moderator: John G. Keogh brings over 30 years of hands-on experience in executive leadership roles, mainly in supply chain management, IT, and consulting. Known for his practical, evidence-based insights, John provides strategic advisory and research to government bodies, NGO's and businesses around the world. He's also a frequent speaker and media analyst. At present, John is the founder and CEO at Shantalla Inc., a niche advisory and research firm based in Toronto and Los Angeles. He is a Professor of Practice at the McGill Center for the Convergence of Health and Economics (MCCHE). In addition, John serves on the board of the Canadian Institute of Food Science and Technology, highlighting his ongoing commitment to the field. His current research focuses on the digital transformation of agrifood supply chains, with an emphasis on issues like transparency, trust, and opportunism.

Panellists:



Harm Veling is Professor Behavior Change for Health and Sustainability and interim Chair of the Consumption and Healthy Lifestyles group at Wageningen University and Research (WUR). He is also the chair of the Open Science Community at WUR (OSC-W). He combines laboratory experiments with human participants to uncover basic psychological processes of value-based decision-making with large intervention trials to translate psychological insights into innovative behavior change interventions. His main interest is uncovering how psychological processes that influence the attractiveness of healthy and unhealthy options can contribute to enabling durable changes in behavior. He is involved in several international consortia to examine how psychological interventions can durably impact people's behavior. His work has contributed to the development of smartphone applications and national and internationally awarded grants (e.g., ZonMw, NIH, NWO) to examine how to reduce the consumption of food, alcoholic beverages, and cigarettes. He has authored papers published in leading psychological journals reporting comprehensive studies containing multiple experiments with replications of key findings and adoption of several open science practices including preregistration of hypotheses and data analyses, open code, open data, and open materials.



Dr. Bärbel Knäuper is Full Professor and holds the James McGill Chair of Health Psychology at McGill University. She is the director of the Health Psychology Laboratory in the Department of Psychology. Her research focuses on the development of behavioural interventions for health behaviour change. For example, she is currently developing and testing the effectiveness of a series of programs that target emotional eating and is developing a mobile application for the delivery of psychotherapy exercises. She also works on developing brief behavioural interventions that can effectively be delivered on a large scale by non-experts in behaviour change (e.g. physicians, dieticians). Other projects include the promotion of sleep in adolescents, the effects of mindfulness interventions, the promotion of physical exercise, and improving medication adherence.



Anita Tusche is an Assistant Professor in the Department of Psychology at Queen's University. She completed her PhD in Psychology in Berlin (Germany) and continued her research as a Postdoctoral Scholar at the Max-Planck-Institute for Cognitive and Brain Sciences (Germany) and at the California Institute of Technology (USA). Her research program is part of an exciting, newly emerging field called neuroeconomics. Her ultimate goal is to build neurally informed computational models of human decision-making that explain differences in people's choice behaviors (e.g. dietary choice, consumer choice, and altruism). To this end, her research and teaching draws on insights and methods from psychology, neuroscience (especially fMRI), and behavioral economics. To understand the mechanism that drive differences in people's decisions, she uses computational models (e.g. multivariate pattern analyses routed in machine learning, drift diffusion models) together with data collected in computer experiments, measurements of eye-movements that indicate what people pay attention to, and functional and structural brain data.



Nitish Nag, M.D., Ph.D., is a Principal Research Scientist at Zepp Artificial Intelligence Health Labs where he works on developing innovative health computing and artificial intelligence technologies to empower human health, performance, and wellness. Nitish Nag was an M.D./Ph.D. candidate at the University of California, Irvine, in the Medical Scientist Training Program, where he was pursuing an M.D. in conjunction with a Ph.D. in computer science. His research interests include developing future technologies in the areas of health wellness and preventive medicine. Nag received a triple major (summa cum laude) from the University of California, Berkeley, in biochemistry, nutrition metabolism, and integrative biology.