

# BCL 2023

Edition IV



**Dino Levy**

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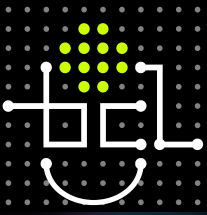


13 Jan | 11:30 - 12:30

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## Using EEG neural signals for predicting future choices and population marketing success

**Abstract:** A basic aim of marketing research is to predict consumers' preferences and the success of marketing campaigns in the general population. However, traditional behavioral measurements have various limitations, calling for novel measurements to improve predictive power. Hence, there is increasing demand within consumer-neuroscience (or neuromarketing) for objective neural measures to quantify consumers' preferences and predict responses to marketing campaigns within individuals and the general population. In my talk, I will present several studies where we use neural signals measured with electroencephalography (EEG) in order to do so. In the first study, subjects viewed individual consumer products in isolation, without making any actual choices, while their neural activity was measured with EEG. At the end of the experiment, subjects were offered choices between pairs of the same products. Using recent techniques for relating neural measurements to choice prediction, we demonstrate that these measures predict subjects' future choices. In the second study, we recorded the EEG signals of subjects, as they watched commercials of food products. We introduce a novel approach in which instead of using one type of EEG measure, we combine several measures, and use state-of-the-art machine learning algorithms to predict subjects' individual future preferences over the products and the commercials' population success, as measured by their YouTube metrics. Importantly, we demonstrate, that for all of our predictions, the EEG measurements increased the prediction power of the questionnaires. In the third study, we aim to develop a novel neuropredictive tool based on deep learning convolutional networks for analyzing the EEG signal which can be used to estimate subjects' valuations and future choices. Overall, our analyses methods and results show great promise for utilizing EEG measures by managers, marketing practitioners, and researchers, as a valuable tool for predicting subjects' preferences and marketing campaigns' success.



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**Brief Bio:** Prof. Levy is an associate professor and the head of the Neuroeconomics and Neuromarketing Lab at the Marketing Department at Collier School of Management since fall of 2012. He is also the head of the undergraduate program in management at the Collier School of Management. Prof. Levy has a BA in Economics from Tel-Aviv University and an MA in Psychobiology, in which he graduates Magna Cum Laude, also from Tel-Aviv University. He received his PhD in 2008 from the Neurobiology Department at the Weizmann Institute of Science in the field of animal models of drug addiction. He then continued for post-doctoral studies at the Center for Neuroeconomics at NYU in which he examined the neural value representations of both primary and monetary rewards.

In his lab they use an interdisciplinary approach, which involves quantitative economic theories, combined with advanced behavioral methods and theoretical models from psychology, marketing, and economics with neuroscience techniques such as functional magnetic resonance imaging (fMRI), Electroencephalography (EEG), and eye-tracking.

The main aim in their studies is to try and better understand how we make decisions and what are the neural mechanisms underlying value-based choices. The projects in the lab range from examining the neural correlates of value computations and the common currency network, deciphering the neural mechanisms of irrational choice behaviors both in humans and in *C.elegans*, through looking for a common denominator between basic visual perception and value computations, to projects that aim to predict future preferences and population success of marketing stimuli using neural signals."