

# 17<sup>th</sup> Annual Congress on Neuroscience

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## Less risky decision making attitudes in vegans compared to non-vegans in iowa gambling task.

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Executive functions that are led mainly by the prefrontal cortex can be impaired either due to physical trauma or altered biochemistry in neurotransmitters, neuromodulators and neuropeptides. Hedonistic (pleasure-seeking) activities are related to increased dopaminergic activity in ventromedial prefrontal and subgenual anterior cingulate cortex. Cholinergic neurons in the medial prefrontal cortex are known to be of importance though it is not very well investigated yet. Since dopamine and acetylcholine are too large to pass through to blood brain barrier both of these neuromodulators are biosynthesised in the brain via precursors. Tyrosine and choline, the precursors of dopamine and acetylcholine respectively, can be synthesized endogenously. However, diet can also provide these nutrients, which can alter the balance with excess consumption of several food items. Tyrosine is found in meat and poultry, fish, cheese, soybeans, and nuts. It can be obtained both from animal and plant based food. However, an average portion of steak, pork chops, salmon and turkey exceed the recommended daily intake (RDI) of tyrosine by at least 200%. Whereas soya (RDI: 202%) being highest tyrosine abundant plant food, the rest (e.g. lentils, black beans, wild rice and pumpkin seeds) are less than 50% of the RDI when eaten individually. The same goes for choline, where choline can be obtained mostly from eggs, organ meats, caviar followed by shiitake mushrooms, soybeans, beef, wheat germ, and chicken. Omnivorous diets can easily exceed the recommended daily intake amount of tyrosine and choline compared to herbivorous and/or frugivorous diets. Excess intake of these amino acids and micronutrients can lead to excess biosynthesis of dopamine and acetylcholine in the brain. This surge of neuromodulators particularly in the forebrain where executive functions are led can cause behavioral modifications. It is widely known that dopamine plays a crucial role in the reward circuitry and when it is too much or too small, impulsive behaviour that leads to compulsive shopping, kleptomania, high sex drive, hyperactivity, and compulsive gambling. In this study, 252 individuals were asked to complete Iowa Gambling Task 2 (IGT2). Their starting cash was \$2000. In the end, high-risk takers ended up with less money than \$2000 and low risk takers were equal to or more than \$2000. Their diet preferences were asked and divided into two categories as vegans and non-vegans. The results showed that vegans significantly scored higher than non-vegans. Vegans mostly do not have excess choline and tyrosine levels in their bloodstream and in the central nervous system, hence they aren't afflicted by the modulations of the neurochemical and behavioural effects as much as their non-vegan counterparts. pinar.

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## Biography

Pinar Sengul is a neuropsychologist who is specialising in nutrition, limbic and executive systems. She has done her Bachelor of Science in Psychology at Isik University and Medical School Hamburg with Honour award. She has completed her Cognitive Neuroscience and Neuropsychology MSc degree with a Merit award at Birkbeck, University of London. Her dissertation was focused on memory and diet. She is currently writing a thesis for her PhD in Neuroscience. She is also doing a second degree (BA) in Philosophy and is particularly interested in Bioethics and vivisection regulations. She has published 5 scientific articles with 4 of them being her own research articles. Her most recent research article is published on Clinical Nutrition Open Science, Elsevier. She speaks Turkish and English bilingually, and fluent in German. She has intermediate fluency in American Sign Language. She translated the book "Why Vegan?" By Peter Singer from English into Turkish. In her free time, she reads loads of literature novels&poetry, and cheerleads in her brother Atilla Volga's rock music concerts.

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