

The Spanish Ministry of Science and Innovation is funding a pre-doc fellowship to do research on the neurocognitive bases of pathological gambling. The position is for four years (starting in year 2015), and the selected candidate is expected to do his/her PhD in the University of Granada, under the supervision of Dr. José C. Perales ([www.ugr.es/local/jcesar](http://www.ugr.es/local/jcesar)), [jcesar@ugr.es](mailto:jcesar@ugr.es)

Candidates must be EU citizens, hold a MSc, be highly motivated, meet the criteria to enter a PhD program, and be familiar with research methods in cognitive neuroscience (neuroimaging, event-related potentials, and experimental designs).

The application deadline expires on the 26th of September.

Please find a brief summary of the aims of the research project below. For more information on the Mind, Brain, and Behavior Research Center, and the town of Granada, visit the CIMCYC website <http://cimcyc.ugr.es/?lang=en>

Sincerely,

José C. Perales

Summary

### **Causal learning and uncertainty perception as indices of severity and prognosis in pathological gambling**

Pathological gambling is a health problem worldwide, in a continuous aggravation process due to the emergence of new forms of telephone and Internet-based gambling. The scale of the problem, and the similarity between gambling and substance abuse, have led clinicians and researchers to re-categorize pathological gambling as an addictive disorder (instead as an impulse control one, DSM-V), which, in turn, has caused a surge of interest on markers of vulnerability for gambling escalation, on indices of pathologization or severitization, and on factors that could provide information on prognosis and therapeutic success.

The research described here focuses on certain specific covariates of pathological gambling, from the perspective of the neuroscience and psychology of learning. These covariates do not belong to the clinical criteria for pathological gambling diagnosis, but do increase the probability that gambling becomes pathological, and stand as an obstacle on the way of rehabilitation. The two to be considered here will be a) specific and generic causal biases (anomalies in processes conducing to establish links

between causes and effects, including illusion of control, the gambler's fallacy, or superstitious beliefs), and b) processes of uncertainty perception and its potential incentive value.

In a first stage, we will try to check for the presence of these covariates in a sample of pathological gamblers. In a second stage, we will try to identify the elements of learning, both at the behavioral level (reversal learning inflexibility, risk numeracy) and the brain activity level (stimulus preceding negativity, feedback related negativity, deep dopaminergic activity in the reward circuit), potentially accounting for these covariates. In a third stage, we will estimate the degree of correlation between the two mentioned covariates (and their neurocognitive components) and the observed severity of pathological gambling. Finally, in a fourth stage, we will prospectively follow up the individuals previously assessed during a two-year period. The aim of longitudinal monitoring will be to find out whether these variables can significantly predict the likelihood of relapse or therapy non-compliance. A finding of this sort would clearly boost the practical implications of this research project.