



II CONGRESO INTERNACIONAL  
DE PSICOBIOLÓGIA

**2<sup>nd</sup> INTERNATIONAL CONGRESS OF  
PSYCHOBIOLOGY**

**ÁVILA, SPAIN  
July, 2017**

**ABSTRACT BOOK**

**UNED**

**ÁVILA**





## SYMPOSIUM 2

### MATERNAL SEPARATION IN ANOREXIC RATS: A SEXUALLY DIMORPHIC EFFECT

D. Aspesi<sup>1,2</sup>, A. Farinetti<sup>1,2</sup>, M. Marraudino<sup>1,2</sup>, F. Amianto<sup>1,3</sup>, G. Abbate Daga<sup>1,3</sup>,  
S. Fassino<sup>1,3</sup>, GC, Panzica<sup>1,2</sup>, **Stefano Gotti**<sup>1,2</sup>

<sup>1</sup>*Department of Neuroscience "Rita Levi Montalcini", University of Turin, Via Cherasco 15, 10126, Turin*

<sup>2</sup>*NICO- Neuroscience Institute Cavalieri Ottolenghi, Regione Gonzole 10, 10043, Orbassano, Turin*

<sup>3</sup>*Eating disorders Unit of AOU Città della salute e della Scienza, University of Turin, Via Cherasco 11, 10126, Turin*

The anorexia nervosa (AN) is a severe mental disorder with a high risk of death, characterized by restricted food intake, a significant body weight loss and, commonly, an excessive physical activity.

It is known that the maternal separation (MS) during the neonatal period may influence the development of behavioural styles of patients with eating disorders, including AN.

Several animal models have been developed to study AN; in particular, the ABA (Activity Based Anorexia) model mimics in rat some key characteristics of the AN: reduced food intake, weight loss, and enhanced activity with physiological responses of malnutrition.

Previous experimental data have shown that MS produces in adolescent rats an anticipated onset of eating disorder. However, these studies did not deeply analyse the overall behaviour, especially regard of anxiety-like and stress behaviours, which are usually correlated with AN.

In our experiment we used a mild-stress ABA protocol and we tested the effect of emotional deprivation, induced by the MS. The groups included: male/female control groups, male/female ABA groups, male/female MS groups, and male/female ABA+MS group. To study the onset of the pathology we analysed body weight loss in relationship with the time spent by rats on the running wheel during the ABA protocol and with the quantity of food consumed during the feeding test. We tested anxious behaviour and hyperactivity by performing the open field (OF) and the elevated plus maze (EPM) tests. We found out that, in general, the loss of body weight is greater and faster in males than in females. Moreover, MS induces a sexually dimorphic effect: MS+ABA males are most susceptible to AN in comparison with ABA males. In the females groups, instead, MS+ABA rats are most hyperactive than ABA females. Behavioural tests show that the anorexic phenotype causes that rats are more physically active, exploring more and are less anxious compared to the control animals, both in males than in females. However there is a sexually dimorphic effect given by MS: MS+ABA female group show an even more hyperactive and less anxious behaviour than ABA females. In males, MS induces animals to be more anxious in comparison with ABA males.



II INTERNATIONAL CONGRESS OF  
PSYCHOBIOLOGY

# PSYCHOBIOLOGÍA

ÁVILA. 19-21 JULIO 2017

## SYMPOSIUM 2

At last, to understand the reason why rats maintained the anorexic phenotypes, we consider the strong influence of the physical activity on the reward system, considering the dopaminergic system in the VTA and the serotonergic systems in the DRN. In fact, the human AN phenotype is characterized by a strong satisfaction for thinness and hyperactivity in the anorexic patients.

In the anorexic rats, the two systems considered show a high sex-specificity: the dopaminergic system increases in ABA males, while the serotonergic system enhances in ABA females.

This study has potential translational implications for better understanding the role of early environment in the pathogenesis of AN.



