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## Juvenile Stress Can Increase Risk of Psychopathology in Adulthood



A study with rats shows that exposure to juvenile stress affects the reactivity to novel stressful situations in adulthood and may increase the risk to develop certain psychopathologies. Animals maintained in low-stress environments in adulthood show less interest for new situations, whereas if they are exposed to an intense stress there is an increase in animal's anxiety. It is noteworthy to say that juvenile and adult stress separately do not cause effects in tests of anxiety, but juvenile stress potentiates in some way the latent effects of adult stress.

Exposure to stressful situations in early stages may act as a vulnerability factor to develop certain psychopathologies in adulthood. One of the most critical stages in the development is the period around puberty. The use of animal models such as rats allows us to better characterize these aspects to deepen into their biological substrate and seek preventive and therapeutic strategies.

In the study published in *Hormones and Behavior*, Dr. Silvia Fuentes and colleagues, in the laboratory of doctors Roser Nadal and Antonio Armario from the Institut de Neurociències at the UAB, a rat model is used to study how the exposure to juvenile stress (prepuberal) affects later stress reactivity to new situations in adulthood.

Juvenile stress intensity was mild and consisted of a combination of several different stressful stimuli (to reduce the habituation to this stress). The long lasting effects of juvenile stress were evaluated in adult rats. Various measures were assessed related to anxiety, the exploration of novel environments and the activity of the hypothalamus-pituitary-adrenal axis, or HPA. Plasma levels of adrenocorticotrophic hormone or ACTH and corticosterone are among the most well-described systems in response to stress. In addition, we also examined how this juvenile stress was able to modify the effects of another severe stressor when applied in adulthood (immobilization).

The main results of this study indicate that when the adult animal was exposed to a stressful situation of low intensity, the behavioral effects of juvenile stress *per se* were modest. They were mainly focused on the decrease in interest for new situations and on the increase of the ACTH hormone levels during the night (which is when these levels are higher in rats). However, when in adulthood a severe stressor is superimposed in animals previously exposed to juvenile stress a remarkable increase in anxiety is detected. It is interesting to note that neither juvenile stress nor adult stress individually caused effects in these tests of anxiety. But somehow juvenile stress increased the latent effects of adult stress.

The results suggest that exposure to juvenile stress of low intensity may produce subtle effects if the animal remains in a "protected" environment. However when these "sensitized" animals experience a stressful situation in adulthood, these latent effects can be "unmasked" and promote the emergence of certain psychopathologies.

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## References

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