

Effects of maternal separation on microglia profile and anxiety-like behavior of male and female mice



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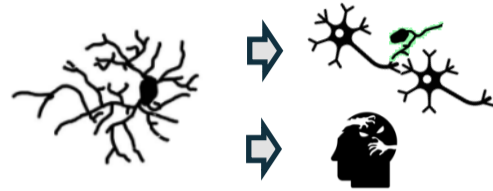
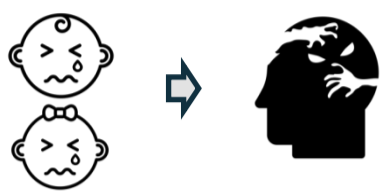
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Why is this research relevant?

Child neglect is an environmental factor for neuropsychiatric disorders

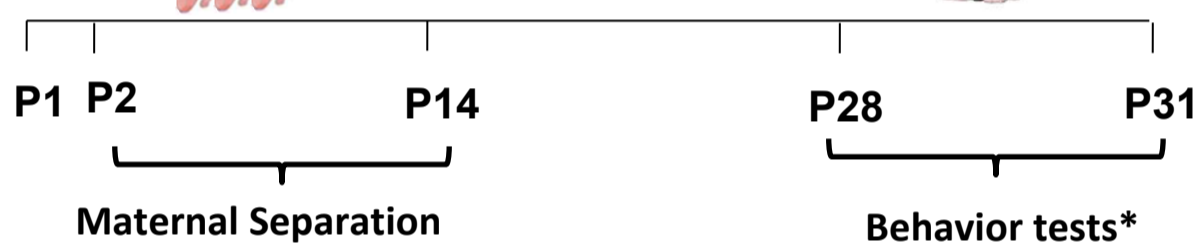
Microglia has a role in both development and psychiatric disorders



Does maternal separation affect prepubertal mice behavior and microglia profile?

Effects of maternal separation on prepubertal mice behavior

C57BL6 mice



- *P28: Locomotor Activity Box; Open Field
- *P29: Light/Dark Box
- *P30: Elevated Plus Maze
- *P31: Novelty-Suppressed Feeding

Statistical analysis

Two-Way ANOVA and Tukey test were used to analyze the effect of maternal separation and sex on mice behavior. Mean ± SD. (*p<0,05**p<0,01).

Locomotor Activity Box

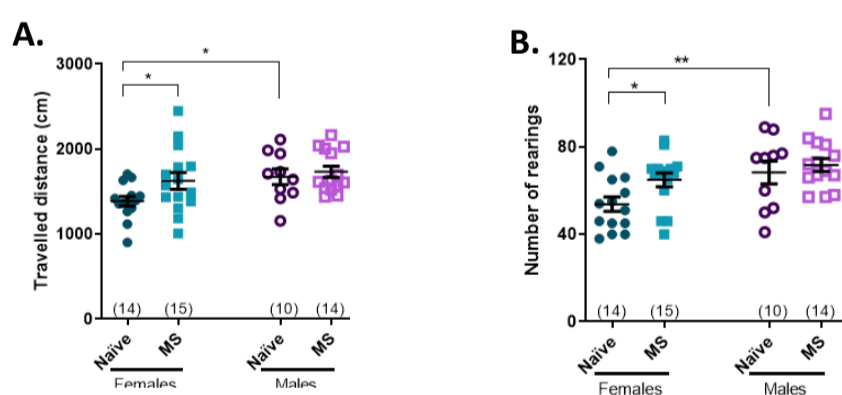


Figure 1. Effects of maternal separation (MS) at locomotor activity box (10 min). **A.** MS increased female locomotor behavior. **B.** MS increased female vertical exploration.

Open Field

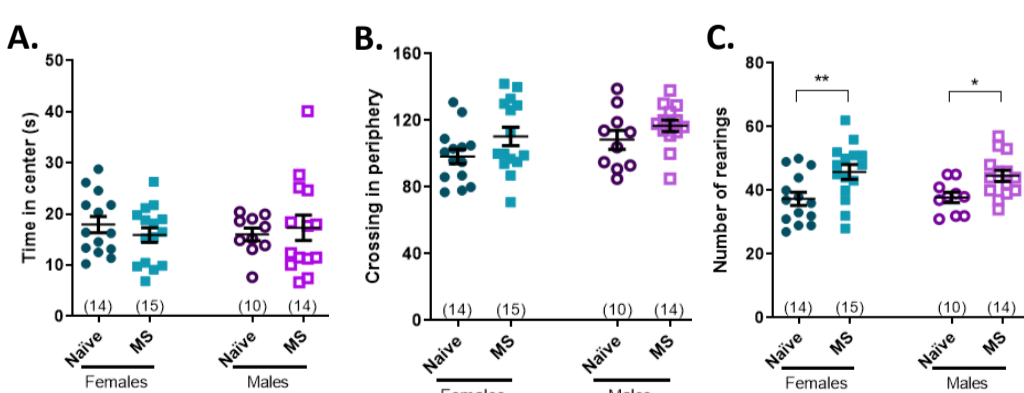


Figure 2. Effects of maternal separation (MS) at open field (5 min) **A-B.** MS didn't change anxiety-like or locomotor behavior. **C.** MS increased mice vertical exploration.

Novelty-Suppressed Feeding

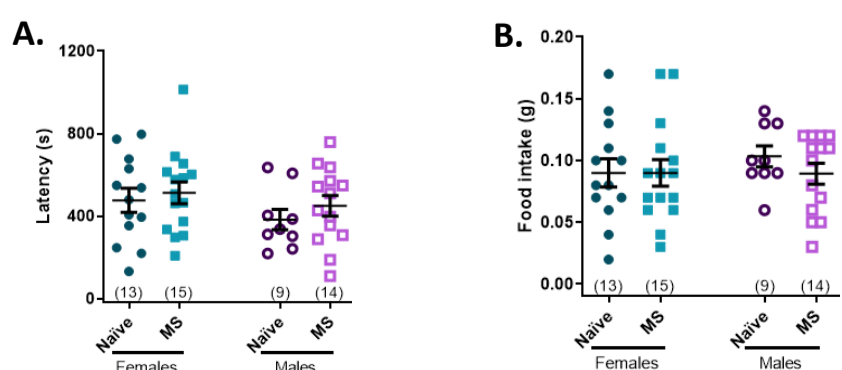


Figure 3. Effects of maternal separation (MS) at novelty-suppressed feeding test. **A-B.** MS didn't alter any of novelty-suppressed feeding parameters.

Light/Dark Box

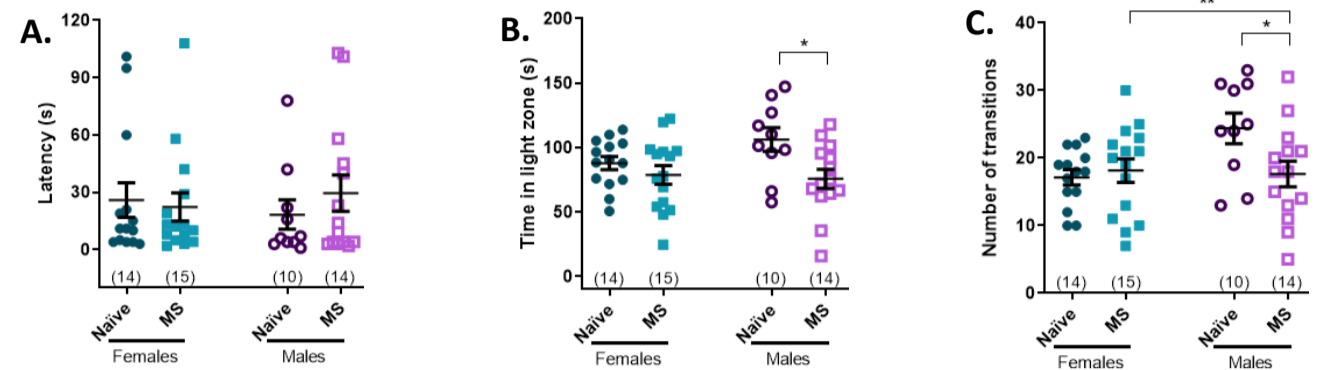


Figure 4. Effects of maternal separation (MS) at light/dark box. **A-C.** MS lead to anxiety-like behavior only in males.

Elevated plus maze

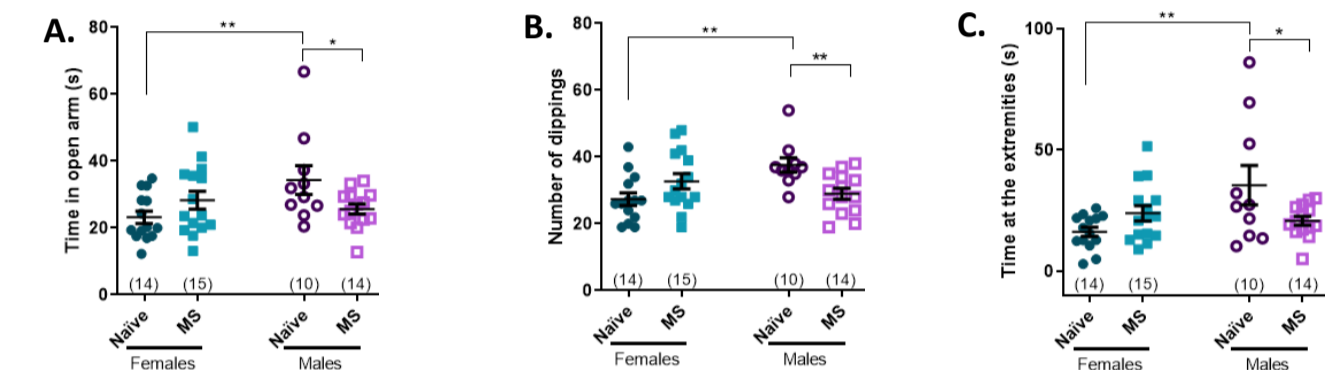


Figure 5. Effects of maternal separation (MS) at Elevated plus maze **A-C.** MS lead to anxiety-like behavior only in males.

Effects of maternal separation on microglia density



C57BL6 CX3CR1:GFP mice



Euthanasia: P15 and P30

Statistical analysis

Student T Test was used to analyze differences between groups with minimal sample. (ns= non significant *p<0,05**p<0,01***p<0,001).

Females data not shown due to lack of sample;

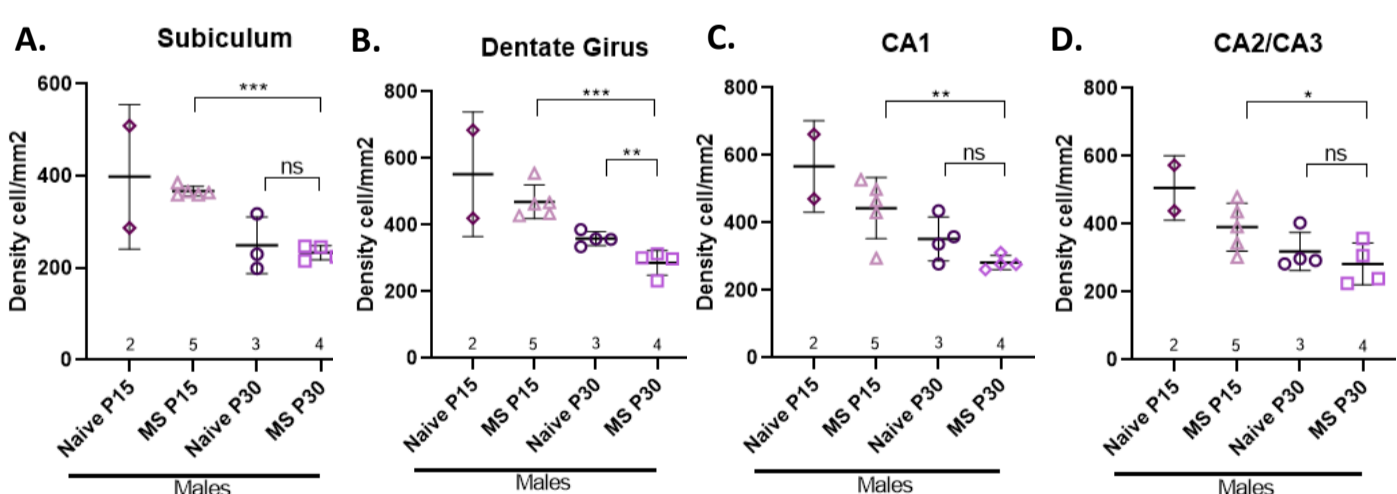


Figure 6 A. Representative images of microglia in DG and CA1 of control (Naive) and maternal separated mice (SM) at P15 and P30. **B.** Scheme of hippocampus division. S. Subiculum; DG. Dentate girus;

Figure 7. Effect of maternal separation and age at ventral hippocampus **A.*****p<0.001; power 1. NS p=0.06; power 0.05; **B.** ***p<0.001; power 0.99. **p=0,014 power 0.79; **C.****p=0.011; power 0.81. ns p= 0.85 power 0.32 **D.** *p= 0.046; power = 0.47. ns p=0.41 power 0.05; Mean ± SD

Take Home Message

- ❖ Maternal separation induced an anxiety-like behavior only in males, suggesting that females are more resilient to our protocol, at least before puberty;
- ❖ Maternal separation decreased microglia density in dentate girus of prepubertal male mice;