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Early maternal separation: A rodent model of anxiety

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Background: Maternal separation presents a major risk factor for anxiety, yet only a few studies have investigated the effect of maternal stress on anxiety-related behavioral impairments. Thus, we aimed to validate an animal model that reflects emotional disturbances seen in patients with maternal stress-induced anxiety. Balb C mice were used in this study. They were subjected to maternal separation from postnatal day one to postnatal day 21, then they were tested for anxiety using the elevated plus maze, open field, Clear/Obscure Chamber test, and hole board. Because benzodiazepines were the only effective anxiolytic medications at the time, animal models predictive validity was reliant on their ability to identify the pharmacological activity of these and related substances.

Results: Mice were treated with diazepam (1 mg/kg) to remedy maternal separation-induced behavioral change. Diazepam treatment significantly reduced anxiety. Our obtained results revealed that the model was successfully created by increasing anxiety-like behavior in subjected animals in the four paradigms.

Conclusions: These results give predictive validity to the animal model and encourage its use in future studies related to anxiety.