

Overgeneralization of context fear memory promotes the despair behavior in PTSD-considered model mouse

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Re-experiencing trauma by overgeneralization is a hallmark of PTSD which is high comorbidity with depression. We thus studied the relation from overgeneralization to depression. Mice were subjected to context A with electric shock as a conditioning which was followed by unconditioned context B using a different, but similar box in 3h on Day1 and was followed by re-exposure to context A (Group ABA) or B (Group ABB) on Day2. Group ABA and ABB mice exhibited the longer freezing in context A and B on Day2. However, the mice which was not exposed to context B on Day1 (Group A-B) showed the shorter freezing time in context B on Day2, indicating that the overgeneralization was induced by experiencing the context B after the conditioning in 3 h. Group ABB mice exhibited the longer immobility time of tail suspension test (TST) than Group ABA and A-B. Freezing time in the first half of the test in context B and immobility time of TST in Group ABB were negatively correlated with the staying time of center zone in the box during the context B on Day1. In contrast, the freezing and immobility time of TST in Group ABA have positive correlation with the time of center zone during context B on Day1. These results suggest that the PTSD and depression may depend on the coping style during unconditioned context within a few hours after the trauma.