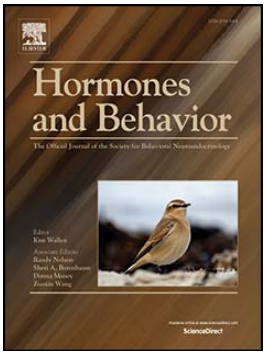

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Daily exposure to a touchscreen-paradigm and associated food restriction evokes an increase in adrenocortical and neural activity in mice

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Keywords

Touchscreen chambers, translation, mice, stress, corticosterone concentration, food restriction, immediate early genes, hippocampus, BDNF

Abstract

The translational assessment of mechanisms underlying cognitive functions using touchscreen-based approaches for rodents is growing in popularity. In these paradigms, daily training is usually accompanied by extended food restriction to maintain animals' motivation to respond for rewards. Here, we show a transient elevation in stress hormone levels due to food restriction and touchscreen training, with subsequent adaptation effects, in fecal corticosterone metabolite concentrations, indicating effective coping in response to physical and psychological stressors. Corticosterone concentrations of experienced but training-deprived mice revealed a potential anticipation of task exposure, indicating a possible temporary environmental enrichment-like effect caused by cognitive challenge. Furthermore, the analyses of immediate early gene (IEG) immunoreactivity in the