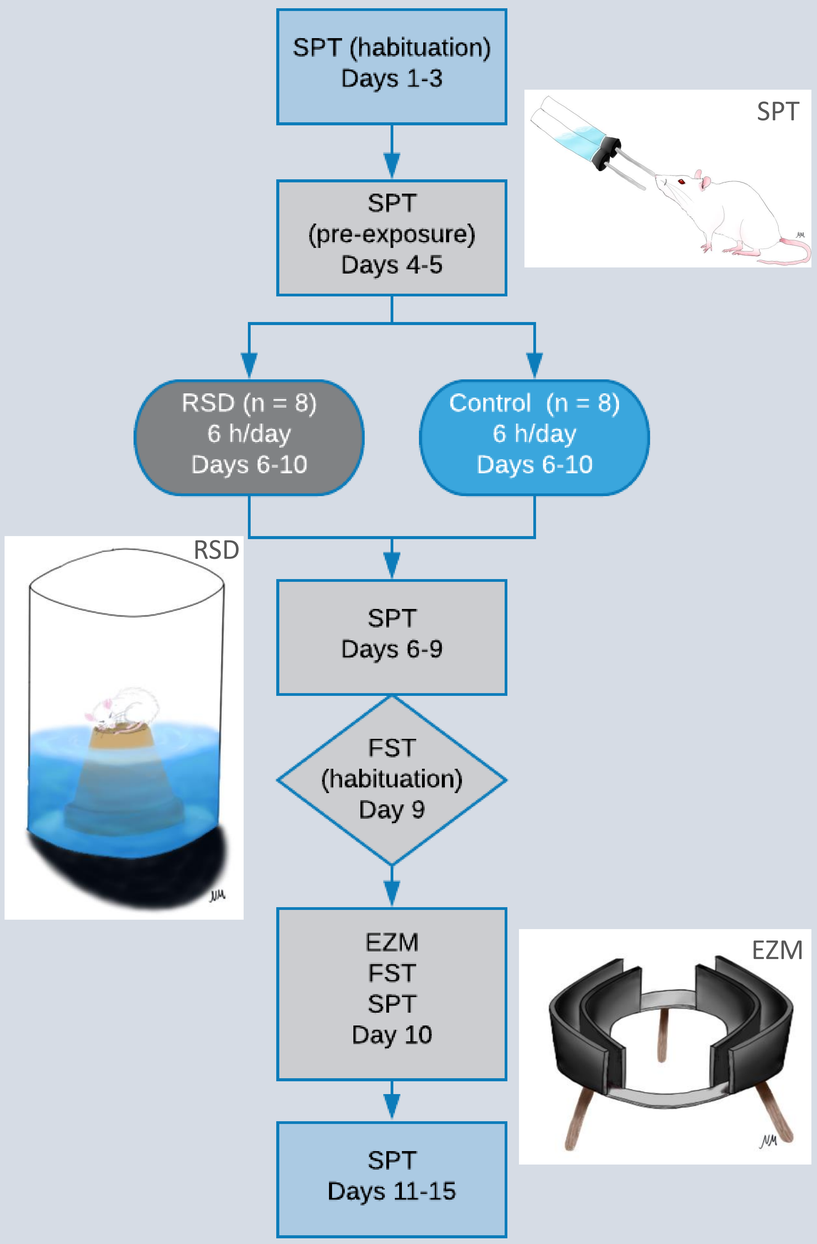
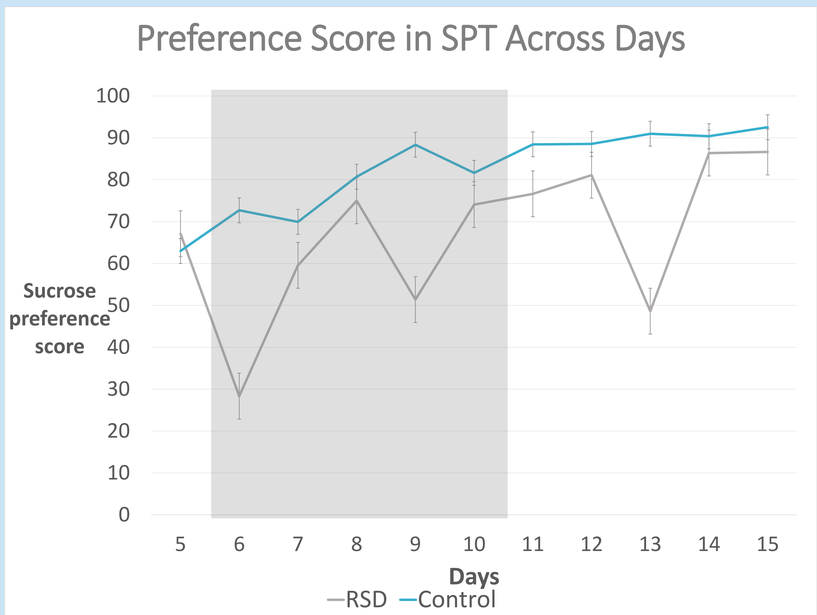
Assessing the effects of short-term REM sleep deprivation on anxiety- and depressive-like behaviors in male rats

Short-term REM sleep deprivation produced depressive-like but not anxiety-like behaviors in male rats.

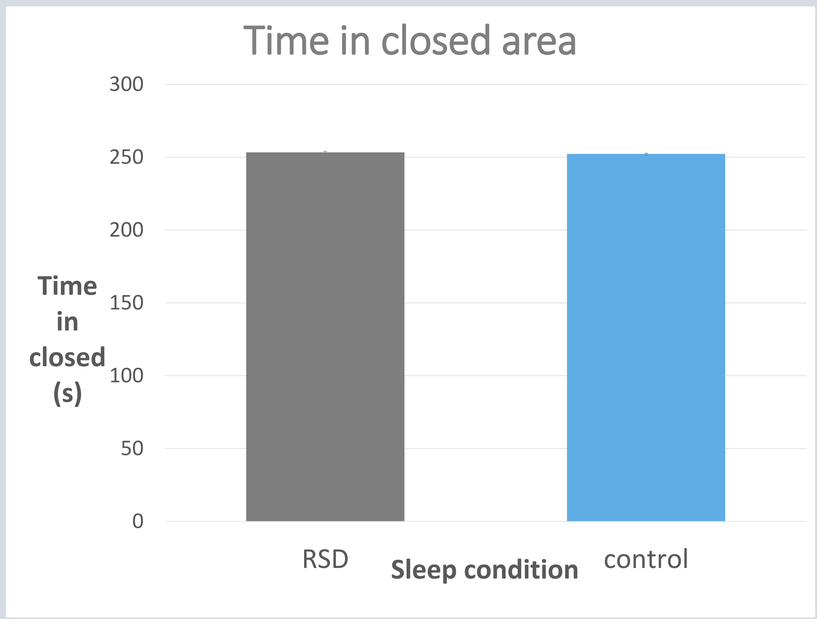


SPT: sucrose preference test
RSD: REM sleep deprivation
FST: Forced swim test
EZM: Elevated zero maze



$$\text{Sucrose preference score} = \frac{sucrose\ consumption}{total\ consumption}$$

A 2 (sleep) x 11 (days) mixed design ANOVA revealed a significant interaction, such that sucrose preference decreased on certain days for RSD but not control rats ($F_{(10, 120)} = 2.40$, $p = 0.012$, $\eta^2_p = 0.167$).There was also a main effect of sleep condition on sucrose preference ($F_{(1, 12)} = 8.57$, $p = 0.013$, $\eta^2_p = 0.417$), and a main effect of days on sucrose preference ($F_{(10, 120)} = 4.72$, $p < 0.001$, $\eta^2_p = 0.282$).



An independent samples t-test found no significant differences between RSD and control rats for **time in closed area**, $t(14) = 0.078$, $p = 0.939$; **head dips**, $t(14) = -0.66$, $p = 0.519$; **stretch-attend postures**, $t(14) = -0.618$, $p = 0.547$; and **start latency**, $t(12) = 0.27$, $p = 0.789$.

DISCUSSION: There were no significant effects of short-term RSD on anxiety-like behaviors in male rats, as measured by the EZM. Although there was an overall increase in sucrose preference across days, sucrose preference fluctuated in RSD rats, suggesting transient increases in depressive-like behaviors. These findings are similar to past research (Gonzalez-Castañeda et al., 2016; Wang et al., 2017).

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