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Stress reduces social and appetitive behavior

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Background: Repeated stress can trigger episodes of depression, along with symptoms of anhedonia and anxiety. Though often modeled separately, anxiogenic factors potently modulate hedonic or appetitive, behavior. While repeated stress can increase anxiety and decrease appetitive behavior, it is not clear whether repeated stress can influence interaction between anxiogenic factors and appetitive behavior. The purpose of this study was to test whether repeated stress increases the effect of anxiety on appetitive behavior.

Methods & Materials: Adult male Sprague Dawley rats were trained to lever press for sucrose pellet reward, an appetitive behavior. After performance criteria were reached for this behavior, rats were exposed to daily social defeat stress or control handling, once/day for five consecutive days. After 2 days or 2 weeks, rats were tested in behavioral assays for social withdrawal and anxiety to confirm the effectiveness of the daily social defeat model of stress. These data were compared between control and stress groups with a one-way ANOVA. After an additional 24 hours, rats were tested for appetitive lever pressing (fixed ratio 4 schedule) under dim light conditions or in the presence of anxiogenic bright light. These measures were compared between control and stress groups across age using a two-way ANOVA. Statistical significance was set at p<0.05.

Results: Repeated social defeat stress reduced exploration in the open field (main effect of stress p=0.006, F(1.40)=8.5) and decreased social interaction (main effect of stress p=0.0004, F(1.40)=14.9), consistent with other models of stress. Repeated social defeat had minimal effect on baseline lever pressing for reward. However, stress-exposed rats were more sensitive to the anxiogenic light, as repeated stress substantially enhanced the effect of anxiogenic bright light on lever pressing. This effect was greater two days after the last stress exposure, and began to diminish within two weeks (stress x age interaction p=0.04, F(1.40)=4.4).

Biography

Suraj Jaisinghani has obtained his BS in Computer Engineering from Rochester Institute of Technology. He has worked as a Consultant for several years and then went on to Chicago Medical School.

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