

### Concomitant adrenal hormonal stress responses are required for cocaine-induced locomotor sensitization



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**Aims:** Cocaine-induced locomotor sensitization is a robust increase in locomotion to a standardized dose of cocaine. The associated neuronal changes that underlie increased behavioral sensitization involve addiction-related plasticity. Strong evidence suggests that the systemic stress response is involved in establishing addiction-related behaviors. We previously reported that the systemic adrenal response is required for escalation of addiction-related behaviors and that glucocorticoids in particular play a role in facilitating long term neural adaptations that result in these behaviors. Here we examine whether increased levels of the adrenal hormones, corticosterone (cort) and epinephrine (epi), either alone or in concert, are required for establishing locomotor sensitization to cocaine.

**Methods:** Male Sprague-Dawley rats underwent surgical adrenalectomy (ADX) with basal cort replacement and were administered cocaine for 10 days. On days 1 and 10 locomotor sensitization was tested by administration of 15 mg/kg, ip cocaine, while sensitization was induced on days 2–9 by administering a high dose of cocaine (30 mg/kg, ip  $\times$  8 days). To test the role of the glucocorticoid receptor (GR) in induction of sensitization, the GR antagonist, RU 486 (12.5 mg/kg, sc) was administered prior to cocaine administration. To test whether replacement of the adrenal-secreted stress hormones would rescue sensitization in ADX rats, we replaced normal cort (2 mg/kg) and/or epi (0.01 mg/kg) during cocaine administration.

**Results:** The induction of sensitization was reduced in rats with ADX or pretreated with RU 486. In ADX rats, replacement using cort or epi alone did not recover locomotor sensitization but did rescue sensitization when co-administered.

**Conclusions:** These findings demonstrate that coordinated systemic stress signaling from the adrenal gland during cocaine administration is required for cocaine-induced locomotor sensitization and may play a role establishing addiction-related neuroplasticity with chronic cocaine use.

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### Comparing smoking cessation interventions for persons with serious mental illness



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**Aims:** This study compared two smoking cessation interventions for persons with persistent serious mental illness (PSMI) with a minimal intervention control.

**Methods:** PSMI ( $N=180$ , 78% of referred) were recruited from a public agency. Participants smoked at least 10 cigarettes daily 3 years or more. Active interventions were contingent reinforcement (CR), and CR plus nicotine replacement via patch (CR + NRT) for 16 weeks. CR was escalating financial compensation for achieving and

maintaining abstinence, as measured by breath CO. A longitudinal design was used with main outcome analyses conducted at baseline and weeks 20 and 36. Measures included: Smoking History/Status, Vitals, Salivary Cotinine (SC), CO, Brief Symptom Inventory, NRT Use, Interest in Quitting. Separate logistic regression models were conducted on SC and CO levels, with Intent-to-Treat analyses.

**Results:** At baseline, 48% reported intentions to quit smoking and 50% wanted to reduce. Breath CO showed that CR and CR + NRT participants had a higher quit rate than controls (58% vs. 18%;  $\chi^2 = 12.84$ ,  $p < .000$ ). However, CO and self-report outcomes were discordant with SC outcomes, which yielded a non-significant difference between intervention and control groups (11.6% vs. 10.7%;  $\chi^2 = 0.15$ ,  $p = .901$ ) at weeks 20 and 36. Also, there was reduced smoking by SC levels at week 20; the CR and CR + NRT group results indicated light smoking, v the self-quit group (32%, 12%, 4%, respectively,  $p = 0.02$ ). Importantly, there was no evidence of psychiatric exacerbation for any of the groups over time regardless of amount of smoking or diagnostic category.

**Conclusions:** This sample was very interested in quitting or reducing. Results suggest that smoking intervention efforts for PSMI should not be hampered by fears of decompensation. The data suggest that adherence to NRT should be reported in studies in this population; other forms of NRT could be explored. A reduction approach versus abstinence could be studied.

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### The impact of eye movement desensitization and reprocessing and schema therapy on addiction severity among a sample of French women suffering from PTSD and SUD



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**Aims:** The purpose of the study is to examine the effects of eye movement desensitization and reprocessing (EMDR) associated with Schema Therapy (ST) on the improvement in symptoms of posttraumatic stress disorder (PTSD), attachment disorder (AD) and substance use disorder (SUD) among women in outpatient substance abuse treatment. Hypothesis: PTSD and AD severity reductions with EMDR-ST focused on addictive memory were likely to be associated with substance use improvement.

**Methods:** This study investigated in the treatment of SUD among 7 women with SUD and PTSD comorbidity. We proposed a 3-phase-protocol therapy: (a) 8 EMDR sessions focused on reprocessing traumatic memory; (b) 8 EMDR sessions (traumatic memory) associated with ST (traumatic attachment) and (c) 8 EMDR sessions (addictive memory) associated with ST. We evaluated PTSD symptoms (PCL-S), Early Maladaptive Schemas-EMS (YSQ-S2) and addiction severity (ASI) before and after treatment ( $t$ -tests).

**Results:** The first phases of treatment protocol reduced PTSD symptoms (a and b) and EMS (b) but not the addiction severity (AS). AS and craving started significantly decreasing only after the last 8 additional sessions (EMDR-ST) focused on addictive memory (c).

**Conclusions:** In a previous study we showed that 6 women with SUD-PTSD and assigned to eight sessions of EMDR (traumatic memory) showed a significant reduction in PTSD symptoms but not in addiction symptoms compared to 6 control patients (treatment as usual). The present study suggests that reprocessing both traumatic and addiction memories using EMDR procedure associated with ST reduces not only PTSD and EMS but also AS. Results support importance of coping with PTSD symptoms and of providing integrative therapies for improving substance use outcomes especially in female patients because of the high frequency of stress-induced craving among women.

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### Careless and overprotective fathers are associated with antisocial crack users



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**Aims:** Several studies indicate that the perception of parental care received during childhood and adolescence may enhance or minimize risk for initiating use of illegal drugs and development of mental disorders, especially Antisocial Personality Disorder (ASPD). The goal of this study was to compare the perceived quality of parental bonding among crack users, with and without Antisocial Personality Disorder and assess the severity of illegal behavioral problems between the two groups.

**Methods:** Cross-sectional study of perceived quality of parental bonding among male crack users admitted for treatment in Porto Alegre, Brazil as measured by the Parental Bonding Instrument (PBI) Mother (n198) and Father (N173). The Addiction Severity Index (ASI-6) was used to assess the prevalence of violence and legal issue; psychiatric comorbidities were evaluated using the Mini International Neuropsychiatric Interview Plus (MINI-Plus).

**Results:** Antisocial behaviour (theft, robbery, burglary) was identified before age 18 (51.7%), and then, in adulthood, establishing ASPD (50.0%) respectively ( $p < 0.001$ ). The Poisson regression showed that subjects with ASPD perceived their fathers as having a 5% lower prevalence of the Care factor and a 5% higher prevalence of the Overprotection factor as compared with subjects without ASPD. Patients with ASPD were much more likely to be unmarried than those without ASPD (64.4% vs 17.8%;  $p < 0.001$ ).

**Conclusions:** The perception of a less caring but overprotective father figure may be a risk factor for the development of ASPD, use of crack, and difficulty in the ability to bond. We hypothesize that the lack of an appropriate male model of authority, an organizer of contingencies and parameters of reality, could hinder the development and structuring of the personality of men, leading to behavioural issues and crack use.

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### Smartphone-reported stress and drug events and day-end perceived stress, hassles, and mood in methadone-maintained individuals



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**Aims:** To determine relationships among drug use and stressful events and day- end reports of perceived stress and hassles.

**Methods:** Opioid-dependent methadone-maintained individuals in a 12-month natural-history study carried smartphones for up to 36 weeks to provide Ecological Momentary Assessment (EMA) data. They initiated event-contingent entries whenever they used drugs or experienced a stressful event, and completed a day-end assessment every night, including 5 items from the Perceived Stress Scale (PSS), 32 hassle items from the Hassles and Uplifts Scale (HS), and a brief mood assessment.

**Results:** Participants ( $n = 102$ ) reported 1016 stress events, of which 613 (60%) had corresponding day-end assessments, and 1171 drug-use events, of which 832 (71%) had corresponding day-end assessments. Compared to days on which no stress events were reported, stress-report days had higher day-end PSS scores (mean  $\pm$  SD, none  $6.2 \pm 3.3$  vs. stress  $6.5 \pm 3.7$ ,  $p = 0.04$ ) and higher day-end HS scores (mean  $\pm$  SD, none  $2.2 \pm 3.6$  vs. stress  $3.6 \pm 4.5$ ,  $p < 0.005$ ). Compared to days on which no drug use was reported, drug-use days had higher day-end PSS scores (mean  $\pm$  SD, none  $6.1 \pm 3.4$  vs. drug  $7.3 \pm 3.2$ ,  $p < 0.005$ ) and higher day-end HS scores (mean  $\pm$  SD, none  $2.2 \pm 3.6$  vs. drug  $2.9 \pm 4.4$ ,  $p < 0.005$ ). On days on which a stress event was reported, individuals more often rated their mood at day-end as angry/annoyed/afraid ( $p < 0.005$ ) and sad ( $p = 0.006$ ) and less often as content ( $p < 0.005$ ). On days on which drug use was reported, individuals more often rated their mood at day-end as sad ( $p = 0.005$ ) and less often as happy ( $p = 0.003$ ).

**Conclusions:** Using EMA to collect real-time in-the-field data, we found that both drug and stress events are associated with higher day-end perceived stress, hassles, and negative mood among opioid-dependent individuals in methadone maintenance. In addition to focusing on reducing drug use, addiction treatment should include education on stress, hassles, and mood management.

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### Daily marijuana use and craving in the academic setting: A study using ecological momentary assessment



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**Aims:** Limited past research has examined the impact of marijuana use and craving on college students' academic motivation and performance. We speculate that marijuana craving may impact the cognitive focus of students, as well as their motivation for academic work. Furthermore, the social context in which marijuana is consumed may play an important role in academic success. Using ecological momentary assessment, we aimed to explore the relationship between marijuana craving, social context, and academic motivation in the moment.

**Methods:** Active college-student marijuana users ( $n = 57$ ) were recruited and completed a baseline assessment and training on