Results First results are expected in 2016 with further major findings following in 2019.
Conclusions The MILESTONE project will provide unprecedented information on the nature and magnitude of problems at the CAMHS-AMHS interface, and potential solutions to overcome these.
Disclosure of interest The authors have not supplied their declaration of competing interest.

http://dx.doi.org/10.1016/j.eurpsy.2016.01.942

Future experts on the floor: Young researchers in addiction

W09

Neurostimulation in alcohol dependence: The effect of repetitive transcranial magnetic stimulation on brain function and craving

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Background Alcohol dependence has long been related to impaired processing and handling of negative emotions. This is the first study to compare emotion regulation (ER) at a behavioral and neural level in alcohol dependent patients (ADPs) and healthy controls (HCs). It also examines the effects of high-frequency repetitive transcranial magnetic stimulation (rTMS) on ER abilities and related craving levels in ADPs.
Method Thirty-six ADPs and 32 HCs matched on age, sex, and education, were included in a within-subject fixed-order study with one functional magnetic resonance imaging (fMRI) session and one rTMS plus fMRI session, with high-frequency (10 Hz) rTMS over the right dorsolateral prefrontal cortex (dlPFC). An fMRI emotion regulation task (ERT) was administered during both sessions and craving was measured before and after each ERT.
Results ADPs were impaired in the regulation of negative emotion and showed a higher activation of ER related brain areas compared to HCs. Furthermore, active rTMS improved ER abilities in both ADPs and HCs, but was accompanied by a decrease in anterior cingulate and left dlPFC activity only in ADPs. In addition, the ERT-induced increase in craving levels in ADPs was trend-significantly reduced by active rTMS, with a large effect size.
Conclusions ADPs are impaired in the regulation of negative emotion and show enhanced neural activity in the ER brain circuit. High-frequency rTMS improves ER in ADPs and HCs and normalizes neural activity and tends to reduce craving in ADPs. Future studies are needed to test the long-term effects of (multiple session) rTMS on ER, craving, and drinking.
Disclosure of interest The authors have not supplied their declaration of competing interest.

http://dx.doi.org/10.1016/j.eurpsy.2016.01.943

W10

The impact of appetite regulating peptides on substance use disorders

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Background Preclinical and clinical data suggest modulating effects of the appetite regulating peptide ghrelin on food intake. Recent data suggest that in food intake the "endostatic" energy-homeostatic systems of the lateral hypothalamus (LH) and the motivational, mesolimbic reward system operate in dynamic interplay with each other. Ghrelin receptors have been detected in the ventral tegmentum of the midbrain (VTA), where they modulate the activity of dopaminergic neurons projecting to the NAc. Assuming that Ghrelin modulate mesolimbic reactivity, the question remains: is this only the case in response to food cues? Or is this the case in response to reward-associated cues in general (including those related to nicotine and alcohol)?
Methods Study 1: a consecutive sample of 61 alcohol-dependent male inpatients was included. Blood was drawn at onset of withdrawal 12-24 hours after admission, and following 14 days of controlled abstinence in order to assess plasma concentrations of both active and total ghrelin. In parallel, we assessed alcohol craving applying the Obsessive Compulsive Drinking Scale (OCDS) as well as symptoms of depression (Beck Depression Inventory [BDI]) and anxiety (State Trait Anxiety Inventory [STAI]). The severity of alcohol dependence was assessed with the Alcohol Dependence Scale (ADS). Study 2: 54 non-treatment seeking smokers and 30 healthy controls with normal eating behavior, as measured by the Three Factor Eating Questionnaire (TFEQ) participated in this study. We measured plasma concentrations of both active and total ghrelin, using a blood sample taken two hours after a standardized meal during early nicotine abstinence in the smoking group. Additionally we quantified severity of addiction in the smoking group using the number of cigarettes smoked per day, cotinine plasma concentration and the Fagerström Test for Nicotine Dependence (FTND).
Results Study1: we found a significant positive correlation between the plasma concentration of active ghrelin and alcohol craving in both blood samples. Plasma concentrations of active ghrelin increased significantly during early abstinence. In a linear regression model, the plasma concentration of active ghrelin on day one, the scores of the ADS, and the BDI explained 36% of the variance in OCDS sum score ($P < 0001$). By day 14, these same factors accounted for 54% ($P < 0.0001$). We did not detect any association between the plasma concentration of total ghrelin and patients' alcohol cravings. Study 2: plasma concentration of acetylated ghrelin but not total ghrelin was significantly higher in smokers than in non-smokers. Moreover, we found significant negative correlations between acetylated ghrelin and all measures of the severity of nicotine dependence.
Discussion In conclusion, both studies supports the general idea that ghrelin's central effects go beyond the endostatic regulation of energy homeostasis, also involving pathways underlying reward expectation and craving. Physiologic factors modulating the reactivity of mesolimbic pathways represent an important research topic for developing pharmacologic treatments for disorders characterized by altered reward-related behaviors, such as substance use disorders and behavioral addictions.
Disclosure of interest The authors have not supplied their declaration of competing interest.

http://dx.doi.org/10.1016/j.eurpsy.2016.01.944

W11

Novel psychoactive substances

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