Although patients have showed stronger DT interaction compared to the control group. The schizophrenia patients showed somewhat slower DT reaction time (353 ms) than controls (318 ms) although, analysis of variance did not reveal a statistical difference between the two groups ($p > 0.05$).

From the results stems the conclusion that schizophrenic patients are not significantly worse in dual tasking, however, one should also acknowledge small size of the clinical sample.

P.1.j.031 The efficacy of N-acetylcysteine on smoking cessation, impulsivity and cue reactivity in heavy smokers

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Introduction: Neural responses to substance-specific cues are a reflection of the salience of these stimuli. For example, BOLD-responses in frontal and limbic areas, such as medial prefrontal regions and the anterior cingulate cortex, have been associated with the viewing of smoking related cues. While smokers seem to be aware of the negative effects of their addiction, they are often unable to quit smoking. With the neurobiological focus shifting from dopamine to glutamate, N-acetylcysteine (NAC) is proposed to be a glutamatergic agent facilitating the cessation of substance use by restoring the glutamate homeostasis. The aim of this study was to investigate the efficacy of NAC on smoking cessation and impulsivity, and to investigate possible related changes in cue-induced brain activity.

Methods: At baseline, a total of 48 heavily smoking (HS) men (FTND $\geqslant$ 4) and 16 non-smoking men participated in this study. Personality traits were assessed by means of the BIS/BAS questionnaire. Impulsivity was assessed by means of the Delay Discounting Task (DDT). During functional Magnetic Resonance Imaging (fMRI), all participants underwent a cue reactivity task in which brain activity in response to smoking related stimuli was measured. For the following two weeks, the HS-group took 2400 mg/d NAC or placebo. The control group only completed the baseline session and did not take any medication. At the second session the HS-group repeated the DDT and the fMRI cue reactivity task. Group differences at baseline were analyzed using an independent samples t-test and the effect of NAC was analyzed using a repeated measures ANOVA with DDT score as within group factor and NAC or placebo as between group factor.

Results: At baseline, there were no differences between the groups regarding age or IQ. There also were no group differences on any of the BIS/BAS subscales, the DDT or cue-induced brain activity. Compared at baseline, the NAC-group ($n = 24$) and the placebo-group ($n = 24$) differed significantly on the BAS fun-seeking subscale of the BIS/BAS questionnaire, with higher scores in the NAC-group compared to the placebo-group. There was a significant difference on the DDT, with the NAC group having higher scores compared to the placebo-group. There were no significant between-group differences on the FTND, other subscales of the BIS/BAS, the OCSS, or on cue-induced brain activity. Furthermore, after two weeks NAC did not seem to have an effect on OCSS, DDT, cue-induced brain activity, or smoking cessation.

Discussion: Based on these findings it appeared that NAC does not have an effect on smoking cessation, impulsivity of cue-induced brain activity. The NAC-group was more fun-seeking than the placebo-group at baseline and were also more impulsive, but also these differences were not affected by NAC. There are several reasons why there was no effect of NAC in this study, such as the absence of group differences at baseline, poor medication compliance, and a considerable dropout rate.

P.1.j.032 Protective effects of metformin in scopolamine-induced cognitive impairment in rats

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Purpose: Epidemiological, clinical and experimental data support a link between type 2 diabetes mellitus and Alzheimer's disease (AD). AD is a progressive neurodegenerative disorder of the brain that is characterized by impairment of memory and cognitive function due to cholinergic nervous system dysfunction. Metformin, the most commonly used drug for the treatment of type II diabetes, has been shown to induce hippocampal neurogenesis and to enhance spatial learning [1]. Scopolamine, a non-selective muscarinic receptor antagonist, blocks cholinergic neurotransmission and impairs behavioral function, including learning and memory. Therefore, scopolamine administration to animals is used as an experimental model of the cognitive deterioration and memory disturbances in AD. The aim of this study was to investigate the effect of metformin on spatial learning and memory behavior in scopolamine-induced memory impairment in naive rats.

Methods: Male Wistar Albino rats were divided into four groups ($n = 10$): Control group, treated with normal saline (NS) (10 ml/kg/day) by gastric gavage for 3 weeks and NS (1 ml/kg) was injected intraperitoneally (i.p) before the tests. Scopolamine group, treated with NS (10 ml/kg/day) by gastric gavage for 3 weeks and scopolamine (1 mg/kg) was injected i.p before the tests. Metformin group, treated with metformin (200 mg/kg/day) by gastric gavage for 3 weeks and NS (1 ml/kg) was injected i.p before the tests. Metformin+scopolamine group, treated with metformin (200 mg/kg/day) by gastric gavage for 3 weeks and scopolamine (1 mg/kg) was injected i.p before the tests. The memory functions were examined by Morris water maze test (MWMT) and modified elevated plus maze test (mEPMT). The intraperitoneal injections were administered 30 min before the probe test of the MWMT or 30 min before on the first day testing of mEPMT. The time spent in the target quadrant during the probe trial of MWMT and the transfer latency on the second day testing of mEPMT, were used as an index of learning and memory. Since the MWMT or mEPMT being affected by the changes in locomotor activity, total locomotor activity (TLA) was also measured. One-way ANOVA and Bonferonni post hoc test used for statistical analysis.

Results: There was no significant difference between the groups in terms of TLA. In the MWMT, the time spent in the target quadrant during the probe trial significantly decreased in scopolamine treated group compared to control group ($p < 0.001$). However, metformin treatment significantly reversed scopolamine-induced shortening in the probe test ($p < 0.001$). In the mEPMT, the second day latency was significantly increased in scopolamine

treated group compared to control group ($p < 0.05$), but metformin treatment significantly reversed the prolongation of second day transfer latency indicating impaired memory retrieval ($p < 0.05$).

Conclusions: Metformin reversed the scopolamine induced impairment of spatial memory in MWMT and mEPMT. The results of this study suggest that metformin may have pharmacological potential for preventing development of memory impairment in Alzheimer's disease and other neurodegenerative diseases.

References

[1] Wang, J., Gallagher, D., DeVito, L.M., Cancino, G.I., Tsui, D, He, L., Keller, G.M., Frankland, P.W., Kaplan, D.R., Miller, F.D., 2012. Metformin activates an atypical PKC-CBP pathway to promote neurogenesis and enhance spatial memory formation. Cell Stem Cell 11(1), 23–35.

P.1.j.033 Social functioning and theory of mind in euthymic bipolar patients

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Introduction: Social cognitions are neuropsychological processes which are implicated in interactions between individuals of the same species. Relative social impairment is observed in patients diagnosed with bipolar disorder (BD) even after clinical stabilization. Theory Of Mind (TOM) is a social cognitive ability. TOM is defined by the ability to attribute a mental state to others, and then to understand and predict their behavior on the basis of that mental state. A deficit in social cognition has been reported in bipolar disorder even in clinical remission. The deficit of TOM may be implicated in the impaired social functioning in the case of these patients.

Objective: To study the potential correlation between the deficit of Theory Of Mind and the social functioning in euthymic bipolar patients.

Methodology: This is a cross-sectional study involving 25 patients aged from 18 to 35 years. Inclusion criteria are the diagnosis of bipolar disorder according to DSM4, the clinical remission which is defined by a score of (HAMD) $\leqslant 9$ and a score of (YMRS) $\leqslant 7$ and the therapeutic stabilization which is objectified by no change of treatment for more than three months.

Exclusion criteria are the association of a mental retardation, the diagnosis of a severe neurological/somatic pathology or the abuse/dependence to a substance.

The TOM's assessment tool is the 2007 Pouillès's animated triangles test which a computer-led test involving geometric shapes which are interacting and mimicking a scenario in three modalities:

- Physical: unintentional movement.
- Biological: directed movement toward a goal.
- Psychological: mental state change of a figure induced by the action of another figure (mental state attribution).

The scores are evaluated according to four dimensions:

- I: Intentionality.
- A: Appropriateness.
- C: Certainty.
- L: Length of phrases.

Social functioning is evaluated by the Global Assessment of Functioning scale (GAF).

Results:

- Our Population consists of 14 men (70%) and 6 women (30%). 13 are single (65%) and 7 are married (25%). 10 have no occupation (50%). 13 are high school dropouts (65%), 4 primary school dropouts (20%) and 3 have had some college (15%).
- We did not find any difference in the physical and biological modalities of the TOM between our patients and normal controls.
- We found a significant difference in the psychological modality between our patients and normal controls. This difference calls for a deficit of the mental state attribution.
- The GAF scores ranged from 65 to 95.

However we did not find any correlation between TOM deficiency and GAF scores.

Conclusion: There are only few studies on the hypothesis incriminating TOM deficit in the social dysfunction of patients with Bipolar Disorder. The social cognition deficit is a major obstacle to the rehabilitation of these patients. This highlights the importance of appropriate cognitive remediation techniques that have been developed to provide better care.

References

[1] Rosa AR, Sanchez-Moreno J, Martinez-Aran A, Salamero M, Torrent C, Reinares M, 2007. Validity and reliability of the fonctioning assessment short test. clin Pract Epidemiol Ment Health, 3:5.
[2] Blairy S, Linotte S, Souery D, Papadomitriou GN, Dikeos D, Lerer B, 2004. Social adjustment and self-esteem of bipolar patients: a multicenter study. J Affect Disord. 79, 97–103.
[3] Barrera A, Vázquez G, Tannenhaus L, Lolich M, Herbst L, 2013. Theory of mind and functionality in bipolar patients with symptomatic remission. Rev psiquiatr Salud Ment(Barc.).6, 67–74.
[4] Olley AL, Malhi GS, Bachelor J, Cahill CM, Mitchell PB, Berk M, 2005. Executive functioning and theory of mind in euthymic bipolar disorder. Bipolar Disord. 5, 43–52.

P.1.j.034 Error processing and psychopathy in multiproblem young adults: preliminary EEG results

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Purpose of the study: One of the most prominent issues of multiproblem young adults (aged 18–27) is the occurrence and persistence of antisocial behavior. Psychopathic traits are highly related to antisocial behavior and there is ample evidence that neurobiological mechanisms underlie these traits [1,2]. Previous research [3] has specifically found a relationship between psychopathy and diminished error processing, evident from behavioral data on a Flanker task and event-related potentials (ERPs) in the electroencephalogram (EEG). The error-related negativity (ERN) is such an ERP and because of its robustness may be viable as a biomarker or predictor of treatment outcome [4]. In the current study, we investigate the relationship between three subtypes of psychopathy and the ERN in a sample of 150 multiproblem young adults. This abstract concerns preliminary results.

Methods: In total, 36 male multiproblem young adults were included. Of these, six were excluded due to task accuracy below 60%, indicative of not actively performing the task. One participant was excluded due to missing questionnaire information. All analyses thus include 29 participants (mean age 21.8 (2.5), range 18–26). Participants performed an Eriksen Flanker task, in which they were instructed to respond to the central letter of a letter string consisting of 5 letters (SSSSS, HHHHH, SSHSS, HHSHH).