

EW0700

Altered functional connectivity in default mode network in Internet gaming disorder with childhood ADHD

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Objective Internet gaming disorder (IGD) is a type of behavioral addiction characterized by abnormal executive control, leading to loss of control over excessive gaming. Attention deficit and hyperactivity disorder (ADHD) is one of the most common comorbid disorders in IGD, involving delayed development of the executive control system, which could predispose individuals to gaming addiction. We investigated the influence of childhood ADHD on neural network features of IGD.

Methods Resting-state functional magnetic resonance imaging analysis was performed on 44 young, male IGD subjects with and without childhood ADHD and 19 age-matched, healthy male controls. Posterior cingulate cortex (PCC)-seeded connectivity was evaluated to assess abnormalities in default mode network (DMN) connectivity, which is associated with deficits in executive control.

Results IGD subjects without childhood ADHD showed expanded functional connectivity (FC) between DMN-related regions (PCC, medial prefrontal cortex, thalamus) compared with controls. These subjects also exhibited expanded FC between the PCC and brain regions implicated in salience processing (anterior insula, orbitofrontal cortex) compared with IGD subjects with childhood ADHD. IGD subjects with childhood ADHD showed expanded FC between the PCC and cerebellum (crus II), a region involved in executive control. The strength of connectivity between the PCC and cerebellum (crus II) was positively correlated with self-reporting scales reflecting impulsiveness.

Conclusion Individuals with IGD showed altered PCC-based FC, the characteristics of which might be dependent upon history of childhood ADHD. Our findings suggest that altered neural networks for executive control in ADHD would be a predisposition for developing IGD.

Disclosure of interest The authors have not supplied their declaration of competing interest.

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EW0701

A new model as an early life manipulation: Fake mother

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Introduction Early life stressful events cause long-term neural changes that are associated with psychiatric disorders.

Objective Early life manipulations focus on commonly the impact of remaining separate from the mother in a specific period of time. The maternal odor is required for pups to approach the mother for nursing. What happens when there is a mother that smell like a real mother but does not take care her own pups?

Aim To investigate the fake mother effects on adult rat's behavioral changes, NMDAR2B protein level changes in prefrontal cortex and hippocampus.

Methods Wistar rats were used. Fake mother (n:13), early handling (n:12), maternal separation (n:14) and control (n:12) were the study groups. A fake mother is an object that smells like a real dam. When the real mother is separated from own pups fake mother stays with the pups for an hour. Manipulations were made during the postnatal first 14 days. Behavioral tests (social interaction test, elevated plus maze, novel object recognition test) were made between postnatal 62 and 78 days. NMDAR2B protein levels in prefrontal cortex and hippocampus were evaluated by using ELISA at postnatal 78 days.

Results In social interaction test, fake mother group exhibited less social behavior and more aggressive behavior than the other groups. Their long-term memory functions were the lowest. NMDAR2B protein levels in the hippocampus increased in rats that exposed to early stressful life events.

Conclusion These results support that being raised by fake mother increases aggressive behavior and decrease social behavior in adulthood.

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EW0702

Neural correlates of behavioral inhibition in healthy people and in patients with borderline personality disorder and ADHD

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Introduction Deficits in behavioral inhibition leading to impulsivity occur frequently in many otherwise different psychiatric diseases, mainly ADHD and borderline personality disorder (BPD). However, the research is complicated by using of different tests and their parameters. Further, the role of frontoparietal network in behavioral inhibition has been questioned recently.

Objectives The aims of our studies were:

- to present the influence of differences in inhibition tasks parameters;
- to describe neural correlates of behavioral inhibition in healthy people;
- to compare them with BPD and ADHD patients.

Methods We implemented two different variants of Go/NoGo Task, one designed for behavioral research and the second for neuroimaging. Thirty healthy participants (37% of women, age range 15 to 33 years) underwent behavioral and fMRI measurement. Further, groups of patients with BPD, ADHD and their healthy controls underwent the Go/NoGo Task under both fMRI and EEG.

Results The results show differences in behavioral performance based on different task parameters. The fMRI results in healthy people show specific activation patterns within the frontoparietal network associated with inhibition trials (mainly inferior frontal gyrus, insula, cingulate gyrus, SMA, inferior parietal lobule). Further, we present differences between patients with BPD, ADHD and controls in BOLD signal and ERPs.

Conclusions Go/NoGo Task design substantially influences the subjects' behavioral performance. Our results with methodologically upgraded Go/NoGo Task design provide support for the inhibition frontoparietal brain network and its different activations in BPD and ADHD patients. The research was supported by Ministry of Health of the Czech Republic, grant nr. 15-30062A.