

AS30-01 - IMAGING STUDIES ON CUE-REACTIVITY IN PATHOLOGICAL GAMBLING AND MULTIUSER INTERNET GAMES

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Pathological gambling and multiuser internet gaming is characterized by recurrent maladaptive behaviour that resembles substance-related addictions. Some studies suggest comparable alterations in mesolimbic reward circuitry which characterize drug dependence and pathological gambling.

In a recent study we observed that excessive computer game players exhibit an attentional bias toward game-related as well as positive stimuli. Among the game players, this effect was accompanied by an increased cerebral activity in midbrain, orbitofrontal cortex, medial prefrontal cortex (mPFC) and anterior cingulate gyrus. For cue-reactivity, increased activation was found in lingual gyrus, hippocampus and inferior frontal gyrus (IFG). Connectivity analyses revealed a strengthened coupling between right IFG and mPFC in excessive game players.

Further studies from our group focused on anticipation and processing of monetary gain or loss. First analyses of the functional data, controlled for age and brain volume, revealed increased activation in the ventral striatum in pathological gamblers compared to alcohol-dependent patients during anticipation and processing of losses. Further, results from a VBM study point to an increased local gray matter volume in subjects with pathological gambling compared to healthy controls in ventral striatum and ventrolateral prefrontal cortex, both brain areas involved in reward-related decision making.

The observed volumetric and functional changes in pathological gambling and multiuser internet gaming may reflect salience attribution to gambling-related stimuli and outcomes and help to explain why subjects decisions making is biased toward gambling-related activities. The question whether these neurobiological changes are a disposition or a consequence of excessive gambling has yet to be clarified.