The present study investigated impulsivity and its resting-EEG correlates to improve our understanding of its apparent potentiating role in the risk for violent behavior in schizophrenia and early psychosis (Witt, Van Dorn et al., 2013).

Focus is put on the proposition that impulsivity and antisocial behavior are consequent to a disagreeable under-arranged physiological and cortical state at rest (Eysenck, 1997; Houston & Stanford, 2005). Thus, we hypothesized that patients with increased impulsivity and violent behaviors would exhibit cortical hypo-functioning with increased low-frequency oscillations.

The current results support there being links between aggression and impulsive dimensions in resting-state EEG of early phase psychosis subjects.

Enhanced theta EEG-resting power, also known to be linked to low feedback reaction (reward or punishment) (Massar, Kenemans, & Schutter, 2014) correlates positively with impulsivity in our data. Additionally, reduced alpha activity over the right-hemis scalp, already shown to be linked to high trait anger (Jaworska et al., 2012), was found here to be in relation with impulsivity scores.

In line with the recent psychological multidimensional description of impulsivity (Moeller et al., 2014), this pilot study suggests the presence of at least two distinct oscillatory markers of impulsivity during resting state, in the theta as in the alpha frequency bands.

These correlates may involve specifically the right hemisphere, known to be dysfunctional in schizophrenia (Cutting, 1994; Barnett et al., 2005), and may increase the risk of aggression against others in the early phase of schizophrenia.

REFERENCES


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RESULTS

Psychometrics: Lecrubier impulsivity scores was higher in Violent than Non-Violent patients sample (9.4±3.6 vs. 4.1±2.7; p < .04).

Resting EEG oscillations: (A) Main effect of hemispheric asymmetry was founded for non-violent patients only. Linear correlations with impulsivity were observed in the theta (B) as in alpha frequency bands (C).

- Low cortical activity (4-7 Hz) and impulsivity scores correlated positively: to elevated theta power corresponds high impulsivity scores over right posterior electrode sites.

- Negative correlations between alpha power and impulsivity were found all over the right hemisphere’s electrodes sites (F4, C4, T8, O2; r_{min} = -.51; p_{max} < .04): the less the alpha power was, the more the impulsive the patients were.