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Cognitive Psychopathology of Bipolar Disorder: Future Directions for Treatment

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In the last decade, cognitive psychopathology has shed light on how abnormal changes in cognitive functions, which are closely related to emotional and relational processes, may explain development, maintenance, and recurrence of psychiatric disorders and how dysfunction of certain brain areas determine specific cognitive phenotypes characterizing psychiatric disorders (1). Episodic memory impairment accounting for a severe damage of a sense of self and a lack of autonoetic consciousness in schizophrenia was first reported in a previous study (2). Neuropsychological investigations have also demonstrated that patients with Bipolar Disorder (BD) present persistent cognitive impairment even during the euthymic phase (3). Given high rates of neurocognitive impairment in BD and their relevance for functional outcome, these deficits should be considered as primary targets for treatment. In light of this assumption, the aim of cognitive psychopathology is to suggest a relationship between cognitive dysfunction and clinical symptoms and to indicate treatment directions. In the current study, 20 patients (M:F = 12:8, mean age 39, mean education of 11 years) were diagnosed with BD type I, according to DSM-V criteria (4) in a current euthymic phase. They were assessed by brief neurocognitive exam (BNE) (5) (overall cognitive screening), digit span (short-term verbal memory) (split-half reliability = 0.90) (6), Corsi Span (short-term visuospatial memory) (test-retest reliability = 0.38), Pairs Associates Leaning (long-term verbal memory) (test-retest reliability = 0.59), Memory of Prose (long-term verbal memory) (test-retest reliability = 0.69), Corsi Learning Suvra-span (long-term visuospatial memory) (test-retest reliability = 0.80), Visual Search Test (selective attention) (test-retest reliability = 0.53) (7), frontal assessment battery (FAB) Go-No-Go subtest (inhibitory control) (inter-rater reliability =.96; test-retest reliability = 0.85) (8), Tower of London Drexel version (ToLDX) (planning abilities) (test-retest reliability = 0.80) (9), Stroop Test (interference control) (test-retest reliability =0.85) (10), Brixton test (detecting rules in sequence of stimuli) (inter-rater reliability =0.96) (11), and picture interpretation test (PIT) (logical inference) (Cohen's kappa statistic PIT and Verbal Fluency = 0.76, $P < 0.001$) (12). Written informed consent was obtained by the patients. On BNE, BD patients presented difficulties in divided attention, cognitive flexibility, and visual-perceptual abilities. According to the literature, BD patients poorly sustain cognitive tasks overload that is associated to altered impulsive control (13). Non-parametric Wilcoxon tests to compare patients' performances on memory, attentional/executive measures showed that patients performed worse on planning abilities than interference control and ability to detect rule in sequences of stimuli ($P < 0.05$). These results confirm that all the aspects of executive function, consistent with failures in goal selection, evaluation and execution, are significantly affected in patients with BD (14). More interestingly, a Spearman's Rank correlation showed a negative association between FAB subtest Go-No-Go and PIT (rho = -0.583, $P < 0.01$). In the euthymic phase, patients experience an inhibitory control that is probably more efficient than in affective episodes: they may present a decrease of logical inference because they are more engaged in self-monitoring. Thus, clinical amelioration of patients has a cost pertaining executive efficiency. According to recent studies (15), we suggest that patients with BD should undergo specific cognitive remediation (CR) programs to better plan and organize activities, break down complex tasks to simpler ones, learn how to coach themselves more adaptively in presence of disturbed thoughts, and conform social behaviour from correct inference, in order to counteract executive dysfunction representing a persistent core deficit of the euthymic phase. The CR programs usually consist of 1 or 2 individual session(s) of 1-hour weekly held for 4/6 months (16, 17), in which participants completed computerized adaptive cognitive tasks frequently used in severe mental diseases (18). Participants may be taught cognitive strategies about memory, concentration and planning and therapists should facilitate re-

flection around how these strategies can be applied to everyday goals (e.g. domestic life or job when possible) (19).

Footnotes

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