

Action-Based Cognitive Remediation in Bipolar Disorder: A Linear Mixed Effects Analysis of Pre-Post Clinical Symptoms

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Bipolar disorder is a chronic mental health condition defined by recurrent shifts in mood and impairment in cognitive functioning. Action-Based Cognitive Remediation (ABCR), originally developed for schizophrenia-spectrum disorders, integrates cognitive exercises with real-world application strategies. The intervention consists of four modules that focus on improving speed and attention, memory, executive functioning, and social cognition. ABCR has shown preliminary promise for improving cognitive and functional outcomes in individuals with bipolar disorder. The aim of this preliminary study is to examine the effect of ABCR intervention on clinical mood symptoms and functioning using a linear mixed-effects model. Based on prior ABCR research using Reliable Change Indices (RCI) and relative percent change, pre-post changes in clinical symptoms were expected to be small. The linear mixed effects model was expected to provide a more informative estimation of these changes by accounting for individual variability and estimating the overall direction and magnitude of group-level change in a small sample. Ten participants (eight females, two males) from the External Clinic for Bipolar Disorders at the Douglas Mental Health Institute were recruited, with seven completing the seventeen-session videoconference intervention. Results indicate small, non-significant average changes across outcomes. Trend estimates suggested modest improvement in functioning, while depressive symptoms and quality of life showed minimal change at the group level. Although limited by a sample size, these findings demonstrate the value of mixed-effects models as a preliminary tool for estimating the overall trend in small clinical samples. Future work should integrate linear mixed-effects models with other measures such as Reliable Change Indices, to better capture improved clinical symptoms and cognitive functioning in patients with bipolar disorder.

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