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Neuroimaging of suicidal thoughts and behaviors in Bipolar Disorder: ideas and considerations for future research

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Suicide is common in Bipolar Disorder (BD). The estimated prevalence is 20-30 times higher in BD patients than in the general population and almost half of the individuals with BD attempt suicide during their lives ¹. An increasing number of studies have used neuroimaging methods to examine the neural mechanisms underlying suicidal thoughts and behaviors see ² for a comprehensive overview, which may increase our understanding of the pathophysiology and inform suicide prevention strategies. While these studies have shown an important role of fronto-temporal regions in suicidal thoughts and behaviors ² some important questions and opportunities for future research remain.

Most previous neuroimaging studies have examined mechanisms related to suicidal behavior in BD by comparing BD patients with a history of suicide attempt to patients without a history of attempt or healthy control participants. It may be relevant for future studies to focus on mechanisms underlying suicidal ideation, as this is what individuals with BD often present to clinicians with and is an important risk factor for suicidal behavior. Furthermore, direct comparisons between BD patients with suicidal ideation (but no history of attempt) and BD patients with a history of attempt, may help identify risk factors for transition from ideation to attempt.

The pathophysiology of suicidal thoughts and behaviors may be very heterogeneous, with many potential mechanisms or risk factors leading to suicidal behavior in different

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individuals or subgroups. An interesting avenue for future research is thus to focus on the heterogeneity in this group, and for instance identify subtypes, for an example see ³.

To address this heterogeneity in underlying mechanisms, large sample sizes are needed, also due to the low base rate of suicidal behavior. One solution to this is to pool neuroimaging data from many different research groups. This is what we are currently working on in the Suicidal Thoughts and Behaviors working group of the Enhancing Neuro Imaging Genetics Through Meta-Analysis (ENIGMA) consortium (<http://enigma.ini.usc.edu/ongoing/enigma-stb/>), which aims to find structural and functional correlates of suicidal ideation and attempt across a broad range of psychiatric disorders including major depressive disorder, BD, anxiety disorders, obsessive-compulsive disorder, psychotic disorders, post-traumatic stress disorder and addiction. Future findings of this consortium, which to date includes more than 60 research groups worldwide, may shed more light on the underlying mechanisms and heterogeneity of this complex and transdiagnostic phenomenon.

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