This talk will focus on the role of white matter neuroimaging for understanding the pathophysiological aspects of affective disorders. Recent advancements in magnetic resonance imaging (MRI) techniques have led to the characterization of the brain as a complex network. By applying sophisticated graph-theory-based network analysis to whole-brain white matter connectivity (the so-called connectome), we will show the first evidence of shared and distinct connectivity disturbances in major depressive disorder and bipolar disorder and discuss the influence of genetic and environmental risk factors. We will also emphasize the importance of longitudinal study designs necessary to explore state-vs.-trait-related alterations and its crucial role in discovering biomarkers that could aid in personalized prediction of disease trajectories.