Bipolar disorder (BP) is a major debilitating mental illness, characterized by hypo/manic episodes and depression, afflicting 1%-4% of the general population.

The boundary between BP and unipolar depression (UP) by official diagnostic systems (i.e. DSM and ICD) is increasingly questionable. Study one began by clinically validating a condition in which individuals with UP manifested subthreshold hypo/manic syndromes, namely soft bipolar spectrum, from a number of clinical characteristics (e.g. hypomanic symptom) and external validators (a family history of bipolar disorder), then compared neurocognitive function between individuals with soft bipolar spectrum and healthy controls and individuals with bipolar I, bipolar II, or UP.

Recently clinical staging models for BP have been proposed, which emphasize the early stages of BP—that is, high-risk and ultra-high-risk stages. In the high-risk stage, individuals with high-risk factors (e.g. genetic susceptibility) manifest no or mild, non-specific symptoms. While in the ultra-high-risk stage, high-risk individuals manifest subthreshold syndromes that fall short of criteria for a diagnosis. Study two and three followed up a group of offspring of parents with BP, who were subdivided into two groups of high-risk and ultra-high-risk offspring. Several dimensions, including neurocognitive function, brain gray matter volumes, and brain network properties (e.g. small world topology) were examined in the high-risk and ultra-high-risk offspring.