Despite a large body of research that has documented numerous differences in neural activity between individuals diagnosed with major depressive disorder (MDD) and healthy controls, it is not clear whether these abnormalities are specific to depression or are shared across multiple psychiatric disorders. This study uses multilevel kernel density analysis – a voxel-wise, whole-brain, meta-analytic approach – to identify the neural abnormalities reported in functional neuroimaging studies of depression and related disorders (MDD: N=66 studies, 2463 subjects; bipolar mania: N=15 studies, 562 subjects; generalized anxiety disorder: N=15 studies, 510 subjects). We obtained results that identified several brain regions with abnormal patterns of activation in participants with MDD compared to HCs that were related reliably to depression but not to mania or anxiety, including hyperactivity in the orbitofrontal cortex (p<0.0001) and hypoactivity in the dorsolateral prefrontal cortex (p<0.0001), anterior cingulate cortex (p<0.05), and anterior insula (p<0.001). Other neural abnormalities were shared across groups of individuals with depression, mania, and anxiety, including hyperactive clusters in the inferior frontal gyrus (p<0.005) and inferior parietal lobe (p<0.025). These results demonstrate that patterns of abnormal activity in functional neuroimaging studies can be used as specific biomarkers for MDD and that depressed adults show neural abnormalities that are specific to depression as well as shared with other mood (i.e., bipolar disorder) or anxiety disorders (i.e., generalized anxiety disorder).