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Neural Correlates of Approach–Avoidance Conflict in Depressive Symptoms within an Interactive Social Competition fMRI Paradigm

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Abstract

Approach–avoidance conflict is a core feature of anxiety and depression, particularly in competitive social contexts. Using fMRI, this study examined neural correlates of approach–avoidance decisions during an interactive social competition task in 118 participants spanning a continuous range of anxiety and depression symptoms. Participants chose between competing against a rival for a higher reward or avoiding competition for a minimal reward. A principal component analysis yielded a composite anxiety–depression (A–D) score. Neural activity was examined during decision and outcome phases. Higher A–D scores were associated with reduced anterior cingulate cortex (ACC) activation as rival category increased during competitive decisions. Conversely, higher reward magnitude was associated with increased ACC and insula activation in individuals with higher A–D scores. These results indicate that anxiety and depression symptoms are differentially associated with ACC engagement as a function of social difficulty and reward magnitude during competitive decision-making.