

## **The development of emotion regulation and mood pathology**

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A body of research has identified structural and functional alterations in emotion processing systems that are present in depression. However, it is not yet clear whether these reflect manifest illness or whether they precede illness onset and potentially predict risk. Thus, we examined structural and functional brain integrity in children with no prior history of depression who were scanned in childhood (n=60; 8-12 years) and then followed longitudinally (n=48). At baseline, we examined brain activity to sad faces in a network of regions involved in emotion processing (e.g., amygdala, hippocampus, parahippocampal gyrus) and in a network of dorsal frontal and parietal regions associated with emotion regulation. We also examined the volumes of amygdala, hippocampus and anterior insula. At baseline, both reduced hippocampal volume and increased functional brain responses in emotion processing regions predicted higher self-reports of depression. Reduced amygdala and insula volumes, as well as increased activity in emotion processing regions, predicted reduced self-reports of emotion regulation. More importantly, these measures also predicted self-reports of depression and emotion regulation at follow-up. For emotion regulation, the brain measures predicted over and above baseline emotion regulation, indicating that they predicted changes over development. These data are consistent with the hypothesis that the structure and function of brain regions involved in emotion processing and emotion regulation may be potentially useful biomarkers of risk for mood pathology.