

Effects of Depression Risk and Current Depressive Symptoms on Striatal Response to Incentives in Healthy Children

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Response to reward within the striatum has been the focus of much recent investigation from typical developmental and psychopathology perspectives. However, few studies have investigated responses to both positive and negative incentive feedback particularly within healthy child populations. The current study aims to investigate whether reduced striatal response to reward and enhanced reactivity to loss, patterns observed in adults/adolescents with/at risk for Major Depressive Disorder (MDD), relates to MDD risk, current depressive symptoms, or both in healthy pre/early-pubertal children. Healthy children (7-10 years) at relatively increased risk for MDD, based upon maternal MDD history (N=12), and at lower risk for MDD (N=17) completed an fMRI card-guessing game using candy pieces delivered post-scan as an incentive (data collection ongoing). A voxel-wise repeated measure ANOVA investigating effects of group (risk, control) and feedback (gain, neutral, loss) was conducted within a striatal mask. Group significantly interacted with feedback type within the ventral striatum. Post-hoc regressions indicated that compared to controls, high-risk children displayed both greater deactivation following loss feedback and reduced activation to gain relative to neutral feedback. Response to neutral feedback did not differ based on group and group differences were unrelated to current depressive symptomology. Results indicate that reduced striatal response to reward and enhanced loss reactivity may in-fact be a marker of risk evident prior to both puberty and onset of pathology.