

SEX-RELATED DEVELOPMENTAL DIFFERENCES IN THE LATERALIZED ACTIVATION OF THE PREFRONTAL CORTEX AND AMYGDALA DURING PERCEPTION OF FACIAL AFFECT¹

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Summary.—The lateralization of cognitive abilities is influenced by a number of factors, including handedness, sex, and developmental maturation. To date, a small number of studies have examined sex differences in the lateralization of cognitive and affective functions, and in only few of these have the developmental trajectories of these lateralized differences been mapped from childhood through early adulthood. In the present study, a cross-sectional design was used with healthy children ($n=7$), adolescents ($n=12$), and adults ($n=10$) who underwent functional magnetic resonance imaging (fMRI) during a task that required perceiving fearful faces. Males and females differed in the asymmetry of activation of the amygdala and prefrontal cortex across the three age groups. For males, activation within the dorsolateral prefrontal cortex was bilateral in children, right lateralized in adolescents, and bilateral in adults, whereas females showed a monotonic relationship with age, with older females showing more bilateral activation than younger ones. In contrast, amygdala activation was similar for both sexes, with bilateral activation in children, right-lateralized activation in adolescents, and bilateral activation in adults. These results suggest that males and females show different patterns of lateralized cortical and subcortical brain activation across the period of development from childhood through early adulthood.