Infant behavior predicts adult brain activity

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In human males, strong reactions to unfamiliar sounds, smells, and objects at four-months of age could predict the development of anxiety disorders in adulthood. These results, presented online this week in Molecular Psychiatry, are the earliest examples of behavior that shows continuity with mature brain activity.

Carl Schwartz and colleagues conducted an 18-year longitudinal study with 135 four-month old male and female infants that were introduced to a set of novel visual, auditory, and olfactory stimuli at the start of the study. These stimuli included smelling butyl alcohol and hearing
recordings of people unknown to the infants. Eighteen years later, the authors followed-up with these individuals, looking at the development of their amygdala, a brain region associated with processing a novel or emotionally charged stimulus such as a threatening face.

Schwartz and colleagues found that the male infants who reacted with greater crying and limb movement, called high-reactive, showed more reactivity in the amygdala towards unfamiliar faces as adults. The fact that the finding was significant only in males could highlight the importance of gender differences in temperament and anxiety. The infant behavior noted, less influenced by environmental factors than later personality profiles of shyness or behavioral inhibition, may more accurately predict predisposition to anxiety disorders.

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