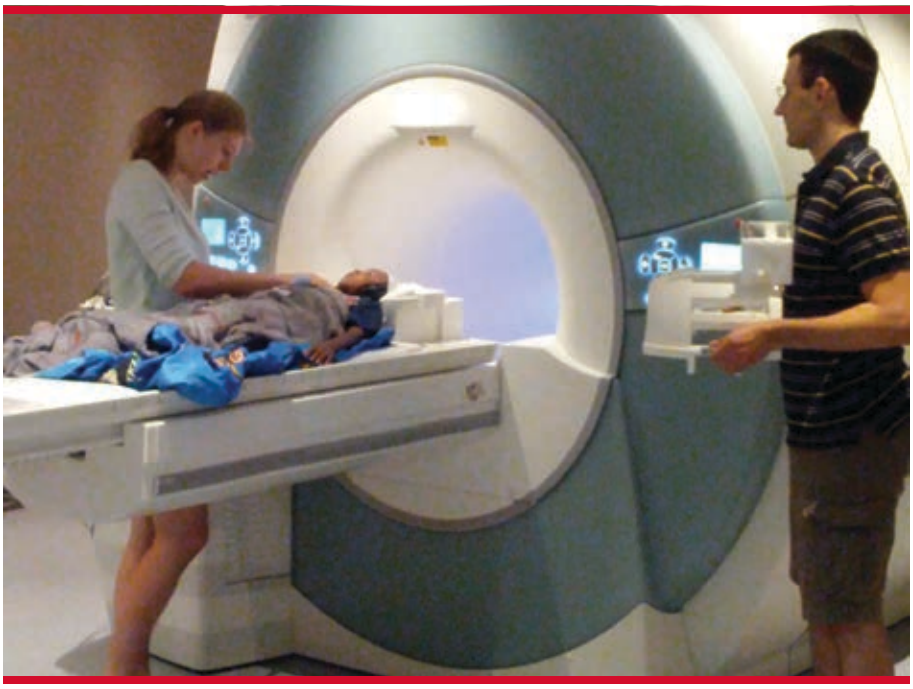
PSYC Professors Work to Unlock Childhood Memories



BSOS graduate student Katherine Rice with a child participant preparing to enter the MRI scanner

While many adults treasure their childhood memories, it can be difficult to recall even the most meaningful experiences, such as holidays and family gatherings, from this time. Assistant Professors Tracy Riggins and Elizabeth Redcay in the Department of Psychology are researching "autobiographical memory"— memories of one's personal life experiences—in their lab. They are specifically examining why most adults can recall very few, if any, memories from early childhood before the age of 6.

While lack of personal memories from early in life, or "childhood amnesia," is quite common, it presents a paradox.

"Current research in developmental psychology has shown that when autobiographical memory is examined in young children, they are able to form and report on personal experiences during this period. What changes that renders memories from childhood inaccessible later in life remains unknown," Professor Riggins said. "We feel it is important to study early autobiographical memory because it contributes to our self-identity and enhances our social ties with others. What we discover may also help improve children's memories as well."

Professors Riggins and Redcay were awarded a grant from the National Institutes of Health to conduct a study on the structural and functional development of brain regions known to play an important role in memory during childhood. In this study, 4- to 8-year-old children are invited to the lab and are asked to participate in memory games and activities, and then undergo an MRI brain scan.

The memory games involve tasks such as asking children to remember pictures, stories and recent events from their lives. The brain scan that follows these games allows researchers to examine memory-related brain structures such as the hippocampus, a subcortical region in the medial temporal lobe (roughly behind the ear). The hippocampus has been shown to be critical for memory in adults. In this study, they are examining how this region becomes functionally connected to other regions of the brain during development.

The study is designed to follow these same children for a period of three years in order to track changes in each child's memory ability and brain development. The study's multimodal and longitudinal approach will allow for the identification of neural trajectories that lead to age-related changes in memory performance.

The project involves both undergraduate and graduate students, who assist the researchers by recruiting participants and by conducting data collection and analysis.

The researchers predict that the study's findings might unlock more than memories.

"Such systematic study of memory development in childhood has important implications not only for understanding memory in general, but will also provide critical information for targeted intervention and prevention strategies for populations at-risk for memory impairment and those diagnosed with neurodevelopmental disorders known to affect the hippocampus and memory," Professor Riggins said.

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