

Poverty may reduce kids' brain function

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Courtesy University of California, Berkeley and World Science staff

In alarming research results that they describe as a “wake-up call,” psychologists have found poorer children tend to suffer from reduced brain activity.

“The stressful and relatively impoverished environment associated with low socioeconomic status” may be responsible, said psychologist Robert Knight of University of California, Berkeley, one of the researchers. “Fewer books, less reading, fewer games, fewer visits to museums.”

The researchers suspect proper training can eliminate the differences. Knight’s group is working with neuroscientists who use games to improve children’s reasoning ability.

“Kids from lower socioeconomic levels show brain physiology patterns similar to someone who actually had damage in the frontal lobe [part of the brain] as an adult,” Knight continued. “We found that kids are more likely to have a low response if they have low socioeconomic status, though not everyone who is poor has low frontal lobe response.”

In a study accepted for publication in the Journal of Cognitive Neuroscience, Knight and colleagues found that normal 9- and 10-year-olds differing only in socioeconomic status have detectable differences in the response of their prefrontal cortex, the part of the brain critical for problem solving and creativity.

Brain function was measured by means of an electroencephalograph, a cap fitted with electrodes to measure electrical activity in the brain like that used to assess epilepsy, sleep disorders and brain tumors.

Although previous research had also suggested poorer children suffer from less brain stimulation, past studies used “only indirect measures of brain function and could not disentangle the effects of intelligence, language proficiency and other factors,” said the university’s Mark Kishiyama, a member of the research team. “Our study is the first with direct measure of brain activity where there is no issue of task complexity.”