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## Early Childhood Experiences Have Lasting Emotional and Psychological Effects

*Experiences between birth and age 5 matter significantly to children's long-term emotional and psychological health, and changing these experiences for the better pays dividends, according to an editorial and several new reports in the May issue of Archives of Pediatrics & Adolescent Medicine, one of the JAMA/Archives journals.*

This month's journal is a theme issue devoted to the science of early life experience. The articles provide "key, actionable evidence of, how we can manipulate the early environment of children and make a tangible difference in their health?" write Dimitri A. Christakis, M.D., M.P.H., and Frederick P. Rivara, M.D., M.P.H., both of the University of Washington and Seattle Children's Research Institute as well as associate editor and editor of the Archives, in the editorial.

"This research needs to be translated into action," they continue. "In the new austerity that has been spawned by the national fiscal crisis, states are cutting back broadly on services. In many cases, children are being hit the hardest. Given the importance of early childhood experiences on the entire life course, we can only hope that the people who make decisions about where monies are saved are mindful of the effect those decisions can have."

Articles featured in the issue include the following:

### **Prenatal Nicotine, Antidepressant Exposure Associated With Childhood Difficulties**

Children whose mothers smoked during pregnancy appear to have more sleep problems throughout the first 12 years of life, and those whose mothers took a certain type of antidepressant may be more likely to have some behavior problems at age 3, according to two reports in the theme issue.

In one study, Kristen C. Stone, Ph.D., of the Brown Center for the Study of Children at Risk, Women and Infants Hospital, Providence, R.I., and colleagues assessed 808 children whose mothers provided information about prenatal care, sociodemographics and their children's sleep and behavior problems, as well as substance exposure during pregnancy.

Of the five substances assessed -- cocaine, opiate, marijuana, alcohol and nicotine -- only prenatal exposure to nicotine was associated with sleep problems in children. "Higher levels of prenatal nicotine exposure predicted more

sleep problems, specifically difficulty falling and staying asleep from one month to 12 years," the authors write.

"Targeting of this group of children for educational and behavioral efforts to prevent and treat sleep problems is merited given that good sleep may serve as a protective factor for other developmental outcomes," they conclude.

In another report, Tim F. Oberlander, M.D., F.R.C.P.C., and colleagues at University of British Columbia, Vancouver, studied 75 mothers and their 3-year-old children. Of these, 33 mothers took Selective Serotonin Reuptake Inhibitors (SSRIs) during pregnancy and 42 did not. Mothers' moods were assessed during the third trimester, three months after birth and at the three-year follow-up.

"Prenatal SSRI exposure and higher current maternal anxiety contributed to increased internalizing behaviors [withdrawal, anxiety and depression] in 3-year-old children," the authors write. "Increased levels of externalizing behaviors were also observed, but they were associated with current levels of three-year postpartum maternal mood." Genetic factors, including an altered version of a gene in the serotonin processing system, moderated the effect of a mother's mood on her child.

"Even with prenatal maternal SSRI treatment, mothers continue to be symptomatic, and child behavior at 3 years of age continues to be at risk," the authors conclude.

In an editorial accompanying both papers, Gideon Koren, M.D., and Irena Nulman, M.D., of the Hospital for Sick Children, Toronto, write that "since the thalidomide era, there are concerns regarding potential adverse effects of drug and chemical exposure on the developing fetus in pregnancy, causing physicians and expectant mothers high levels of anxiety toward drugs, even in life-threatening conditions."

"Because pregnant women will never be randomized to exposure to antidepressants or recreational drugs, high-

quality observational investigations, such as those by Oberlander and colleagues and Stone and colleagues, will be critical in distinguishing associations from causation in the field of maternal-fetal toxicology," they conclude.

#### **Early Childhood Television Exposure Associated With Academic, Lifestyle Risks in Fourth Grade**

Children who are exposed to more television at 29 months of age appear to have more problems in school and poorer health behaviors in fourth grade. Linda S. Pagani, Ph.D., of Université de Montréal, Canada, and colleagues studied 1,314 children in this age group whose parents reported their weekly hours of television exposure.

The researchers assessed parent and teacher reports of the children's academic, psychosocial and health behaviors as well as their Body Mass Index (BMI) in fourth grade. Each additional hour of television in early childhood corresponded to a 7 percent unit decrease in classroom engagement, 6 percent unit decrease in math achievement, 10 percent unit increase in victimization by classmates, 13 percent unit decrease in time spent doing weekend physical activity, 9 percent unit decreases in activities involving physical effort, 9 percent higher scores for consumption of soft drinks and 10 percent higher scores for consumption of snacks, as well as a 5 percent unit increase in BMI.

"The long-term risks associated with higher levels of early exposure may chart developmental pathways toward unhealthy dispositions in adolescence," the authors conclude. "A population-level understanding of such risks remains essential for promoting child development."

#### **Home Visits by Nurses Benefit Mothers, Children Through Age 12**

Home visits by nurses during pregnancy and the child's infancy appear to improve mothers' life course, reduce some behavior problems in children and decrease government spending in aid programs through age 12, according to two reports in the theme issue.

In the first, Harriet J. Kitzman, R.N., Ph.D., of University of Rochester, N.Y., and colleagues studied 613 12-year-old children, 228 of whose mothers were randomly assigned to receive home visits by nurses during the prenatal period and until the child was age 2. The other mothers received prenatal care and developmental screening and referral for the children, but no home visits.

"Through age 12, the program reduced children's use of substances and internalizing mental health problems and improved the academic achievement of children born to mothers with low psychological resources," the authors write.

In the second paper, David L. Olds, PhD, University of Colorado Denver Anschutz Medical Campus, and colleagues assessed partner relationships, fertility, economic self-sufficiency and government spending among the mothers in the study. By the time the child was age 12, nurse-visited mothers as compared with control mothers reported less role impairment due to substance use (0 percent vs. 2.5 percent), longer partner relationships (59.6 months vs. 52.6 months) and a greater sense of mastery.

During the 12-year period, the government spent less through aid programs on nurse-visited families (\$8,772 vs. \$9,797); this represents \$12,300 in discounted savings compared with the program cost of \$11,511.

"In general, these findings support the effectiveness of the Nurse-Family Partnership," the program providing the nurse visits, the authors write. "The partnership offers a means of reducing government spending and family poverty, improving children's health and development and grounding policy based on the results of replicated randomized controlled trials."

#### **Repetitive Movements Common in Children With a History of Institutional Care**

Stereotypies -- repetitive, unchanging movements with no obvious goal or function -- appear common among children who have a history of early institutional care. Karen J. Bos, of Children's Hospital Boston and Harvard Medical School, Boston, and colleagues studied 136 children from institutions in Bucharest, Romania.

After a baseline assessment, half of the children remained in their institutions, whereas the other half were assigned to be placed in foster care. At the initial assessment, more than 60 percent of children in institutional care exhibited stereotypies. At follow-up assessments 30 months, 42 months and 54 months later, children placed in foster care experienced a reduction in stereotypies, with earlier and longer placements resulting in larger reductions.

"Children who continue to exhibit stereotypies after foster care placement are significantly more impaired on outcomes of language and cognition than children without stereotypies and thus may be a target for further assessments or interventions," the authors write. "These findings have implications beyond the unique population of children in orphanages, as the extreme example of institutional care can help us to better understand the impact of deprivation on children in many settings."

### Living With Birth Parents After Maltreatment Associated With Altered Cortisol Levels

Children who continue to live with their birth parents after the involvement of Child Protective Services appear to have different daily patterns in production of the stress hormone cortisol than do children who are placed in foster care. Kristin Bernard, M.A., and colleagues at the University of Delaware, Newark, studied 339 children at 2.9 to 31.4 months, 155 of whom were living with birth parents and 184 of whom were placed in foster care following an incident requiring the involvement of Child Protective Services.

The children's salivary cortisol levels were measured at waking and bedtime on two days. Children who still lived with their parents had different patterns of cortisol production than those in foster care, with flatter slopes in waking to bedtime values.

"A blunted pattern of cortisol production appears to confer risk for later psychiatric disorders, most especially psychopathy and substance abuse problems," the authors write. "Although it is premature to suggest specific implications for neglected children, the findings are concerning."

"Foster care may have a regulating influence on children's cortisol among children who have experienced maltreatment," they conclude.

### Editorial: Behavioral Interventions Should Target Caregiver Relationships

"We live in a universe where the disruptive behaviors so often exhibited by children in child welfare are easily ascribed to Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition) diagnoses of attention-deficit, bipolar or oppositional defiant disorders," write David Rubin, M.D., M.S.C.E., and Kathleen Noman, J.D., of The Children's Hospital of Philadelphia, in an accompanying editorial.

"Missing from that discussion is that at the heart of many of these disruptive behaviors are the biological effects of failed relationships, failed attachment and multiple traumatic disruptions," they write. "The strength of the Bernard et al and Bos et al articles in this month's Archives is that they demonstrate that such injuries produce neurobiological alterations whose treatment is more likely to be successful with interventions that target attachment failure than the symptoms of disruptive behaviors targeted by medications."

"The work ahead is in understanding and supporting secure and functional caregiver relationships that lead to the sustained changes in the brain that will promote resiliency in children," they conclude.

### Twin With Higher Birth Weight Has More Conduct Problems

Among twin pairs in which there is a 20 percent or greater difference in birth weight, the twin who weighs more appears more likely to have conduct problems at age 3 to 4 years. David Mankuta, M.D., of Hadassah Hebrew University Hospital, Jerusalem, and colleagues identified 112 Israeli families with twins born at unequal weights in 2004 and 2005.

According to mothers' reports, the twin with the higher birth weight had more conduct problems in 41 percent of twin pairs, whereas the twin with lower birth weight had more conduct problems in 21 percent of twin pairs. This association tended to be stronger in dizygotic (fraternal) vs. monozygotic (identical) twins.

"The findings suggest an effect of birth weight differences on development of subsequent conduct problems," the authors write. "Further studies are needed to clarify the mediating factors of this effect."

Sources:

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