Adverse Childhood Exposures and Reported Child Health at Age 12

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Objective.—The relationship between adverse childhood exposures and poor health, illness, and somatic complaints at age 12 was examined.

Methods.—LONGSCAN (Consortium for Longitudinal Studies of Child Abuse and Neglect) tracks a group of children with variable risk for maltreatment. Of the participating child-caregiver dyads, 805 completed an interview when the child was age 4 or age 6, as well as interviews at age 8 and 12. The relationships between 8 categories of childhood adversity (psychological maltreatment, physical abuse, sexual abuse, child neglect, caregiver's substance/alcohol use, caregiver's depressive symptoms, caregiver's being treated violently, and criminal behavior in the household) and child health at age 12 were analyzed. The impact of adversity in the first 6 years of life and adversity in the second 6 years of life on child health were compared.

Results.—Only 10% of the children had experienced no adversity, while more than 20% had experienced 5 or more types of childhood adversity. At age 12, 37% of the children sampled had some health complaint. Exposure to 5 or more adversities, particularly exposure in the second 6 years of life, was significantly associated with increased risks of any health complaint (odds ratio [OR] 2.24, 95% confidence interval [95% CI] 1.02–4.96), an illness requiring a doctor (OR 3.69, 95% CI 1.02–15.1), and caregivers' reports of child's somatic complaints (OR 3.37, 95% CI 1.14–1.0). There was no association between adverse exposures and self-rated poor health or self-rated somatic complaints.

Conclusions.—A comprehensive assessment of children's health should include a careful history of their past exposure to adverse conditions and maltreatment. Interventions aimed at reducing these exposures may result in better child health.

KEY WORDS: adverse childhood experiences; child abuse; child neglect; health outcomes; longitudinal studies

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The Adverse Childhood Experiences (ACE) Study and other recent research has demonstrated that adults who experienced adverse childhood experiences were more likely to rate their health as poor and to have health problems in adulthood such as ischemic heart disease, cancer, chronic lung disease, skeletal fracture, obesity, and liver disease.[1–4] Several studies have also shown a relationship between child maltreatment and adult somatic complaints.[5,6]

The postulated link between childhood adverse experiences and health outcomes has not been examined longitudinally, however. One previous study examining a high-risk sample of children found a link between adversities and poor health at age 6, but without the dose effect found in adult studies.[7] These findings, along with the limitations of the earlier research, suggested the need to examine the impact of adversities on health over time as children mature.

The timing of adversities may be important. Research on maltreatment has suggested that maltreatment occurring across several different developmental periods has a much more profound impact on child behavioral outcomes, particularly predictors of socialization adaptation, than does maltreatment occurring in only one period.[8] In addition, the timing of childhood maltreatment has been shown to influence the appearance of aggression in later childhood and mental health outcomes in later adulthood.[9,10]

The current study examines the impact of childhood adversities occurring in the first 6 years of life (early childhood) and those occurring in the second 6 years (middle childhood) on the emergence of health outcomes in early adolescence. We hypothesized that: (1) as children age, adverse experiences would have a greater impact on their health than was found in the earlier research on younger children; (2) there are significant links between earlier childhood adversities and reported health, serious illness, and somatic complaints at age 12; and (3) adversities occurring in the second 6 years of life more strongly predict these reported health outcomes.

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METHODS

Participants and Study Design

Data used in these analyses were collected by the Consortium for Longitudinal Studies of Child Abuse and Neglect (LONGSCAN). LONGSCAN is a consortium of a coordinating center and 5 study sites investigating prospectively the antecedents and consequences of child maltreatment.[11] The study sites represent different geographical regions and populations with different levels of risk for maltreatment. The Southwest site includes children removed from their homes by Child Protective Services (CPS) and placed in foster care, while the Northwest site includes children reported to CPS judged to be at moderate risk for maltreatment. The Midwest site includes both families reported to CPS and matched neighborhood controls who were not initially reported to CPS. The East site recruited low-income at risk children from their clinics. The Southeast site recruited children at birth considered at risk because of birth or sociodemographic problems.[12] All sites collect data according to the commonly shared protocols at age-specific data collection points.

These analyses include data on participants who had completed interviews when the child was either age 4 or age 6 and who had also completed both the interviews conducted when children were age 8 and 12. Of the 1354 children enrolled onto the LONGSCAN studies at baseline (age 4, age 6, or both), 805 (59%) had completed both the age 8 and age 12 interviews. This decrease in numbers was primarily due to attrition; specifically, participating families moved frequently, and some were not responsive to telephone and mail requests for interviews. In addition, several children in the Midwest site had not yet aged into the age 12 interview at the time of these analyses. Comparison of demographic characteristics revealed no differences between those included in the analyses and those not included. The only significant difference in early adversity between the 2 groups was that those who were included were significantly more likely to have been reported as experiencing psychological abuse (26.6% vs 21.9%, $\chi^2 = 3.92$, $P = .04$).

The demographic description of the sample is presented in Table 1. More than 40% of the children were living in poverty, and approximately one-third had mothers who had never been married. The biological mother was the primary caregiver for approximately 75% of the sample, depending on the age assessed. The remainder included some children in foster care and some being raised by other relatives.

Table 1. Demographic Characteristics (N = 805)

Characteristic	n (%)*
Gender	
Male	399 (50)
Female	406 (50)
Site	
Eastern	153 (19)
Southern	147 (18)
Midwestern	113 (14)
Northwestern	175 (22)
Southwestern	217 (27)
Race	
White	215 (27)
African American	431 (54)
Other	159 (20)
Poverty	
Yes	316 (41)
No	442 (59)
Mother marital status	
Never married	269 (34)
Married	314 (39)
Formerly married	218 (27)

*Numbers vary slightly as a result of missing data.

Human Subjects

Each site and the coordinating center obtained approval from their local institutional review board. Caregivers provided informed consent, and children assented to participate.

Variables and Their Measurement

Age-appropriate measures were selected from among available standard published instruments, as discussed below. Some measures asked caregivers about events in the prior year, others in the prior 6 months. Analysis included data collected during assessment interviews when the children were aged 4, 6, 8, and 12. For several predictor variables, different measures were used to assess the variable at different ages. We dichotomized each predictor and outcome variable to construct a risk profile, unless otherwise specified as detailed below.[11–14]

Demographic Control Variables

Demographic variables were part of the assessment at each age. Time-invariant demographic variables (child's race/ethnicity, gender, and study site) were collected at age 4 or 6. For variables that could vary over time (eg, caregiver's marital status and family income), information collected at the age 12 interview was used. To increase power, the number of categories of each variable was reduced. Specifically, child's race/ethnicity was divided into white, African American, or other. Caregiver's marital status was divided into married, never married, or formerly married. Family income was dichotomized into above federal poverty level or at or below federal poverty level.

Adverse Exposures

We examined the pool of variables from the ages 4, 6, 8, and 12 interviews to identify indicators of adverse childhood experiences that corresponded with 8 categories of childhood adversity analogous to those described in the ACE Study with the addition of child neglect. Four indices of maltreatment (psychological maltreatment, physical abuse, sexual abuse, and neglect) and 4 measures of household dysfunction (caregiver's substance use/alcohol abuse, caregiver's depressive symptoms, caregiver being treated violently, and criminal behavior in household) were identified. Where possible, an indicator for each of the measures of adversity was specified. These assessment periods were categorized as adversities occurring in the first 6 years of the child's life (assessed at 4 and 6 years) or occurring in