PERSPECTIVES

Early Childhood Predictors of Adult Psychopathology

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This paper considers the relationship between experience and behavioral profiles during the first 4 years of life and later psychopathology by examining the results of prospective longitudinal studies. The review revealed modest associations. The most consistent findings imply that an extreme degree of impulsivity in preschool children predicts adolescent delinquency, and that severe neuromotor anomalies in infants are a possible sign of vulnerability to adult schizophrenia. (Harvard Rev Psychiatry 1996;3:341-50.)

The hypothesis that the present is continuous with the past—and therefore can be predicted from it—is a popular conception in Western views of nature, especially in theories of psychological development. Plato, Freud, and Watson urged parents to follow well-specified regimens with their infants to guarantee the development of a competent child and a civil adult. This degree of historical determinism has always been less attractive to Chinese commentators, who have tended to emphasize the prominence of change in human development, arguing that if the initial environment created one profile, it was irrational to reject the possibility of subsequent environments creating a different profile. Advances in human genetics that promise to result from the genome project may make the Western view more persuasive. One day clinicians may karyotype a newborn and tell the parents about the profile of probabilities relevant to the mental and physical diseases to which that infant could be vulnerable.

ORIGINS OF THE MODERN VIEW

During the past century, researchers maintaining that aspects of early childhood offer a preview of future personailty and psychopathology have been divided into two camps. Those in one camp have used particular early experiences to make their predictions; those in the other have relied on the behavior of the young child. This paper reviews data that bear on each of these positions.

Acceptance of the belief that adolescent or adult psychopathology begins in early childhood and can be detected during the first few years of life is now so pervasive that few scholars or parents appreciate how revolutionary it was, in 1905, for Freud to posit the later consequences of fixations at the oral and anal stages. Twenty-five years earlier a majority of scholars believed that most pathology resulted from inherited biological mechanisms, some of which were called temperament. However, the concept of temperament did not demand that the relevant physiological mechanisms be revealed early, so studying the very young child was not of great interest to most 19th-century scholars.

Although some of the recent, occasionally harsh, criticism of Freud's views and observations is valid, the critics often fail to acknowledge the originality of his speculation that the events of infancy had a formative influence on the future. That speculation motivated a quarter-century of empirical research on the consequences of variation in forms of feeding and regimens of toilet training for later character. The conclusion, at the end of this intense period of inquiry, was not in accord with Freud's predictions. Hence, one would have thought that a strong loyalty to early childhood determinism would have faded. But facts are not the only determinant of the popularity of a belief; history is equally influential.
By the 1960s increasing numbers of young mothers were entering the work force, and society, convinced that the biological mother was the best caretaker, became apprehensive over the rise of surrogate care. As a result, Bowlby's ideas on attachment, emphatically stated in his trilogy, changed the focus of inquiry from feeding and toilet training to the quality of affective interactions between mother and infant while still preserving the emphasis on early experience. The invention by Ainsworth and colleagues of the Strange Situation, an easily implemented laboratory procedure that purported to measure the complex quality of attachment of infant to caretaker, guaranteed that this concept would ascend in salience because the community wanted to believe the fundamental premise. Many scientists interested in psychopathology (e.g., Goossens and Van IJzendoorn) believe that a 1-year-old who is insecurely attached to the parent is at greater risk than a securely attached infant for the development of later pathology.*

While Bowlby's ideas were gaining adherents, Thomas and Chess revisited the 19th century's interest in temperament. They suggested that each infant begins life with tendencies that have consequences for the future but wisely added that the individual's profile would depend on the combination of a particular temperament and a particular environment. The concept of goodness-of-fit held that later pathology was likely only if the ideals and practices of the parents were not in harmony with the child's temperamental profile. Presumably, sensitive observers would be able to detect the goodness-of-fit and predict future disorder, but for reasons that were very different from those put forward by Freud or Bowlby.

The hypothesis that the profile of the young child provides a clue to later psychopathology has broad support in most industrialized states, whether the enthusiasm derives from attachment theory, temperament, or the consequences of abuse or cocaine addiction in the pregnant mother. We now review, with three caveats, the evidence for and against this proposition.

First, we will restrict this review to childhood data that cover the first 4 years of life. This decision was based on the consideration that there is good support for a predictive link between the behavior of the school-age child (age 5 and older) and psychopathology in the adult, but much more controversy over the relation between behavior during the first 4 years and later psychopathology.

Second, the evidence to be summarized will rely primarily on prospective data because recall of childhood experiences by an adult—or by his or her relatives—is of uncertain validity. Parents cannot recall accurately, after even a 3-year interval, how they behaved with their infant, and no adult is able to remember with accuracy the significant events of his or her first 4 years. Limitations on validity are also imposed by the subjects' views of the importance of the topic, their honesty, their age and life stage, the context of the interview, and the forgetting, reordering, or invention of past events. Although some adults with clinical symptoms might report that a parent was cold or indifferent when they were young, it is notable that Charles Darwin and John Stuart Mill had such memories of their fathers but concluded as adults that their fathers loved them. Thus, the relationship between adults' mental health and their memories of their parents' affection for them as children is ambiguous. Hence, prospective data must remain the basis for evaluating the argument that early childhood qualities predict later psychopathology.

Third, the vast majority of studies to be reviewed did not rely on standardized psychiatric interviews for diagnosing psychopathology using DSM-III or IV. Thus, the presence or absence of a relation between early childhood qualities and adult psychopathology could be due to imprecise diagnostic techniques. Further, in most cases the diagnoses of pathology were evaluations of the person's current state, not lifetime estimates. The reader should consider this flaw in evaluating our conclusions.

Excellent reviews of this topic have been published in the past. However, most of these essays, like the recent one by Rutter, covered children older than age 4 and included both prospective and retrospective evidence. This is an understandable choice, for it leaves the scholar with a much larger corpus of evidence from which to draw inferences. Limiting the review to long-term prospective data diminishes the relevant evidence. Thus, this review is not redundant with other, similar contributions.

The search for relevant prospective studies in this review relied on Medline, PsycLIT, and the Inventory of Longitudinal Studies in the Social Sciences. It was limited to articles published in English, German, French, Spanish, and Italian from 1974 to 1994.

We have tried not to select articles based on a particular theoretical framework, but rather to present the authors' theoretical positions when they are stated. Compared with psychologists in the period prior to World War II, when Freud's ideas were dominant, contemporary empirical investigators are theoretically more agnostic. Although attachment theory is currently popular, we know of no published prospective study that has followed into late adolescence and adulthood a large cohort of young children whose early attachment status was known. Therefore it is not possible to evaluate the theoretical claim that most 1- to 2-year-olds with insecure attachments are at risk for later psychopathology. We also do not comment on the recent studies that assume that adult narrative memories of early childhood are a valid index of the form of an earlier attachment.
The reader may wish to know the theoretical biases of the authors of this review. We believe that although initial temperamental dispositions or experiences can have an influence that extends into the future, there is great malleability prior to age 6 or 7 years because a child's identification with family and class and his or her success or failure in school or with peers, which are very influential after that point, have not yet become important participants in the child's personality.

NONCLINICAL SAMPLES

The Fels Institute Study

Eighty-nine middle-class Caucasian families living in southwestern Ohio in the 1930s were enrolled in a longitudinal study. The infants and young children were observed at home and in group settings at the Institute during the first 4 years of life. When these children became adults, they were interviewed and tested extensively by Kagan and Moss.20 Very few individuals displayed obvious signs of psychopathology during 2- to 3-hour interviews covering their current status. One girl, who had a brief psychotic episode during her freshman year at college, was an exception. However, her behavior during her first 4 years was not different from that of the majority of children in the sample. She was described by observers who saw her at home and in a group setting as an adaptive, even-tempered, relatively fearless child who was less irritable and easier to care for than her two siblings, who were also members of the large cohort.

The only sign of a relation between early childhood behavior and later pathology was a modest association between a shy, avoidant response to challenge during the first 3 years and passivity to challenge and dependency on family members in adulthood. Although this is a distinct personality trait, it would not meet the usual criteria for a diagnosis of psychopathology.

The Kauai Study

Another important prospective investigation involved a birth cohort of over 600 children born on the island of Kauai and followed from birth to 32 years of age. The purpose of this study was to determine whether infants born with severe perinatal complications and/or serious social disadvantage were at special risk for later pathology.21,22 The 10% of the sample who had experienced perinatal stress proved to be only at slightly greater risk for later pathology than the remainder of the sample. By contrast, continuing influences—such as the social class of the family and the infant's temperament—were more influential. The higher the social class of the family and the less irritable the infant, the less prevalent were school failure, delinquency, and clinical referrals to psychiatrists.21,22 Many psychological problems in the children were temporary, especially if they occurred in children growing up in middle-class homes. The last assessment (at age 32 years), which included an extensive structured interview, revealed that three-quarters of those who had been delinquent as adolescents did not have an adult arrest record.22

A combination of biological stress at birth and economic disadvantage was the best predictor of later psychological problems. Either condition alone was much less potent. The authors21 wrote, “As we watched these children grow from babyhood to adulthood, we could not help but respect the self-righting tendencies within them that produced normal development under all but the most persistently adverse circumstances.”

The Berkeley Guidance Study

MacFarlane23-25 followed 166 subjects from birth through early adulthood. At age 30 years a core group of earlier measurements (mental and projective tests) were repeated and the subjects were interviewed to secure data for the appraisal of self-acceptance, morale, and competence and satisfaction both on the job and as a parent. Summarizing the evidence, she noted that most of her colleagues' expectations of later pathology from a child's early profile were incorrect. She wrote, “It seems clear that we overweighted the troublesome and pathogenic aspects and underweighted elements that were maturity inducing… We unquestionably overestimated the durability of those well learned behaviors and attitudes that were characteristic habitual response patterns over a substantial period of time.”25 “Our adult outcome data, however, show that for many persons early road blocks were in time bypassed or compensatory satisfactions were secured… Many of our mature and competent adults had severely troubled and confusing childhoods and adolescences. It is clear that we need more sophisticated theories that will help us weight the relevant components—the types of stress, the compensating supports, in various types of organisms, at the various developmental periods—if we are to predict which combinations of factors forestall and which combinations facilitate maturity and strength.”25

The British Medical Research Council's National Survey of Health and Development (NSHD)

The NSHD is a birth-cohort study that was initiated in Britain in 1946 (see Wadsworth25 for details). Data concerning home and family background, health, education, employment, behavior, and attitudes were collected at intervals of no longer than 2 years until early adulthood, and less often thereafter. Additionally, the NSHD included an assessment of psychiatric state (mainly affective disorders) at age 36 years. Because of the large sample size and the
nonclinical character of this sample, the psychiatric evaluation at age 36 years was done by lay interviewers using the Present State Examination.

Rodgers summarized the associations between the childhood variables at age 4 and mental health at age 36 years that were found in a sample of over 3000 individuals. Only bed-wetting in 4-year-old girls had a predictive link to adult symptoms. Girls who were bed wettters were more likely than others to be diagnosed with an affective disorder at age 36 years (13.6% vs. 8.5%, \( \chi^2 = 4.03, p < 0.05 \)). It is noteworthy that the “neurotic” traits of childhood, such as eating difficulties, fidgetiness, thumb-sucking, difficult relationships, concentration/restlessness, mood change, obsessions/compulsions, phobias, and teachers’ descriptions of sensitive/highly strung, shy/withdrawn, and aggressive personality did not predict adult psychological problems. The author concluded, “In general the accuracy of prediction obtained in the reported analyses was unimpressive and could be poorer if the same criteria were applied to different samples. A parent concerned over a child who bit his/her nails [a trait found to be associated with mental health when assessed at age 6 years] could reasonably be assured that the habit in itself had little implication for later adjustment.”

These four prospective longitudinal studies did not produce strong support for the hypothesis that the characteristics of young children are sensitive predictors of later pathology. However, critics could claim that most of the children in these longitudinal cohorts had the privilege of relatively secure middle-class homes and protection from frequent trauma early in life. Prediction of psychopathology might be better for children who were unfortunate enough to be exposed to many adverse experiences during infancy and early childhood.

**CONSEQUENCES OF EARLY TRAUMA**

After World War II a social service agency arranged for middle-class American families to adopt homeless children who had led unpredictable lives in Europe during the war. The children ranged in age from about 5 months to 10 years when they arrived in the United States. Thirty-eight of these children were followed longitudinally as they adjusted to their new homes. About 20% initially displayed signs of severe anxiety, including overeating, sleep disturbances, and nightmares. But these symptoms vanished in time, and the vast majority made good school progress. The authors wrote, “The thing that is most impressive is that with only a few exceptions they do not seem to be suffering either from frozen affect or the indiscriminate friendliness that Bowlby describes. As far as can be determined, the relationships to their adopted families are genuinely affectionate. . . . The present results indicate that for the child suffering extreme loss the chances for recovery are far better than had previously been expected.”

In a later, similar investigation by Winick and colleagues, 229 Korean girls between 2 and 3 years of age who had been exposed to trauma during the Korean War were later adopted by middle-class American families. The children were initially divided into three groups based on severity of malnutrition, and they were observed 6 years after they entered their foster homes. The severely malnourished group showed an average IQ (102) 40 points higher than the scores of similar Korean children who had returned to their original home environments; there were no serious cases of dyslexia or mental retardation. Although the authors did not evaluate the usual categories of psychopathology, the absence of cognitive problems could perhaps be taken to imply that emotional pathology was minimal.

Hodges and Tizard studied 42 adolescents who had been reared in residential nurseries in Great Britain for the first 2 years of life and had then experienced a change in circumstances. Between ages 2 and 7 years, some of the children were adopted and others were restored to their biological parents. The latter group of youngsters, whose families were often both disturbed and economically disadvantaged, showed a high rate of antisocial behavior. Almost all had had some contact with the police and/or psychiatric services. However, the adopted children, most of whom were living in stable homes, were far less likely to show asocial patterns. Because these two groups had had very similar experiences during the first 2 years, the higher level of asocial behavior in the children restored to their biological families was probably a function of their continuing disadvantaged circumstances rather than of their initial institutional experiences. The fact that the children who were adopted into stable homes had less pathology argues against the preservation of the effects of the first 2 years.

Most investigators who have tried to link early aversive experiences with later pathology have failed to find that stress in the early years, when considered apart from other background factors, predicts later pathology. In some recent studies reporting connections between early environmental influences (such as negative maternal attitudes or a severely disadvantaged environment) and adult psychopathology, the adverse environment of the first years was maintained. Clarke and Clarke suggested that if the stress of the early years continues throughout childhood, it is not possible to conclude that the early stress was pathogenetic: “Unless it can be positively shown that there was a significant discontinuity between early and late environmental circumstances, no conclusions can legitimately be drawn concerning the effects of the former.”

In sum, the evidence suggests that an early adverse
environment increases the probability of later disorder, but only if the adverse environment is maintained. Stressful experiences in the first years seem to carry less risk if the rearing environments become supporting after age 4 years.30,32

EARLY CHILDHOOD PREDICTORS OF SPECIFIC DISORDERS IN ADULTHOOD

Antisocial behavior
White and colleagues37 initially studied 1037 members of a New Zealand birth cohort at age 3 years. Based on later longitudinal data, they subsequently divided the children who remained in the study into three groups: subjects with no disorders in childhood or adulthood (n = 837), subjects with disorders other than antisocial behavior (n = 37), and subjects with antisocial behavior disorders (n = 50). A discriminant function that used the five most promising preschool variables correctly predicted whether or not the children would show antisocial behavior at age 11 years in 81% of the subjects, and whether or not they would show delinquent behavior at age 15 years in 66%. The preschool traits of hyperactivity, restlessness, and being difficult to manage, based on teacher and parent reports, forecasted the antisocial outcomes. However, the magnitude of the predictive relation was modest. Among the 209 children whose early behavior should have been predictive of antisocial behavior at age 11 years, 84% did not display a profile severe enough to require that diagnosis. The authors concluded, “The prediction does not yet appear to be accurate enough to provide the basis for any intensive intervention program that is designed to prevent stable and pervasive conduct disorder.”

In a related analysis with the same sample,38 behavior ratings of over 800 children at 3, 5, 7, and 9 years of age were factor-analyzed to reveal three dimensions at each age: lack of control/overcontrol, approach toward/avoidance of unfamiliar people and situations, and sluggishness/vitality. These qualities in 3- and 5-year-olds were correlated with later parental judgments of behavioral problems at 9–11 years and at 13–15 years. The preschool characteristics that best predicted adolescent delinquency were “lack of control” (defined as an inability to modulate impulsive expression), minimal persistence in problem solving, and affectively intense anxious or angry reactions to challenge. However, the magnitudes of these predictive coefficients were small (<0.25).

The same sample was reassessed at age 21 years for psychopathology using standardized interviews based on DSM-III-R criteria (A. Caspi et al., unpublished data). On the basis of the behavioral observations at age 3 years, the children were divided into five groups. The first three groups—labeled “undercontrolled” (n = 106), “inhibited” (n = 80), and “well-adjusted” (n = 405)— resembled the three groups identified by Chess and Thomas.30,50 Children in the first group were impulsive, restless, and distractible; those in the second group were shy, fearful, and easily upset; and those in the third group were self-confident, capable of self-control when it was demanded, and not “unduly upset when confronting new people and situations.” Two other, functionally less relevant groups were also described, the “reserved” and the “confident.” The authors asked two questions: First, are undercontrolled and inhibited children more likely than others to have psychiatric problems? Second, do behavioral characteristics at age 3 years provide discriminant validity in predicting specific psychiatric outcomes in adulthood? The Diagnostic Interview Schedule, version III-R, was administered to the 21-year-olds to obtain diagnoses of mental disorder during the previous 12 months.

The likelihood of psychiatric disorder at age 21 years was modestly linked to behavioral styles at age 3 years. Undercontrolled and very inhibited children were most likely to have a later psychiatric disorder (χ² = 8.5, p = 0.07), as evaluated by parent and teacher questionnaires. An analysis of variance of the number of concurrent DSM-III-R diagnoses at age 21 years, with behavior at age 3 years as the independent factor, revealed only a marginally significant statistic (F = 2.13, p = 0.07). As for the connections between early behavior and specific disorders, undercontrolled children were more than twice as likely as well-adjusted ones to be diagnosed as having antisocial personality disorder (p = 0.03); they were also twice as likely to be recidivistic offenders (p = 0.05) and over five times as likely to have been convicted of a violent offense (p = 0.01). Surprisingly, inhibited children were also significantly more likely to have been convicted of a violent offense (p = 0.02). However, this association was moderated by the sex of the child: inhibited boys, but not girls, were more likely to have had such a conviction.

Block and Block31 found that lack of control in 3- and 4-year-olds, based on ratings by nursery school teachers, predicted adolescent involvement in drugs. The adolescent boys who used drugs were described when they were young as disobedient, active, high risk-taking, not introspective, and unable to delay gratification. As preschoolers, the adolescent girls who used drugs had wanted attention and prizes from others while being resentful of them.

Thus, the preschool child’s inability to inhibit socially inappropriate behavior appears to predict, to a modest degree, later asocial behavior. Such a conclusion is consistent with other reports31–43 suggesting that undercontrolled behavior in school-age children is the best predictor of adult antisocial behavior. This association, which is stronger for children from less-well-educated families, may be the most reliable relation between char-
acteristics in young children and later psychopathology.

Schizophrenia

It is difficult to find a sample of young children at risk for schizophrenia and to study them into late adolescence, when a diagnosis becomes more likely. Despite the paucity of prospective data, there is a hint that risk status might be reflected by a display of neurodevelopmental irregularities during the first 2 years. Relevant data come from eight studies of high-risk children: the New York Infant Study,\textsuperscript{44,45} the Pittsburgh Study,\textsuperscript{46} the Rochester Longitudinal Study,\textsuperscript{47,48} the Jerusalem Infant Developmental Study,\textsuperscript{49,50} the Swedish High Risk Study,\textsuperscript{50,51} the Boston High Risk Study,\textsuperscript{52} the Obstetrical Study,\textsuperscript{53} and the Collaborative Perinatal Projects of New York,\textsuperscript{54} and Minnesota.\textsuperscript{55}

Fish and colleagues\textsuperscript{44,45} studied 24 children from economically disadvantaged backgrounds; the mothers of 12 of them had chronic schizophrenia. These youngsters were observed at birth and again 7–8 years later. Seven of the 12 infants of the schizophrenic mothers, but only one control child, had a neurodevelopmental disorder that Fish called pandysmaturation. Pandysmaturation was defined as a transient lag in and disorganization of gross motor and/or visual motor development, as indexed by behavior on the Gesell test and physical growth measures that were repeated ten times between birth and age 2 years. In a nonblind evaluation Fish provisionally diagnosed six of these subjects as adults as either schizotypal or paranoid; all six had had pandysmaturation as infants. Five of the 11 controls who remained in the study (versus seven of the 12 children with a schizophrenic mother) also had a diagnosable DSM disorder—a nonsignificant difference.

Walker and Lewine\textsuperscript{56} analyzed home movies made in familiar, ecologically valid settings (e.g., home, playground) of children who had become schizophrenic, as well as similar films of their healthy siblings. Clinicians who were blind to the subjects’ later psychiatric status studied the movies and identified, at above chance levels, those youngsters who became schizophrenic.

The clinicians probably used facial expressions as a clue to identify the children who later became schizophrenic. In a subsequent study, Walker and colleagues\textsuperscript{57} asked observers to code facial signs of emotion from home movies made during early childhood of 32 schizophrenic patients and 31 healthy siblings. Compared with their same-sex healthy siblings, the girls who later became schizophrenic displayed significantly fewer occurrences of facial expressions of joy. However, a similar difference did not appear among the boys.

Walker and coworkers\textsuperscript{58} also compared home movies, from infancy through the adolescent years, of 30 schizophrenic adults and persons from several comparison groups that included healthy siblings of the schizophrenic patients, patients with affective disorder and their healthy siblings, and individuals from families without mental illness. Two coders rated the movies for neuromotor abnormalities and motor skills. The scale for neuromotor abnormalities emphasized soft signs of neurological dysfunction and abnormalities of movement. Neuromotor abnormalities were most frequent in the children who became schizophrenic—a result reminiscent of Fish’s concept of pandysmaturation. Moreover, choreathetoid movements in the upper limbs of the children who developed schizophrenia occurred primarily on the left side of the body, suggesting unusual levels of activation, or compromised function, in the right hemisphere.

Hanson and colleagues\textsuperscript{59} were less confident about finding early behavioral signs that would predict schizophrenia. They reported no important differences among the four groups that they studied: 33 children born to a schizophrenic parent, 36 children born to a parent with some form of pathology other than schizophrenia, and two normal samples. However, five children had very poor motor skills and great variability in their performances on a variety of tests. All five of these children had a schizophrenic parent, and no control child displayed such a profile. Nevertheless, all five appeared to be well adjusted as adolescents, although it is possible that they could develop symptoms as adults. The authors noted: “Perhaps the human organism is endowed with a remarkable capacity to channel development in the direction of health.”\textsuperscript{60}

They also suggested that the less frequent the pathological symptom, the harder it would be to detect or to predict that symptom. A large number of schizophrenic patients appear to be normal nearly until the onset of psychosis. For example, even if an early predictor—such as pandysmaturation—has a specificity of 95% and a sensitivity of 90%, the probability of predicting correctly which child will become schizophrenic is only 0.15, assuming a base rate of schizophrenia of about 1%. Eighty-five percent of the children who show the predictive signs will not develop schizophrenia.

Depression

Researchers have investigated such factors as loss of a parent, maternal deprivation, and institutional rearing but have been unable to find a particular set of events or behaviors during the first 4 years of life that predicts later depression. Further, for most reports on early precursors of depression, children were first studied when they were older than 5 years.\textsuperscript{60} Investigation of younger children relied primarily on parental interviews, rather than direct observations, as the primary source of information. None of the studies of children at high risk for depression that have tracked the youngsters from birth has assessed subjects old
enough for a diagnosis of depressive disorder. The Rochester Longitudinal Study\textsuperscript{47} stopped at 30 months, and the National Institute of Mental Health/Colorado Collaborative Study\textsuperscript{41} stopped at 7 years.

Block and Gjøde\textsuperscript{52} examined the relation between early personality characteristics of 3-year-olds and later depressive symptoms in 106 young adults assessed after high school graduation. Each 3-year-old was described by three nursery school teachers who had observed the child for a minimum of 6 months. There were modest correlations (about 0.3) between the nursery school descriptions and the assessments at 18 years. The mildly depressed 18-year-old boys had been described 15 years earlier as having transient interpersonal relationships and being unable to admit to anger or fear. The mildly depressed adolescent girls, however, had been described as attentive, verbally fluent, and unlikely to seek others to affirm their self-worth. Thus, the predictors of later depressive mood were different for boys than for girls. However, the authors noted a methodological limitation in their study: the measure of depression was the Center for Epidemiological Studies Depression Scale, which may not be a valid index of major clinical depression.

In the previously cited study by Caspi and colleagues (Caspi et al., unpublished data), inhibited 3-year-olds were twice as likely as well-adjusted ones to be diagnosed with depression at age 21 years.

Some clues to possible precursors of affective disorders can also be seen in Walker and coworkers' archival studies of home movies.\textsuperscript{54} As mentioned above, one of the comparison groups consisted of affectively disordered patients. There was some suggestion that the children who later became depressed had neuromotor abnormalities during the first 2 years of life, although these children showed less abnormality than did those who became schizophrenic.

**DISCUSSION**

The evidence summarized suggests a modest relation between the psychological profiles displayed in the first 4 years and later psychopathology. The two most robust associations linked impulsivity and lack of control in 3- to 4-year-old males with later asocial and delinquent behavior, and serious neuromotor anomalies in infants with later schizophrenia. However, both associations are quite modest in magnitude. Most scientists who have reviewed similar corpora\textsuperscript{63-66} have arrived at a very similar conclusion.

However, researchers who believe that the link between early childhood and later pathology is much stronger can legitimately claim that no investigator has studied all of the relevant qualities of the children and their environments. It is not beyond reason to suggest that future scientists may discover a subtle physiological or behavioral feature displayed before 5 years of age that is a sensitive predictor of later symptoms. We will have to wait and see; at the moment the available evidence is silent on that hope.

The prediction of adolescent or adult psychopathology from infancy and early childhood is modest because some infants with risk profiles are fortunate enough to encounter more-supportive environments later, while others living under adverse circumstances possess a temperament that enables them to develop effective coping styles. And many children who manifest symptoms do not encounter adverse circumstances until later in childhood.

If this cautious conclusion regarding the predictive significance of early childhood is valid, one must ask why many professionals have a strong intuition that some early profiles are sensitive predictors of later pathology. This view rests on a tacit commitment to the idea of connectedness in development. Connectedness implies that nothing of the past is lost and that the present is directed by the deep past. It is easy to look at an irritable, fearful, or hyperactive 1-year-old and imagine an adolescent in whom each of these features has become enhanced. The observer's mind does not consider the possibilities that the current profile is a short-term reaction to a temporary stressor and that future encounters might support the child's development. The data suggest that children have a natural tendency to grow toward health.\textsuperscript{10,67}

Skolnick\textsuperscript{68} described the feeling of surprise among the scholars who evaluated the subjects in the Berkeley longitudinal study: "When the subjects were seen at age 30, 12 years after their previous interviews, the researchers were shocked by the inaccuracy of their expectations. They were wrong in about two-thirds of the cases mainly because they overestimated the damaging effects of early troubles. They had also not foreseen the negative effects of a smooth and successful childhood; a degree of stress and challenge seemed to spur psychological growth and competence."

The actualization of most profiles—Axes I and II—requires the combination of at least three independent factors: a particular temperament, an environment that amplifies the psychological vulnerability associated with the temperament, and stressors that precipitate the symptoms. The probability that all three factors will coexist for a particular child is low. Consider as a hypothetical illustration a young adult with social phobia. Existing data\textsuperscript{69} suggest that about 20% of infants are born with a temperamental profile that renders a child at risk for later social phobia. However, parents who place reasonable demands on easily aroused infants and gently encourage them to cope with fear of unfamiliar events protect this type of child from becoming extremely fearful. Parents who are too protective of such children facilitate the maintenance of a fearful profile.\textsuperscript{70} Unfortunately, the data do not permit an accurate estimate of the prevalence of parents who adopt
this overprotective regimen. The data from one study suggest that in contemporary America, the protective style of child rearing with these easily aroused infants has a prevalence of about 0.3.

Finally, stressful experiences—abuse, peer rejection, school failure, the death of a parent—are of importance in precipitating the syndrome. As with parental practices, the prevalence of such stressors is unknown. We would estimate that the probability of a child encountering any one of these or similar stressors is 0.4. If we multiply 0.2 (the prevalence of high reactivity) by 0.3 (the prevalence of a protective parent) by 0.4, we arrive at an estimate for the prevalence of social phobia of about 2-3%. This estimate is close to one based on epidemiological surveys of anxiety disorders.

This view of the development of pathology, which resembles biologists’ views of evolution, is different from a linear perspective that assumes that a certain set of experiences (for example, abuse of an infant) must establish a sequence of psychological outcomes that usually leads to a psychiatric disorder. This latter perspective is not in accord with the empirical data.

We noted earlier that Chinese scholars see less permanence in nature. The Western mind, frustrated by the irrepressible flux, demands some almost-frozen moments in the form of hypothetical entities that do not change, principles that impose uniform regularity, or—if these cannot be defended—at least periods during which the rate of change becomes very slow. We are as if in the midst of a spring thaw, hoping that the rush of water will cease for a few moments so that we might determine our location and savour the view.

Several factors have promoted a contemporary faith in the determinism of early childhood. One is the egalitarian ethic in Europe and America. Many believe that the only way to guarantee the attainment of political equality is to assume that all infants are similar at birth and to regard experience as the unbiased tutor to all. Those who want an egalitarian society are attracted to any theory that insists that experience is the primary determinant of psychological differences. Because 5-year-olds differ markedly from one another, supporters of this view would be driven to conclude that very early experience must be the cause of that variation.

A second factor derives from the maxim that one must prepare for the future. The writings of American intellectuals in the 18th and 19th centuries, influenced strongly by Protestants with an egalitarian ideal, urged mothers to care for their young children, implying that such action was not unlike gathering wood in August to prepare for winter’s frigid winds.

A third basis for a belief in stability is the nature of our language. The adjectives used in English, German, and French to describe people rarely refer to the age of the actor or to the context of the action. Like the names of colors, they imply a stability over time and location. Words like “passive,” “intelligent,” or “angry” are used to describe infants, children, and adults as if the meanings of the words were not altered by maturation. The use of the same adjectives to depict individuals of different ages invites the conclusion that one is talking about the same process. This tendency is not characteristic of all languages: Japanese, for example, uses different words to describe the qualities of infants and children.

The friendliness toward early determinism and connectedness in development tempts one to look for historical explanations and to dismiss the significance of more-recent forces. It is not obvious that the increasing rates of suicide and pregnancy among adolescents in the United States will be understood by knowledge of the first 4 years of life. Poor reading skills among school-age children are many times more frequent in lower- than in middle-class children. We suggest that this fact can probably be better explained by examining the values of the child’s peer group, the quality of school instruction, and the child’s preparation for reading as he or she enters school than by studying movies or diaries of the first 3 years. A faith in connectedness blunts our motivation to change the present. Although the inevitability of spring rains in New England is the result of forces that operated in prior eons, today’s rain shower was created about 48 hours ago.

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