In the Long Run . . .

Longitudinal Studies of Psychopathology in Children

Formulated by the Committee on Child Psychiatry
Group for the Advancement of Psychiatry
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In the Long Run...

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Introduction and Overview

Will they or won’t they outgrow it? Which childhood mental health problems lead to later psychopathology? Longitudinal studies (defined as studies with a follow-up period of at least 3 years) allow the researcher to follow the developing child over time and best contribute to our understanding of these questions. The members of the Child Psychiatry Committee of the Group for Advancement of Psychiatry (GAP) undertook this review of longitudinal studies because the conclusions of many of these studies are important, but many have not been well-publicized or integrated into the child psychiatry database. Some important studies have been published as books with brief or limited circulation or in governmental reports that are hard to find. By presenting an integrated review, we hope to facilitate the work of clinicians and investigators interested in issues of primary and secondary prevention.

Some of the findings may surprise you; others may be familiar. For example, Head Start for disadvantaged children has not been a failure. Aggression, disruptive behavior disorders, and attention-deficit disorder in 5- and 6-year-old children, especially if they coexist with other diagnoses, may precede serious psychopathology later in development. Affective and anxiety disorders in young school-age children are associated with similar disorders in adolescence and adulthood. At least a third of adolescents with anorexia remain seriously ill in adulthood. Children whose parents are mentally ill have both a genetic and an experiential risk of developing psychopathology themselves. Although
temperamental traits in infancy may not persist into later childhood. Temperamental traits at age 5 or 6 do persist and may predict later psychopathology.

Because we found these and other results of longitudinal studies to be relevant to everyday clinical practice, we resolved to bring them to the attention of mental health professionals, development specialists, educators, public policymakers, and parents. We selected studies that involved large populations, control groups, and proper statistical analysis and those that appeared to be generalizable. Some studies represent the efforts of many investigators; other studies are more modest.

Like all GAP reports, this report comprises chapters initially produced by only one or two individuals, but the collaborative efforts of most committee members are represented in each chapter. This review does not cover certain interesting questions. Because few studies of effects of deafness or blindness on psychological development extend to 3 years or more, we could not include a chapter on this topic. Long-term effects of divorce are clinically important, but because there have been several books already published on this topic, it is not included in this report. Several excellent longitudinal epidemiological studies, which have followed individuals from early college age to old age, tracing the influence of earlier personal and psychological attributes to later development, did not begin in childhood and therefore were not included in our report. Studies of six general syndromes are reviewed: chronic medical illness, childhood trauma, mood and anxiety disorders, eating disorders, attention-deficit/hyperactivity disorder (ADHD), and conduct disorder. We also review the long-term effects on child development of social stress, of attending Head Start, of having a mentally ill parent, and of having more than one mental disorder. We hope this volume will put into the practitioner’s hand a useful reference to assist in clinical decision making.

History and Pitfalls of Longitudinal Research

Longitudinal research may teach us to better predict the outcome of a disorder and the effects of our treatment. Psychiatric diagnosis itself enables better prediction of prognosis, vulnerability, and risk than does simple symptom description. Epidemiological studies of the point prevalence of psychiatric disorders offer cross-sectional description. Studies of the incidence of psychiatric diagnosis point to information about who is most likely to fall ill, how a disorder will progress, and who is likely to survive or succumb. Such cross-sectional studies provide us with developmental information about how many and what types of children fall ill, but they do not tell us who will become ill in the general population or in a specific cohort, nor do they tell us who among the disordered will fare well or survive. Although course of illnesses has been studied with interest since the time of Hippocrates, systematic longitudinal studies are relatively recent because they are difficult to execute and require a long commitment of resources.

Epidemiological studies of childhood psychopathology are important not only to establish incidence and prevalence rates but also to increase our understanding of the causes, development, and course of childhood psychiatric disorders (Costello et al. 1993). Such studies are important not only for understanding disorders in particular children but also for learning more about the long-term effects of their disorders on other family members. For example, Faraone et al. (1996) found that 4 years after a child’s initial diagnosis with ADHD, there were significant elevations of behavioral, mood, and anxiety disorders found among the child’s siblings. The siblings also had high rates of school failure. This longitudinal study identifies that the siblings of children with ADHD may require primary prevention interventions, an important finding for clinicians caring for children.

Early Studies

Early studies from Berkeley and the Fels Institute (Bayley 1960) and the psychoanalytically guided studies at Yale (Kris 1957), although descriptively rich, were limited because they were essentially ahypothetical. A large corpus of data on demography, physical features, and observed adaptation was amassed. Regrettably, there was little in these studies about what data are essential to the clinician trying to decide if his or her patient will develop a particular disorder or specific personality variation.

After World War II, Margaret Fries began her studies of congenital activity type (Fries and Woolf 1953) to test the notion that the earliest activity level would be related to later drive intensity and behavior. This valiant start was the intellectual precursor to the New York Longitudinal Study.
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(Thomas and Chess 1982). In this study, Thomas and Chess developed nine parameters of behavior to characterize the concept of temperament. The characterization was based on animal behavioral characteristics, relatively free of traditional notions of disorder or disease. Thomas and Chess' description of the "temperamentally difficult" child was a serendipitous discovery and not a hypothesis or an intention, but it has been clinically heuristic.

More Recent Research

Longitudinal studies beginning in childhood are currently recognized as useful. To review early longitudinal studies with caution and the interest they deserve will help us design the next generation of studies with wisdom gained from the past. Issues and cautions in assessing longitudinal study results must be considered.

The first significant issue is length of follow-up. Constraints on length of investigation to 2-5 years, imposed by practical matters such as limitations on grant money and interest span of scientists, also have constrained the studies' findings. Little consideration may have been given to matters such as passing a critical boundary of age or developmental stage to secure results. Sameroff and Chandler (1975) addressed these issues directly by reviewing the long-term effects of reproductive casualty, which showed clear effects of perinatal insult 2 and 3 years after birth on cognitive and developmental measures. These effects were eclipsed by the effect of social casualty as children passed their seventh birthday. Thus, survival from ante- and perinatal insult is but one rung on the developmental ladder; interventions to improve caregiving and an environment of poverty and neglect are also shown to be needed. This review cautions us to consider that, as development proceeds, other "sleepers" effects, effects that come to light only after a period of relatively normal development, deserve study.

The preceding work points to the second issue: what measures at early developmental stages will provide predictive correlations with later behavioral or biological parameters? For example, does early postnatal activity accurately predict later drive status? If so, how would one measure the latter? Do the timing and integrative failures of early motor development in infancy that Fish (1987) described predict which children will later develop schizophrenia? How does hand-eye coordi-

nation relate to later visual motor integration? Do arousal and vigor of suck predict anything about zest for life, and how should we measure that zest in a 20-year-old? Each stage of life and development calls for its own area of measurement but, as development proceeds, we do not know what or how one measurement relates to the next or the last.

A related third issue to consider in reading longitudinal reports concerns interpretation of data. For example, suppose the earliest appearances of a trait suggest that 10% or 40% of a population may show a particular trait or diagnosis, and follow-up studies 3 or 10 years later show the same percentages. Unless the investigators have identified that the same individuals show the trait at both points in time, the finding may be misleading to the conclusion that the diagnosis is stable. Longitudinal study design is required to evaluate whether and to what degree the specific diagnoses or symptomatic categories persist for the individuals studied.

A fourth issue to be alert to is the variation of a single or multiple trait in a population and the relation to later pathology. Early studies of mother-infant interaction may show that children vary in their security of attachment (Farber and Egeland 1984). These categories do show good correlation in the short run from 18 months to 3 years if various adaptive functions are measured (Ainsworth et al. 1978). However, there is no tenuous link between insecure attachment and later pathology. Similarly, attunement in early infancy between mother and infant (Stern 1985) may vary but, if a mother-infant pair is not "well attuned," this lack of attunement may not lead to pathology or significant symptoms. We may be tempted to project our prejudices about what seems desirable as an environmental influence onto our models of pathogenesis. However, concepts of invulnerability and relative safety from untoward influence have been introduced (Anthony and Kohler 1987), and they should challenge our certainty about inevitability of the course of clinical disorders. Behavior that seems undesirable or maladaptive should not be called pathological until its context is evaluated and until the limiting factors in pathogenesis are discovered.

This point is relevant for studies of children at risk because of their presumed vulnerabilities. But even for these genetically loaded children, how can we predict the appearance of symptoms or how can we predict which at-risk children will develop them? What additional social factors are contributory? At an early age, what serves as diagnostic threshold of an adult psychiatric disorder? For example, Wender et al. (1971) show a genetic effect on adopted-away offspring of schizo-
phrenic individuals, including diagnoses in the "schizophrenic spectrum" as well as the diagnosis of schizophrenia in the grown-up children.

Perhaps the most serious issue in reading or conducting longitudinal studies involves the creative act of developing new techniques for study. One could devote part of a lifetime to a study that then becomes irrelevant when a new study method is developed. Recall the long and painstaking study of coatings of pneumococci done to generate protective serums for each specific bacterial type. In one fell swoop, penicillin wiped out the need for this work, excellent as it was. New study techniques and their application to the behaviors of children are being developed faster than the children themselves develop. Nonetheless, we must continue to study the emergence of psychiatric illness in the course of childhood and continue to use the hard-won information from longitudinal studies. In that cause, this volume should provide an interpretative guide to current knowledge about facets promoting or deterring children's development toward healthy adulthood. It may distill information gained from longitudinal study about which factors are stable in development, which factors can be changed, and what interventions may change them.

The book begins with a longitudinal study of prevention of psychopathology in children—specifically, prevention through early therapeutic school-based programs. Chapters 3 and 4 examine issues related to the effects of environmental stress and of medical issues on developing psychopathology. Chapter 5 examines the effects of mentally ill parents on a child’s development, incorporating both stress and heredity. Chapter 6 reviews the impact of trauma on development. Chapters 7 through 10 examine studies of outcome in children with specific psychiatric diagnoses. Chapter 11 extends the work presented in Chapters 7 through 10 to consider the effect of race, gender, and comorbidity on outcome. Progression of the chapters therefore is from more general issues that may not have been examined in many longitudinal studies to issues that have been examined more thoroughly.

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Robert

Robert was 3 years old when he was enrolled in the Head Start program. He had a sister who was 18 months old. His mother was 21 years old, did not work, and had never married. There was no adult male in the household and the family’s sole source of support was Aid to Families With Dependent Children. His Head Start teachers noted that Robert’s speech was normal but his language was moderately delayed. Although he enjoyed playing with toys, his play was not “creative or imaginative.” He did not appear to interact with the other children initially but did listen to the teachers. He was obedient but “constricted.” The teacher’s impressions were that he had not been exposed to many activities that were usual for a 3-year-old.

The teachers knew that the mother’s financial resources were limited, and she said that raising two young children was a strain. She felt demoralized and sad, had few acquaintances, and appeared depressed to the teachers.

It was the philosophy of the program to involve the parents. They attended group meetings to discuss normal child development; parent-child interaction, including play; and community resources. Also, appropriate toys were given to the parents to encourage parent-child interaction.

Seven years later, when Robert was in the fifth grade, he was evaluated for intellectual ability, educational achievement, and social behavior. He was assessed as age-appropriate in all areas, and he did not have language delay. It had not been necessary to refer Robert to a resource room or special class for students who demonstrated academic
or emotional difficulties. Robert was one of a group of Head Start children matched with a control group of children without the benefit of the Head Start program. A (statistically significant) greater number of the control group were in special classes and/or failed one or more grades at the time of assessment. The investigators concluded that the Head Start program with parents’ involvement had a positive and lasting effect on Robert’s academic achievement and social skills in elementary school. Incidentally, Robert’s mother became self-supporting, had several friends and many acquaintances, and remained unmarried. She was not sure if she would ever marry because she appraised the marriages of a number of women she knew as a “mess.” She believed that Head Start was a help to her children and herself. She expressed hope for her and her children’s future.

The United States—educationally oriented, at least in spirit—was among the first nations to require compulsory elementary and secondary level schooling for all children. When, in the early 1960s, it became evident that too many children in the United States were failing in school and that many high-school graduates could not read at a sixth-grade level, there was appropriate alarm. It was noted that the children who fared the worst were predominantly from the inner cities and had parents who were poor and uneducated themselves and that many came from one-parent families. The tax structure that supports education in many states results in inner-city schools spending considerably less per pupil than suburban schools spend. Inner-city children are unlikely to attend preschool, and they may arrive at school lacking basic knowledge and skills. They may have limited vocabularies, may give one-word answers to questions, and may have never seen a children’s book.

The early 1960s, the era of the War on Poverty, was a time of social hopefulness. In the tenor of the times, a decision was made to remedy the educational plight of these children. The children were failing, it was theorized, because they were not being given the learning experiences in early childhood that affluent children had. At the highest levels of government, a program was developed to reverse this inequality, a program that would give poor children a head start. The program was designed not only to help the children themselves, but also to involve their families. The program would provide not only education, but also better medical care, better nutrition, and better dental health for the children.

Head Start began in 1965 as a 6-week summer experiment and soon expanded to involve close to half a million children. Over the years, the program has expanded greatly and has been extravagantly praised by governmental leaders. In 1980, President Carter applauded it as “a program that works.” In 1990, President Bush requested a $500-million increase in the Head Start budget, a 28% jump over the previous year, which would raise its total budget to more than $1.9 billion. Even more striking was Oregon Governor Neil Goldschmidt’s call for an expansion of his state’s Head Start program in 1990, saying that such expansion would be “the most significant—the most effective anti-drug, anti-crime, pro-education strategy” in the United States (Holden 1990, p. 1400).

But hasn’t Head Start been shown to be a failure? Weren’t its benefits found to be largely evanescent—completely gone by the second grade? Have people forgotten the Westinghouse study (Cicirelli 1969), which reported finding only a modest short-term increase in IQ and achievement scores for Head Start children, an effect that completely disappeared during the first two grades of elementary school? Bronfenbrenner (1964) published what came to be an especially influential report that concluded that initial gains of children participating in the program soon “washed out.” Very gloomy opinions were expressed by others. On the subject of preschool enrichment, Tizard (1974) concluded

In so far then, that the expansion of early schooling is seen as a way of avoiding later school failure or of closing the social class gap in achievement, we already know it to be doomed to failure. It would perhaps be sensible for research workers to point this out very clearly to public authorities at an early stage. This is not, of course, to say that such an expansion has no value—no one would agree that a young child should not be fed well, because his present diet will not affect his adult weight and height.

In more recent years, however, reappraisals of Head Start and other preschool programs have led to a more tempered view of its effects. These studies are not always easy to interpret, and they have not entirely silenced Head Start critics, but they deserve at least to be heard.

The Perry Preschool Project

One of the earlier studies to provide a rosier view of Head Start’s success was the Perry Preschool Project of Ypsilanti, Michigan, a community
near Detroit (Berrue-Acien et al. 1984). At the time the study was begun, the community’s population was racially segregated. Perry school, located in a disadvantaged neighborhood, was attended by mostly black children from low-income families. The project was initiated by black educational leaders in the community, who were concerned about the high number of high-school dropouts among black children. It was led by Eugene Beatty, the first black principal of Perry School and an educator who had already pioneered programs aimed at increasing the involvement of parents in the education of their children.

The study began in 1962 and focused on the lives of 123 youths born between 1958 and 1962. The selection of a group of 4-year-olds was designated Wave Zero and of 3-year-olds was designated Wave One. Subsequently, three additional waves were enrolled. All the children came from low-income families. Fewer than 20% of their parents had completed high school; 47% of children came from one-parent families. Children were randomly assigned to experimental and control (i.e., no preschool) groups, with each carefully matched for age, sex, IQ, parental socioeconomic status, presence or absence of father, education of mother, family welfare status, family income and size, father’s employment status, and birth order. Fifty-eight children were assigned to the preschool group and 65 to the no-preschool (control) group. The curriculum in the preschools to which the experimental children were assigned was designed to improve the children’s intellectual and social skills.

Children participated for 2 years, at ages 3 and 4, except for Wave Zero children, who participated for only 1 year. The school year was 7½ months long. Classes were conducted for 2½ hours each day for 5 days a week. There was one adult staff member for each five or six children. Teachers made a home visit to each mother and child for 1½ hours weekly.

Children were studied yearly between the conclusion of the program and at age 11 and again at ages 14, 15, and 19. Data were gathered by using a variety of psychometric, linguistic, achievement, and sociobehavioral instruments, as well as extended interviews with the children when they were older. Official crime and delinquency records were examined to determine if the names of the children appeared in them. Attrition was minimal, with the median rate of missing data for all measures being only 5%.

In comparison with children in the control group, children in the program were found to have received important and lasting benefits. In early childhood, they scored better on IQ tests; later, they showed improved school performance and decreased delinquent and criminal behavior. Preschool attendance improved performance by almost a factor of two on four major variables at age 19. The rates of employment and attendance at college or vocational training were nearly double for the children participating in the experimental classrooms.

The Consortium Study

Exciting as the results of the Perry Preschool Project were, they represented the experiences of a small sample of students in only one school. Even as the results were being published, other studies, most equally small, were reporting conflicting results. To remedy these conflicts, the Consortium for Longitudinal Studies was formed in 1974 to study a much larger sample of preschool intervention projects for children of low-income families; the statistical technique of meta-analysis was used in the investigation (Consortium for Longitudinal Studies 1973).

Meta-analysis is a relatively recent statistical technique to analyze a body of separate but similar experiments. The technique has generated heated controversy in some quarters, especially from those whose favorite beliefs have been belied by the results of meta-analytic studies. It resembles the more traditional and subjective "review of the literature" approach to reaching conclusions about the significance of reviewed research, except that it reaches conclusions by using quantitative mathematical techniques. This technique has been used to good effect in establishing the effectiveness or lack of effectiveness of certain interventions in the fields of cardiology and obstetrics.

The Consortium selected preschool projects that met the following criteria: 1) the study must have had a specific curriculum, 2) it must have been focused on children from low income families, 3) the preschool part of the study must have been completed before 1969, and 4) the program must have had an original sample of more than 100 subjects. Fifteen projects were identified. All but one agreed to join in the Consortium study; among them was the Perry Preschool Project. The various studies differed in many of their details of curricula and specific interventions, but all had several points in common. They had been carefully planned and well run. Baseline data had been collected on the
children, and in many instances control or comparison groups had been used for evaluation of program effectiveness. The programs had been carried out in rural and urban sites in the Northeast, Southeast, and Midwest.

The Consortium study compared data gathered at four times: 1) when subjects entered the preschool program, 2) when the preschool program was ended and subjects were ages 5–10 years, 3) when subjects were ages 10–19 years, and 4) when subjects were age 21 years. Because the Consortium study was begun when data collection was still ongoing in most of the individual projects, it was able to influence which outcome measures were collected during the later follow-up phase of many of the individual projects. This method increased the similarity of data collected in different projects.

Fourteen projects were enrolled in the Consortium study, but only eight were included in the long-term meta-analysis because the others either had data that differed too much from that collected in the other projects or the data they collected in the earlier stages were incompatible with the pooled analysis variables. Attrition rates varied for each project. By 1980, recovery rates for the original samples ranged from 31% to 100%, with a median recovery rate of 79%.

The goal of the meta-analysis was to measure differences in outcome between the program and control groups within each of the 14 projects. The significance levels (P values) found for each analysis were converted to standard scores (Z scores) and the standard scores of all projects were pooled. This approach ensured that each study had equal weight and that each program group was compared with its own control. Only the raw data collected in each project were used rather than data that had been published in ongoing project reports. For most outcome measures, analyses were done twice, once using the simplest possible technique and again using multiple regression to control for background variables such as sex of the child, mother’s education, and father’s presence.

The major findings of the Consortium study can be summarized as follows:

1. Well-run, cognitively oriented early education programs all increase the measured IQ scores of low-income children, and they do so to an academically important degree. The pooled results for the programs were highly significant and robust.

2. IQ scores remain statistically higher for preschool children in comparison with the IQ scores of control children for some 4 years after the end of their participation in the preschool program. These differences are not robust after the second year.

3. Achievement test scores in reading and mathematics were available from four projects. At grade three, preschool graduates performed significantly better than did control subjects on both mathematics and reading, but only the mathematics finding was robust. Differences in mathematics performance remained insignificant to grade five, but not beyond this point.

4. School competence was defined as the ability to meet the academic, social, and behavioral demands of school. Two simple measures were used to evaluate school competence: 1) was the child ever retained at grade? and 2) was the child ever placed in a special class for mentally retarded, learning disabled, or emotionally disturbed students? All eight projects had data to the seventh grade for school competence; four had data to grade 12. All projects reported a lower rate of special education placements for the preschool children at seventh grade. To summarize these results, an average of 14.5% of preschool children had been placed in special education compared with 34.9% of the control group. This difference was highly significant (P < .001). Similar significant differences were found between the two groups in the number of children retained for a grade.

In a related analysis, the consortium examined whether group differences in results might have been due to teacher bias. If teachers knew which children had been in preschool, they might have treated them differently from the control children. If this were the case, one would expect that the greatest differences might be seen between groups in the early school years, because in later years teachers would be much less likely to know which child was in which group. The opposite effect was found: differences in school competence between groups were smaller in the earliest grades and greatest by grades five, six, and seven. At grade 12, children in the preschool group were once more found to have significantly better school competence (as measured by grade retention and special class placement) than the control subjects.

5. Data available from four projects showed that 64.8% of preschool program children completed high school compared with 52.5% of
control children ($P < .016$ for pooled $\chi^2$ results).

6. Three projects studied participants beyond the normal age of high-school completion. No program/control differences were found for employment rate; however, of those individuals among the experimental group who had remained in the regular classroom, more were holding jobs longer than were students who had been retained in a grade or had special classroom placement.

7. Although there were no measures of occupational aspirations and pride in achievement in the earlier stages of each project, these factors were studied at later stages of follow-up. When the preschool children were between ages 10 and 19 years, they were asked to describe something that they had done that made them feel proud of themselves. The preschool children were far more likely to respond with school or work achievements than were children from the control group ($P < .003$). In addition, when mothers of the preschool children were asked, "What kind of job would you like [your child] to have later in life?" mothers of preschool children consistently named occupations that were higher status than the occupations for which the children themselves hoped. This was not true for the mothers of children in the control group.

Summing up the results of the above analyses, consortium scientists concluded that the beneficial effects of preschool intervention were not to be found in specific measures such as IQ and school achievement scores but were demonstrated in improved attitude and school competence. Children who attended preschool, it could be argued, have increased academic confidence and better parental expectations of their success. They are less likely to be held back a grade or identified as retarded or learning disabled. Being held back a grade or placed in special education classes was highly correlated with failure to graduate from high school, which correlated with later unemployment.

As promising as the results of the Consortium study were, their shortcomings must be noted. The number of programs studied was small. Even their applicability to Head Start could be questioned, since only 2 of the 11 programs in the Consortium study were run by Head Start. This factor may not have been too important, since a more recent comparison of Head Start and non-Head Start preschool programs (Lee et al. 1990) found that both had equally good outcomes as measured in early elementary school.

**Study of Head Start Programs**

Few Head Start programs were designed with research or long-term follow-up in mind. The most comprehensive review of the effects of Head Start is provided by the Head Start Evaluation, Synthesis and Utilization Project (McKey et al. 1985), carried out by CSR Incorporated under contract to the Administration on Children, Youth and Families of the U.S. Department of Health and Human Services. The project examined more than 210 published and unpublished research reports from Head Start programs. Of these reports, 134 were evaluated by using traditional review methods and 76 were studied by using meta-analysis techniques. The project examined the effects of Head Start in five areas: 1) cognitive development, 2) socioemotional development, 3) child health, 4) families, and 5) communities. The findings were as follows:

1. Children’s cognitive ability (as measured by psychometric and school achievement tests) showed significant immediate gain as a result of participation in Head Start. This finding, reported by most studies, was robust. Gains were greatest for children participating in Head Start programs sponsored by community action agencies and less for children in programs sponsored by public schools or multiple agencies. Highly structured academic curricula produced larger immediate gains than did traditional, cognitive, or Montessori curricula. Longer (6- to 8-hour) Head Start days correlated with markedly higher immediate cognitive gains than did shorter (2½- to 5-hour) sessions. Programs with a primary emphasis on language interaction appeared to have a higher immediate impact than programs in which language was a secondary emphasis.

2. Children in the Head Start group had significantly higher achievement scores for 2 years after preschool, but their IQ scores were higher only to the end of the first grade.

3. Head Start had an immediate positive effect on children’s self-esteem, achievement, motivation, and social behavior as measured with standard instruments. The greatest difference between Head Start and control groups was in social behavior; the smallest difference was in self-esteem. Improved social behavior continued well into the third year after the end of Head Start; the gains in self-esteem and achievement motivation persisted for 1 year. Classes with a strong emphasis on language interaction were found
to have a greater effect on raising the children’s achievement motivation.
4. Head Start children were considerably more likely to receive medical and dental examinations; speech, language, and developmental assessments; nutritional evaluations; and vision and hearing screening. Children in the program had a lower incidence of pediatric problems than did non-Head Start children, and they had a level of health comparable to that of more advantaged children. The Head Start children had fewer dental cavities and practiced better dental hygiene.
5. Children who attended Head Start tended to have higher calorie and essential nutrient intake than children who did not attend.
6. Despite the emphasis by Head Start on parental participation, the program has had only partial success in reaching this goal. Although many parents did participate as paid teacher aides and general assistants, parental involvement was uneven, with a core of parents contributing a disproportionate share of time. And although Head Start was shown to link families with a wide range of health and social services, it had less success in helping parents to modify their child-rearing practices, teach their children academic skills, or change their basic attitudes toward education.
7. Head Start programs have frequently begun as an integral part of a community’s economic environment by providing jobs and purchasing goods and services. Head Start programs employ many minority group members, some for the first time in their adult life.

The New Haven School Development Program

Although the bulk of this chapter has examined school programs operating under the aegis of Head Start, other innovative programs also have proven themselves in the past 25 years. One such program is the New Haven School Development Program.

In 1968, representatives from the Yale University Child Study Center developed, in collaboration with the New Haven school system, the School Development Program (SDP). Schools enrolled in this model program were among the lowest-rated in the city, with poor attendance and school performance, low student achievement, and serious relationship problems among students, school staff, and parents. The program developers conceptualized many of the schools’ and students’ difficulties from a developmental and contextual perspective, and they focused on trying to understand the underlying problems. They employed three mechanisms to address these problems: 1) a school governance/management team, 2) a mental health/staff support team, and 3) a parents’ program.

The SDP has now been implemented successfully in more than 150 schools in 14 school districts, 12 states, and the District of Columbia (Haynes and Comer 1990; Haynes et al. 1988). At least six follow-up studies of the SDP model have been conducted to date; other evaluative programs are in progress. By and large, these studies indicate significant gains in math and language learning/performance among SDP school students. In addition, these studies indicate significant decreases in both the rate of school failure and improvements in measures of school attendance, suspensions, classroom behavior, and attitudes toward authority. Some evidence from long-term follow-up studies suggests that the earlier difference in SDP versus non-SDP students may dissipate over time, but further studies are needed.

Head Start in the Twenty-First Century

On the basis of work done to date, we believe that good preschool preparation for disadvantaged children is one of the most promising measures available today for the prevention of later school failure. The salutary effects of preschool education on disadvantaged children are indisputable. Children enrolled in such programs show clear-cut gains in psychometric and achievement test scores by the end of the first year. Any good preschool program can be successful, but a program such as Head Start, with the weight of government behind it and with the ability to ensure long-term funding, is the best approach. Head Start not only provides the educational emphasis that other schools provide, but it also provides for better nutrition, medical and dental care, and access to other social agencies than can be provided by non-Head Start schools.

Like many public programs, Head Start always has been in danger of being taken for granted or being eclipsed by another set of priorities so that its funding would begin to melt away even as people praised its worth. Indeed, funding for publicly supported programs for impoverished families has faced serious cutbacks throughout the 1990s. Al-
though Head Start did go through some lean years in the 1980s (Chafel 1992), more recently it has had its champions who could make a difference. During his 1988 campaign, George Bush vowed to provide “full funding” for Head Start (Rovner 1990), and on May 16, 1988, the House passed a 4-year Head Start reauthorization bill, which projected 1998 funding to be $7.7 billion for the program.

The social and economic conditions since the creation of Head Start have changed. The degree of violence found in the inner cities has escalated to the point at which it is much more difficult for parents to ensure their children’s safety. Takanishi and DeLeon (1994) have urged development of linkages between early childhood and family support programs.

New York City’s Project Giant Step is a specific example of improvements in Head Start. The program is supported by federal education funds and city taxes. In 1990, 6,850 children were enrolled, most of whom came from families whose annual income was less than $15,000 (Wells 1990). Each of its approximately 400 classrooms has no more than 20 students; every classroom has a teacher, a teacher’s assistant, and a family aide. For every three classrooms, there is a program director and a social worker. A study of the effects of the program indicates that it had more than twice the positive impact on children’s cognitive performance as other early childhood programs, including Head Start. The children also showed large gains in social and emotional development, especially in their ability to communicate and interact with adults.

Although Head Start was originally conceived by some as a brief “inoculation” against the effects of poverty and low socioeconomic status, it is clear that this concept was wrong. Head Start works and it works well, but it must be continued beyond the preschool years. A model example of how this can be done has been developed by a group from Johns Hopkins University, whose experimental program Success for All was begun in 1987 (Holden 1990). Located at the Abbottston Elementary School in Baltimore, the program serves an inner-city population of mostly black students from single-parent families who are on welfare. The program involves the entire school, although the emphasis is on grades one to three. All the teachers have received special training in remedial education and behavior management. Class size is smaller than in other inner-city schools, and each student has an individual learning plan. Tutors are immediately available to any child who begins to fall behind in his or her learning plan. Family support teams handle disciplinary problems. Health services are provided by professionals who visit weekly; there are plans to open a health clinic in the school. The program costs a premium: $1,000 more per child than in other inner-city schools. The total cost, however, is still below that spent per child in Maryland suburban schools.

In March 1994, Senator Nancy Kassebaum introduced the Head Start Quality Improvement Act, aimed at raising the quality of Head Start programs by establishing general performance measures for all grantees, strengthening training and technical assistance support, and expanding the Head-Start Transition Project, whose aim is to assist children and their families in making a successful transition from Head Start to elementary school.

For some of our students, the United States educational system has failed. This failure does not have to be. Programs such as Head Start, Project Giant Step, and Success for All provide us with solutions. Failure to implement these solutions immediately can only continue the downward spiral of education. Economically, the price we pay today for such programs will be considerably less than the price we will pay in the future if we do not act.

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Effects of Early Disabilities and Social Stress on Later Development

Rockefeller and Einstein

We relish accounts of individuals who overcame developmental disability to make contributions and take significant community roles. Nelson Rockefeller, with a known reading problem, became the governor of the State of New York and a candidate for the presidency of the United States. Albert Einstein is said to have had problems learning at school and might have been identified as a child with a learning disability had the current diagnostic tools been available. His genius in mathematics and physics may have compensated for his other areas of ineptitude.

What about the modal developmentally disabled child? That child does not succeed as well as Rockefeller and Einstein did. But is there a modal developmentally disabled child? Some developmental disabilities are highly selective in the functions affected; others present more global problems. For some children with pervasive developmental disorder (PDD), the outcome for social adjustment and adaptive functioning may be poor (Venter et al. 1992). Other children with focal difficulties, such as developmental reading disorder, may adapt well and have good educational outcomes (Benasich 1993). Yet in both examples, the disorder has a significant influence on the child's learning course and may affect his or her life adaptation. In this chapter, we review conditions that may affect brain development and may produce psychopathology in children and adolescents.
Neonatal Disabilities

About 10% of babies born in the United States start life with some handicap or defect (Sameroff and Chandler 1975). These handicaps or defects range from mild learning disorders to severe mental retardation. As far back as 1947, Gesell and Amatruda introduced the notion of minimal cerebral injury. In 1966, Pasamanick and Knobloch articulated the concept of a continuum of reproductive casualty, developmental insult contributed by intrapartum anoxia, prematurity, delivery room complications, or social conditions. However, in a follow-up of the Pasamanick and Knobloch children at age 7 years, Corah et al. (1965) showed that many of the disturbances that had been present in the first 3 years of life, including IQ differences, had disappeared. This finding suggests that anoxic infants, who do poorly on testing at age 3 years or younger, may either catch up to healthy children by age 7 or may continue to lag if they are at continued risk due to low socioeconomic status (SES) or exposure to maltreatment.

Prematurity

Prematurity has been studied extensively, and prematurely born children have been shown to be at risk for later deficits in IQ. Because some studies did not adequately control for the effects of social class, Hertzig (1981) selected 66 middle- and upper-middle-class infants who had been born prematurely (weighing between 1,000 and 1,750 g) and examined them neurologically at age 8 years. Thirteen children had localizing neurological signs, whereas 20 had two or more nonlocal neurological signs. Affected children tended to be those who had sustained prenatal, perinatal, and postnatal complications. Hertzig (1981) found no significant abnormalities in IQ or in reading or arithmetic achievement scores of the children at age 8 years, but children with soft neurological signs were significantly more likely to have been in special education classes and to have had more psychiatric consultations than were the children who were free of neurological abnormality.

Cerebral Palsy

Children with severe cerebral palsy, followed up after 14 years (Klapper and Birch 1966, 1967), were found to have more psychiatric and cognitive problems as adolescents or young adults than were unaffected children. One hundred fifty-five children were examined initially, and 89 of them were located at follow-up. Of those subjects age 18 years or older, 50% had completed high school, a figure comparable to the 55% of the control population who had graduated. Normal IQ and good self-care skills were predictive of better academic performance.

Perinatal Stress

Disturbances in development as a result of perinatal stress were identified by Werner et al. (1971) in a study of 670 children in Kauai, Hawaii. Severe perinatal stress at 20 months was correlated with lower scores on infant assessment measures. However, although 34% of the entire population by age 10 years had problems, only a small proportion of these problems could be attributed to the effects of perinatal stress.

These data led Sameroff and Chandler (1975) to construct a model of a continuum of caretaker casualty, which posits that physical and medical problems account for only a small amount of the variance of later developmental outcome. Even when temperamental features are added as a predictor, social factors remain the most powerful determinant of later outcome. Sameroff and Chandler constructed a "transactional model of development," incorporating factors that must be considered in any prospective study of developmental risk factors (Seifer et al. 1992). This model has been reformulated (Rutter and Locke 1988; Wyman et al. 1992) to emphasize concepts of continuity and discontinuity in development.

A developmental perspective should include specific perinatal difficulties as well as risk factors or untoward events occurring at later stages in the life cycle. Protective factors, and when in childhood they may be influential, also should be variables in a model of child development (Seifer et al. 1992; Silverman 1989).
Disabilities Arising in Childhood

Malnutrition

Intrauterine insult and genetic loading may identify the baby as at risk as a newborn. But his or her developmental course will be further jeopardized by early malnutrition (Hertz
g et al. 1990).

Social Stress

Rutter (1989) has investigated the effect of social factors on the development of psychopathology. The prevalence of psychiatric diagnoses in a population of children from the Isle of Wight was compared with that found in children living in an inner-London borough (Berger et al. 1975). Inner-city children showed almost double the rate of disorders. Longitudinal studies showed that symptoms of inattention and overactivity were found to be strongly associated with later conduct disturbance.

Language Delay

Cantwell and Baker (1987) studied 600 children, ages 2–16 years, referred to a speech and hearing center for a language disorder. Fifty-three percent were found to have a psychiatric diagnosis in addition to their language disorder. Of the children with a psychiatric diagnosis, 25% had attention-deficit disorder, oppositional disorder, or conduct disorder; 20% had an anxiety disorder; and 21% had mental retardation. When Cantwell and Baker (1987) restudied this population 4 years later, they found that although some children had made marked improvement in their speech, many still had learning disorders and some had newly diagnosed learning disorder in the interval. Similar findings have been reported by Beitchman et al. (1996a, 1996b), studying a group of Canadian children.

To determine the effect of conduct disturbance and learning problems on outcome, Maughan et al. (1985) studied four groups of children with and without reading delay and behavioral problems at ages 10 and 14 years. They found that, in comparison with children with good reading skills, children who had delayed reading ability in the early grades were more likely to leave school before graduating and to have poor work records as young adults. Young children who had both poor reading skills and marked behavioral problems fared the worst on follow-up. These results held even when the effect of SES was controlled for.

Mental Retardation and Pervasive Developmental Disorders

PDDs and mental retardation represent a separate and important group of diagnoses whose outcome differs considerably from the disorders discussed previously.

Follow-up of children who have been identified early in life as having severe or profound levels of mental retardation (IQ below 50) shows, as would be expected, that most remain considerably handicapped as adults. However, children with a lesser handicap (IQ scores from 60 to 75) may no longer be considered to be handicapped on follow-up. Mercer (1973) coined the phrase "the five-hour retardate" to describe individuals who appear retarded only in the academically demanding school setting, but not at home, and who later can find a place in the work force. Zigler and Balla (1977), carrying out long-term follow-up of such youngsters, found that individuals who test as mildly to moderately retarded during the school years melt into the community and live quite satisfactory lives as adults. Because of this finding, the current diagnostic system (DSM-IV; American Psychiatric Association 1994) specifies that, for a diagnosis of mental retardation to be made, both low IQ and poor social adaptation must be present. Although mild to moderately retarded persons may have good social outcome, they also may be at considerable risk for developing psychopathology (Chess 1977; Phillips 1967).

The prevalence rate of PDDs is low. Autism, as defined by DSM-IV, is found in about 4–5 per 10,000 persons. If the diagnostic criteria are modified to include milder forms of the disorder, as Wing and Gould (1979) have suggested, this rate would be higher. The inclusion of Asperger’s disorder in DSM-IV is a recognition that PDD is a spectrum disorder. Regrettably, DSM-IV criteria for Asperger’s disorder are not based on clinical descriptions as detailed as those that led to the characterization of autistic disorder. Perhaps it was premature to designate another new di-
agnostic category. Rather than proliferating diagnostic subcategories, it would be clinically useful to develop a method of dimensioning the severity of the social communication problems of autism, as recommended by Shapiro and Hertzig (1991). This method might include scales to carefully evaluate the level of individual handicap in each social communication domain.

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The Chronically Medically Ill Child

Teddy

I was sick in the night. I had a croupy cough and Papa gave me some
opicack which had dreadful effects. Every body went to Pompeii ex-
cept Conie and I who stayed at home.

Theodore Roosevelt, January 5, 1870, at age 11 in Italy (Roosevelt 1928)

The published diary of Theodore Roosevelt discloses the emotional
course of his grade-school years and documents the pervasive ef-
facts of his asthma upon his development. Although in most ways he
was an extremely privileged and fortunate young boy, he suffered from
repeated debilitating attacks of asthma throughout childhood. Through
his own words, one can trace his transformation from a sickly child to
one of the most outwardly vigorous and robust American leaders of the
nineteenth century. Unfortunately, not all children with chronic illness
are able to adapt so well.

There is an interesting history to the study of the development of
children with severe chronic illness. For many years, it was considered
self-evident that children with severe physical illness were likely to ex-
perience emotional pain and suffering as a consequence of their physi-
cal restrictions. However, individuals such as Teddy Roosevelt are
examples of the wide variability in the outcome of these invalid chil-
dren. They show that some children are apparently able to completely
overcome early adversity. The pendulum of popular wisdom recently
swung toward the other extreme, tilted by the force of findings that ill children suffer less than they were thought to before. These studies, focusing on cross-sectional questionnaire reports from samples of patients, find that ill children often did not endorse experiencing psychiatric symptoms. These findings have invited countertouitive, if not misguided, declarations regarding the absence of sadness in children during the final months of terminal painful illnesses. It is ironic that stigmatized children who have learned to manage their feelings bravely therefore may be classified as no different from healthy peers. Subsequently, the validity of such research results has been challenged because of major methodological errors.

To explore developmental processes that allow children to cope with severe stresses, and particularly with severe chronic illness, investigations using longitudinal designs are necessary. Clues to the nature of these developmental processes may be found in retrospective reflections, but demonstrating the mechanisms by which symptoms arise requires a longitudinal effort, focusing on individual differences to define both critical risks and protective factors for emotional development.

Unfortunately, few comprehensive longitudinal studies exist and those that are available have clear limitations. However, these investigations provide the best opportunity to understand developmental processes and also have advanced the methodology to clarify etiological mechanisms.

The first of many thorny questions to be addressed in designing a longitudinal study is whether to emphasize breadth or depth. The choice of breadth or depth should depend on the investigator’s central questions. Studies designed for breadth include more subjects and allow greater generalization of conclusions to a wider range of populations. Analysis of data from a large number of subjects can be done by using powerful multivariate statistical techniques to demonstrate relationships. However, the limitation of large projects is the strength of in-depth studies. It appears from recent studies that the greater the number of subjects included in a study, the more superficial has been the level of inquiry. Data on emotional processes and internal experiences of children can be collected as part of smaller intensive studies. This information is critical for better understanding the emotional development in physically ill children. The rule has been that the depth of the inquiry is inversely related to the number of subjects. At one extreme is the intensive case study, perhaps of biographical length, focusing on the success or failure of a single child, as illustrated by Teddy Roosevelt’s recovery from asthma. Such stories are inspiring and can reveal some of the critical factors leading to the successful adaptation of one child, but they do not allow us to derive general principles.

The Dunedin Child Development Study

The Dunedin Child Development Study (Hood et al. 1978) is an example of how a team of investigators resolved the breadth or depth decision by recruiting a large sample (see also Chapter 7, in this volume). This study is noteworthy for a number of outstanding strengths. Key among these are 1) the large sample size, 2) the broad range of variables measured, 3) the focus on measurement of both physical illness and emotional adjustment, 4) an impressive ability to retain the study sample, and 5) the frequency of assessments over the course of the development of the children.

The sample was collected nearly 20 years ago by enrolling all children born in Queen Mary’s Maternity Hospital in Dunedin, New Zealand, between April 1, 1972, and March 31, 1973. This strategy resulted in 1,139 children and families participating in the project, and the research team has been successful in maintaining a high degree of commitment to the project. The sample is well described, so it is possible to consider its degree of generalizability to other populations. In comparison with other New Zealanders (i.e., general national characteristics), the families in the study were noted to be somewhat “underrepresentative of non-Europeans and predominantly socioeconomically advantaged” (Hood et al. 1978).

Variables measured fell into four major categories. Background measures included socioeconomic status, parental education, paternal intelligence and training in child development, an assessment of the marriage, a measurement of family mobility, and a checklist of common family activities. Developmental measures included motor, language, and intelligence items. Behavioral variables were primarily limited to questionnaire data. During the early years of the study, behavioral variables were measured by “behavioral profiles,” the Rutter Parent Questionnaire (Rutter et al. 1970), and child behaviors such as naughtiness, management problems, and other general difficulties. Medical indexes were a particularly important part of this study. Neurological assessments were systematically conducted, and a number of developmen-
In the Long Run...

In the long run, specific medical problems were monitored. These problems included enuresis, sleeping and eating difficulties, and vision and hearing difficulties. Finally, other illnesses of interest were tracked, with special attention being paid to asthma and allergy (Langley et al. 1980).

An advantage of the Dunedin study is that the progress of the research team can be followed through their consistent and regular reporting of research findings. At this point in the evolution of the study, there are about 200 reports focusing on the development of these children. Although many of the findings would have been of limited interest taken in isolation, the entire body of the work is impressive.

Intriguing Findings

Early on, the team focused on feeding, noting that more than two-thirds of the mothers in the study wereed their babies as a result of feeding difficulties and only 25% of the mothers breast-fed for more than 12 weeks (Hood et al. 1978). The investigators were surprised to find few differences in the development of children who were breast-fed longer than was customary, given the benefits that were believed to be associated with nursing (Silva et al. 1978).

Some findings were provocative. For example, no differences were found in developmental characteristics of children who had more than two childhood traumatic accidents versus those who had no accidents. This finding indicates that tracking childhood accidents as a risk factor might yield little information (Langley et al. 1980).

The study has contributed to the field by developing new instruments for initial screens of large populations. An example is a cognitive developmental screen, essentially a two-item test, that appeared to effectively identify 3-year-olds with significant difficulties (Silva 1981). A provocative finding was that family size and ordinal position seemed to have little effect on the development of children (Silva et al. 1982) but that recurrent otitis media with effusion was associated with a twofold increase in the likelihood of subsequent behavioral problems. More surprising still was a specific reported association between early bilateral otitis media and hyperactive behavior in boys (McGee et al. 1982).

Two findings exemplify the relevance of the study of emotional factors. First, a high incidence of maternal depression was noted: 8% of the mothers in the sample were identified as having major depressive disorder. This finding raised an important methodological issue. The depressed mothers' reports on the frequency of behavioral problems in their children were not confirmed by teachers' reports of the presence of such problems in these children. These conflicting reports suggested that responses of the depressed women might be biased (McGee et al. 1983). Second, relevant to long-term cognitive development, two variables—premature birth and small gestational size—were examined. Interestingly, preterm children showed normal IQ, whereas children who were small for their gestational age were shown to be at risk for lower IQ scores and greater behavioral difficulties. This finding generated the conclusion that "it is better to be born too early than too small" (Silva et al. 1984, p. 4).

This study also focused on chronic illness. There is a high incidence of asthma in New Zealand, and the disease is of considerable national interest. At age 9 years, 813 children were still participating in the study. Asthma prevalence was defined as cumulative or current; the spectrum of wheezing illness and of bronchial hyperreactivity was examined separately. Severe asthma was defined as persistent daily wheezing despite treatment. Moderate asthma was defined as recurrent wheezing occurring at least monthly and warranting regular symptomatic prophylactic treatment. Asthma was termed mild if there were at least three episodes in a year but wheezing did not occur on a monthly basis or require treatment. Asthma was classified as trivial if there were two or fewer annual episodes. By age 9 years, only two children had severe asthma, whereas 31 had moderate asthma. Eighty-one children had mild asthma in the previous year. Thirty-three children had been classified in the past as having at least mild severity. One hundred eighty-six children had experienced trivial wheezing or a current dry cough. The rest, 480 children, were completely asymptomatic for wheezing and had no known chronic illness. No socioeconomic differences between the asthmatic children and the remainder of the sample were noted.

Importantly, pulmonary function evaluations were completed for most children. Eight hundred children completed spirometric tests and 27 (3.4%) demonstrated resting air flow obstruction. Methacholine challenges in 766 asymptomatic children demonstrated findings in 176 (23%). Interestingly, 8% of children with no history of wheezing or recurrent dry cough were responsive to methacholine challenge, whereas 35% of children with previous or current wheezing did not respond to any dose of methacholine. The research team concluded that bronchial challenges by methacholine inhalation were neither sensitive enough...
nor specific enough to be a useful method to establish the diagnosis of asthma in epidemiological studies (Sears et al. 1986).

Summarizing the data reflecting the prevalence of asthma in New Zealand, the authors were able to conclude that 19% of the sample had experienced wheezing in the previous year and 11% had wheezed in the month before assessment. In focusing on lifetime prevalence, 27.1% wheezed at least once by age 9 years. In 34 of these children, the wheezing episodes had been of sufficient frequency to require regular antiallergic medication (4.2%). A fascinating issue from a methodological perspective was that only 32% of all wheezing children were identified by their parents as having asthma. Those children labeled as asthmatic more often were given a bronchodilator (76%) rather than antibiotics (28%). In contrast, those children with respiratory symptoms but not identified as asthmatic received antibiotics (49%) more often than bronchodilators (28%). All but one of the children with a diagnosis of asthma received treatment.

It was concluded that asthma of mild to moderate severity was not associated with behavioral or cognitive difficulties (Silva et al. 1987). This conclusion is limited because the two severely asthmatic children were not analyzed separately but were considered only as part of a larger group of children with moderate illness, so the impact of severe asthma was not addressed.

Asthma Results Highlight Research Concerns

The strengths and weaknesses of the asthma component of the Dunedin study bring into focus several research issues. The data on prevalence and incidence of asthma are extremely valuable and provide convincing and conclusive information about the range of asthmatic symptoms in children. Additionally, the study provided improved methodologies for assessment of illness. The high false-negative and false-positive rates in approaching the diagnosis of asthma exclusively through methacholine challenge should dissuade investigators from using methacholine challenge results in isolation. Also important is the finding that, in this sample, children with mild or even moderately severe asthma had limited risk for cognitive or emotional disturbance.

Answers to other questions were less clear. Not enough data were gathered to predict the impact of severe illness. The measures of psychological adaptation, although well documented, were of limited sensitivity and would overlook symptoms that would be of particular interest related to the impact of chronic illness of even moderate severity. Important examples are 1) dimensions of self-reported affective symptoms, 2) documentation of coping strategies, and 3) measurement of dimensions of self-esteem. A final limitation of this study is that, even though it was longitudinal, the primary focus was on defining the risk factors associated with the initial development of asthma.

W. T. Grant/National Jewish Center Study

Contrasting large epidemiological samples are in-depth assessments of children at increased risk for development of a specific disorder. The W. T. Grant/National Jewish Center Study (Mrazek and Klinnert 1990) is an example of this strategy. A central question was to define risk factors hypothesized to be associated with asthma onset. Consequently, intensive data were prospectively collected to define the early parent-child relationship and the emotional adjustment of parents.

Children of asthmatic parents are at elevated risk for developing the illness. A strategy for defining a cohort of children likely to be sensitive to risk factors would be to study the offspring of asthmatic individuals. The estimated rate for asthma in families with one affected parent is 20%; the occurrence of asthma in families where both parents are affected is approximately 50%.

One hundred fifty asthmatic families were recruited into the study in the third trimester of the mother's pregnancy with the index child. All mothers were asthmatic, and 60 (40%) of the children had a first- or second-degree paternal relative with asthma. Of these 60 families, 28 of the fathers themselves were asthmatic. Given this high genetic loading, it is not surprising that by age 3 years, 21 of these children had developed asthma. Twelve more children had developed asthma by their third birthday. Initial analyses revealed that elevated levels of immunoglobulin E antibody and early emotional stressors (Mrazek and Klinnert 1990) both predicted subsequent asthma. Psychological predictors included both clinical interviews and parental self-report life inventory questionnaires, although the semistructured clinical assessments were better indicators of subsequent risk.

There are three primary limitations of the W. T. Grant/National Jew-
ish Center Study in comparison with the Dunedin design: 1) the
generalizability of the findings are somewhat more restricted, given the
characterization of the sample; 2) the ability to compare a variety of vari-
bles by using multivariate analysis is limited by the sample size; and 3) 
the prediction to later childhood is not possible because the study was
only begun in 1985 and the children are still quite young. However, the
positive associations between early stressors and subsequent develop-
ment of both physical illness and emotional disturbance provide evi-
dence for the underlying mechanisms that may relate to expression of
illness. Perhaps more importantly, sufficient developmental and psy-
chological data have been collected to examine processes related to de-
velopment of psychopathology quite independent of whether the child
has developed asthma.

Other Longitudinal Studies of Chronic Illness

Although many studies of physically ill children have been conducted,
most are limited by short follow-up. A classic example was the creative
work of Gauthier, whose pioneering studies examined the developmen-
tal course of infants with relatively mild asthma. Detailed, albeit some-
what idiosyncratic, measures of early mother-child interactions were
collected, and a considerable range of patterns of relating were docu-
mented (Gauthier et al. 1977). A 2-year follow-up confirmed the absence
of consistent psychopathology, but no further follow-up of the physical
or emotional development of the children is available (Gauthier et al. 
1978).

The classic study of Monica is an interesting contrast. Voluminous
data were collected on both the physical and emotional development of
this child, who had congenital esophageal atresia. Monica could not be
fed by mouth until age 2 years, at which time surgical correction allowed
her to eat normally. She experienced a relatively stable childhood with-
out “other major trauma” (Viederman et al. 1979). However, many
years later, Monica demonstrated lasting changes indicating memory of
this early experience. For example, she repeatedly placed her own (in-
tact) newborn for feeding in the same position that she had been placed
in as an infant: supine on her lap, a position optimal for tube-feeding but
not for bottle- or breast-feeding. Interesting hypotheses have been de-
derived from this study, including speculations regarding the origins of
alexithymia (the inability to express feeling states).

Conflicting Results

Conflicting results may arise from studies of psychological sequelae of
medical illness if measures of psychological function are not sensitive
enough. An example of this problem is a study that examined the con-
tinuity of behavioral disturbance over a 5-year period (Breslau and Mar-
shall 1985). Two hundred fifty-five children with a wide range of
physical disabilities were evaluated initially when they were ages 8–16
years. After 5 years, children with cystic fibrosis did well in contrast with
children who had neurological problems, whose serious psychological
disturbances persisted. Although it was encouraging that children with
cystic fibrosis as a group might have fewer psychological sequelae than
might children with neurological deficits, the acceptance and interpre-
tation of these results must be tempered because the exclusive method-
ology was a questionnaire format. In contrast, cross-sectional studies,
such as the work of Steinhausen et al. (1983), demonstrated an associa-
tion between severity of cystic fibrosis and emotional disturbance.

Results of separate studies may conflict for other reasons as well.
Shorter-term studies, such as Herndon et al.’s (1986) investigation of
children with serious burns over 80% of their total body surface, demon-
strated that survivors might have serious psychological sequelae. Their
problems included excessive fears and immature behavior, although
many of these children also had evident strength. Longer follow-up, by
questionnaire, found more encouraging results (Brown et al. 1985).
Only 15% of children with severe burns had psychological sequelae af-
after 12 years. Long-term studies are required to test the hypothesis that
“time heals all wounds.”

In designing a longitudinal study, the investigator must choose the
most salient questions that can be addressed and devise ways to collect
appropriate data. An ongoing complex study of recently diagnosed dia-
abetic children by Kovacs explores family and maternal variables.
Ninety-five diabetic children are being followed, but these children
have been recruited over the course of 9 years, and follow-up thus
ranges from 2 to 11 years (Kovacs et al. 1990). The investigators have fo-
cused much of their analyses on data defining maternal emotional re-
sponse to the child’s illness and course, but considerable potential exists
for exploring the interactions between diabetes and emotional develop-
ment.

Longitudinal investigators have sometimes tried to extend their
range of inquiry by adding retrospective data. An example is the study of migraine by Merikangas et al. (1990). A cohort of 457 young adults was followed for approximately 8 years. Retrospective interviews also explored the onset of symptoms that occurred during adolescence. Using this reconstructive method, the investigators found that a sequence of symptoms appears common, with episodes of anxiety preceding the first migraine attacks by 1 or 2 years and depressive episodes occurring after the onset of migraine (Merikangas et al. 1990). A prospective design is necessary to verify these relationships.

The value of conducting longitudinal studies that are designed to examine the interaction between physical and emotional development has never been so obvious. Early illnesses of childhood present specific challenges to both the affected children and their families. Advances in molecular genetics make it increasingly straightforward to identify children at risk for developing a wide range of diseases. Carefully designed, well-focused studies that prospectively measure physiological and psychological risk factors offer a good possibility for developing strategies that may minimize the likelihood of disease expression.

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Children Whose Parents Are Mentally Ill

Robby

Because Robby could not pay attention in his first-grade class, the school asked his mother to have him evaluated by his doctor. The oldest of three children, Robby was described as "hyper" since birth. He was named after his father, who as a child had been diagnosed as having minimal brain disorder. The father dropped out of school in the 10th grade and had many arrests for various misdemeanors. Because of the father's drinking, Robby's parents divorced when Robby was age 2. His mother, age 24, had a high-school education. She was unemployed, and the family was on public assistance. Seen in the pediatric clinic of the local hospital, Robby was diagnosed as having attention-deficit disorder, and he was treated with dextroamphetamine.

At age 15, Robby was seen for evaluation in the juvenile court clinic. He had a long history of truancy, had twice failed grades in school, and had been arrested for breaking and entering, for selling marijuana, and, most recently, for selling crack cocaine. Psychological testing showed a general IQ of 92, a reading disability, poor impulse control, aggressivity, and low self-esteem. He was evaluated in two interviews by a child and adolescent psychiatrist, who noted Robby's lack of remorse or concern about breaking rules or laws and who found no evidence that Robby wished to change his behavior, only that he wanted to avoid consequences. Robby received a diagnosis of a moderate to severe conduct disorder, undifferentiated type.

Whether it be by genetic inheritance or by deviant parental nurturing, the children with mentally ill parents are themselves at risk to develop
psychopathology. This risk was observed long before we understood medical genetics. The Old Testament (Exod. 20:5) warns that the sins of the fathers may be visited upon the children, even to the fourth generation. Certain families seemed cursed by having an inordinate number of offspring who acted demented, depressed, or just plain mean. Members of such families were likely to be shunned, to live in poverty, and to marry one another. Yet the effects of familial mental disorder need not be all negative. Andreasen (1987) and others have shown that psychiatric disorders do not necessarily preclude creativity. This observation also was made long before medical science took notice. Samuel Johnson complained that, in addition to his genius, he had inherited a vile melancholy from his father that made him mad all his life (Boswell 1906). Sadly, the odds of untoward effects of mental disorders predominate over good effects. During the last decades of the twentieth century, there has been a concerted effort to discover risk factors and weigh the odds that parents' mental disorders will be visited on their children. In this chapter, we focus on what has been learned about this issue, recognizing that nature-nurture issues are complex and our understanding of them is incomplete.

Eabees (1987), Rutter (1989), and others have summarized and discussed the many studies of associations between parents' mental illness and mental illness in their children. That such associations occur more frequently than by chance is no longer questioned. Associations, however, do not explain causality. Some studies even suggest that a person's genetic makeup may influence how he or she remembers childhood (Thorpe and McGuffin 1996). Teacher-turned-comedian Sam Levenson once quipped, "Insanity is hereditary; you can get it from your children." However, raising a child who is disturbed or has a conduct disorder is no joke—it is very stressful. "Levenson's Law" is frequently broken in families, with parents' illness predating the child's, and this is the rule rather than the exception. In many cases, the offspring's illness does not even occur during childhood but is first evident in late adolescence or in adulthood.

Nurturance Risk Factors

Quinton and Rutter (1988) have reviewed the effects on children of the breakdown of parenting. Mentally ill parents are prone to be more abusive, inconsistent, and/or neglectful in their child-raising styles when compared with control groups of parents. It is likely that these parent-child interactions are risk factors for disorders in the children. As already noted, parental mental illness also raises the likelihood that children will be removed from the home. Removal of a child and placement in a foster home or in an institution are in themselves additional risk factors; this is especially true when the placements become multiple.

Rutter and Quinton (1984) and others have shown that family discord has a powerful relationship to the occurrence of psychiatric disturbance in offspring. Again, the presence of a psychiatric disorder in one or both parents increases greatly the probability that family discord will occur. Family discord is seldom focused only between parents or between parents and children; it is generally shared among all or most family members. When, as is often the case, anger and hostility are complicated by other adversities, such as poverty, separation, divorce, and educational difficulties, the negative effect is enhanced.

The final parental risk factor is the use of alcohol and other drugs. A father's alcoholism produces relatively nonspecific stressful effects and an increased probability for family discord, poverty, separation, divorce, and child abuse. Of a mother's drug use during pregnancy, more is known about alcohol than other drugs. Streissguth et al. (1989) followed a large number of infants, grouped as offspring of either relatively heavy- or relatively light-drinking mothers. Central nervous system problems in the infants were seen more if their mothers had more heavy consumption. Because the worst damage to the fetus takes place during the weeks before and just after the woman's first missed menstrual period, drinking during this time is a major public health problem. By the time the drinking mother knows she is pregnant, it already may be too late to protect the child from damage that may cause mental retardation, craniofacial malformation, and attentional and/or behavioral problems.

A period of physiological drug withdrawal is observable for an infant born to a mother addicted to opioids, but evidence of an ongoing syndrome is not as clear as it is with alcohol. There is also debate as to the amount of reproductive hazard caused by maternal cocaine use (Koren et al. 1989). However, if the same mother who abused drugs during pregnancy raises the baby, poor prenatal and general health care may be followed by inconsistent parenting and an environment of poverty, child abuse, and the vicissitudes of living surrounded by persons concerned primarily with their personal need for drugs.
Hereditary Nature of Mental Disorders

The National Institute of Mental Health has emphasized the importance of genetics in diagnosis, treatment, and prevention of mental illness. Preliminary reports in the literature have identified possible genes for schizophrenia and manic-depressive disorder. Although the genetic approach has received much publicity, little evidence exists that the disorders of most psychiatric patients (those seen in psychotherapy or in most types of outpatient care) will be found either to be mainly influenced by genetic loading or significantly better managed because of future genetic findings. Indeed, there seems to be relatively little specificity in the congruity of types of mental illness expressed first by parents and then by their children (Rutter 1989).

It is now clear, however, that psychiatric disorders are not transmitted in a simple or definitive manner (Kennedy 1996). Merikangas et al. (1989) have summarized some of the confounding issues faced when attempting to identify specific genetic modes of transmission for psychiatric disorders. These issues include the complexity of the disorders. The interrelationship, for example, between mood and conduct disorder subtypes is not known, phenomenologically or genetically. There is also frequent comorbidity in persons diagnosed with a psychiatric disorder, well over 50% in almost all studies. The meaning, genetically, of this finding is still unclear. Finally, linkage studies are in a relatively primitive form, and retractions and corrections of previous findings are occurring. This problem should decrease as we move into the twenty-first century and the genome is completely mapped and sequenced. For now, one should obtain log-of-the-odds (LOD) ratio scores of 5 or 6 and replication of findings by more than one laboratory before making claims to a gene locus finding.

As is emphasized throughout this book, and as Rutter and Giller (1983) have pointed out, there is often discontinuity between psychiatric disorders experienced in childhood and adulthood. Although offspring may as children experience the same disorder that afflicts their parents, the influence of a genetic component seems more powerful for those disorders that persist into adulthood.

Studies of intergenerational transmission of psychiatric disorders are most complete and persuasive for a relatively small number of disorders. These include mood disorders, schizophrenia, and personality disorders, especially the antisocial type. Some types of alcohol abuse also seem to demonstrate a strong familial pattern.

Specific Disorders

Mood Disorders

Studies have concentrated mainly on major depression, bipolar disorder, and the interaction between major depressive disorder in parents and their offspring's risk for panic disorder or agoraphobia. Diagnostic purity and accuracy vary between studies. Simple correlations say nothing specific about what factors might be most important in causing the children's enhanced risk. Plomin and Daniels' (1987) views of genotype-environmental correlations and the impact on children of the so-called shared and nonshared family environments are all relevant and reflect the complexity of etiological forces. Additionally, almost all comparisons between parental and offspring disorders rely on reports that beg the question of "caseness." In other words, it is not clear that those adults who taught or brought up the children would have labeled the children as disordered without the appearance of research teams armed with research protocols. There certainly is not the usual strict definition of Kendell (1988) that "predictive validity is the best criterion available to us for deciding where to draw the boundary between illness and temporary distress." (p. 375).

Angold et al. (1987) studied children from families in which at least one parent had been treated for major depression and compared these children to children of parents who had no history of any psychiatric disorder. The children were matched for age, gender, and race. This study, which is part of the ongoing studies of the Yale Depression Research Unit, demonstrated the difficulties inherent in evaluations. The offspring ranged in age from 6 to 23 years. When children did not report dysphoria, parent-child agreement was good. However, children in general reported more dysphoria and other psychiatric symptoms about themselves than were reported about them by their parents. There was not a significant difference between the reported rates of dysphoria by children of the study parents and of the control parents. Without more longitudinal data, it is not possible to prove whether child
or parent reports are more useful to predict etiology or to establish a clear parent-to-child rate of risk.

Another study by the same research unit (Weissman et al. 1987) compared the children of at least one parent with major depression to the children of parents with no disorder. In this study, the diagnosis was provided by a child and adolescent psychiatrist who interviewed children and parents. Prepubertal depression was uncommon but equally frequent in males and females. After age 12 years, females became more vulnerable to major depression, although the mean age at onset was equal for males and females. For all depressed children, the symptom profiles were similar. However, the depressed children of depressed parents did tend to become ill earlier and to have a greater severity of symptoms than did the depressed children of nondepressed parents. Children of depressed parents comparatively showed an overall greater prevalence of major depression, substance abuse, poor social functioning, and school problems than did children of nondepressed parents. This research group had earlier shown (Weissman et al. 1984) that if parents with major depression also had panic disorder or agoraphobia, their children were more likely than control children to have depression plus anxiety disorders. In this study, children had a threefold greater likelihood than did control subjects for separation anxiety if the parents had panic disorder plus depression.

Richman et al.’s (1982) methodologically sophisticated longitudinal study showed that 3-year-old nonsymptomatic children of depressed mothers were at heightened risk for a disorder during the following 5 years. Although many depressed children become depressed adults, it remains unclear exactly to what degree childhood depression is interchangeable with adulthood depression.

Studies (Mitchell et al. 1989; Puig-Antich et al. 1989) also have compared the mental health status of parents and other adult relatives of depressed children and adolescents with adult relatives of control children. Findings tend to show an overall increase in mental health disorders generally, with a modest skew favoring the presence of mood disorders in the probands’ relatives.

In summary, mood disorders do tend to show some parent-child loading, more with bipolar disorder than with depressive illness (Blehar et al. 1988). With depression per se, the great degree of phenotypic heterogeneity suggests a substantial environmental impact on the degree to which anxiety and other behaviors commingle with or supplant a relatively pure depressive mood.

Schizophrenia

From at least the time of the studies of Kraepelin and Eugene Bleuler in the early part of this century, it has been assumed that schizophrenia is a hereditary condition. However, modern genetic studies show that when one monozygotic twin is schizophrenic, the risk for the same disorder in the other twin is well below 50% (Kendler and Robinet 1983). The lifetime risk in the general population is 1%. Therefore, both genetic and environmental factors are obviously important.

In a Danish longitudinal study of offspring of schizophrenic and control mothers, the proband offspring at age 23 years showed 8.6% with schizophrenia and 17% with schizotypal personality disorder. The rates for the control offspring were 1% each for the two conditions (Parnas 1986). The etiological model that seems most likely is that schizophrenic and schizotypal patients share the same or similar genetic loading but that additional insults are greater for those who become schizophrenic. Significant additional risks in the Danish study included fathers who were psychiatrically disordered, institutionalization of the child, and obstetrical complications. But again, it must be kept in mind that these risks are correlational and not yet proven to be causal.

Newborns whose mothers were diagnosed with schizophrenia were followed, along with newborn control subjects, for 4 years in the Rochester Longitudinal Study (Sameroff et al. 1987). Developmental examinations were performed when the children were ages 4, 12, 30, and 48 months. Although the ages of the children were still far below the usual age for the onset of schizophrenia, their developmental status was linked more to the severity of the parents’ illness and socioeconomic status than the parents’ specific diagnosis. Most devastating for a child was when a multiplicity of risk factors was present.

Patients with a family history of schizophrenia are less apt than schizophrenic patients with a negative family history to display findings of central nervous system disorders. The data for this finding seem to support schizophrenia as a severe final common pathway disorder resulting from the additive effects of genetic, neurobiological, and environmental factors. Studies of children not at risk who were adopted and raised by schizophrenic parents show that the variable of upbringing alone does not increase the children’s risk, compared with the risk among the general population, to become schizophrenic (Wender et al. 1974). Kringlen and Cramer (1989) compared the offspring of schizo-
phrenic monozygotic twins to the offspring of their nonschizophrenic co-twins. The latter showed fewer schizophrenic, schizotypal, and paranoid personality disorders, presumably due to more stable home environments, but the differences were not statistically significant.

Some new evidence suggests that schizophrenia and bipolar disorders may show genetic “anticipation” (i.e., they worsen with each succeeding generation [O’Donovan et al. 1995]). This finding is yet to be confirmed.

**Antisocial Personality Disorder**

It has long been noted that sinful fathers tend to sire sinful sons. Males carry the diagnosis of antisocial personality disorder six to seven times more frequently than do females.

Hutchings and Mednick’s 1975 report from the Danish Adoption Register Study showed that if the biological father had a criminal record, his adopted-away son had a 21% likelihood of also having a criminal record. If the biological father did not have a criminal record, it did not make much difference whether or not the adopting father had one. The figures were 11.2% and 10.4%, respectively. When both fathers (nature plus nurture) had criminal records, the risk for the son to live likewise jumped to 36.2%. In a review in 1988, Robins concluded that about one-half of the children of antisocial parents will display conduct disorder behaviors. Because about 40% of males and 25% of females who have conduct disorders will be diagnosed in adulthood as antisocial, Robins calculates the risk of a child’s duplicating a parent’s antisocial personality disorder at about 16%.

Every study that has examined a relationship between antisocial personality disorders and alcoholism or other drug use has found a positive correlation (Drake and Vaillant 1988). The relationship seems stronger for alcohol than for other drugs.

Bohman et al. (1987) reported on a large study of children adopted in infancy. Female and male adoptees were at greater risk for alcoholism when their biological, but not their adoptive, parents were alcoholic. The most common form was mild, clearly milieu influenced, and not associated with criminality. A second type was limited to alcoholism in sons and to somatization in daughters. A third type was again expressed in daughters as somatization, whereas sons showed alcoholism with a strong tendency toward violent criminality.

A review of studies that address the issue of biological transmission of alcoholism (Pollock et al. 1987) confirms that alcoholism does indeed run in families. The degree and specificity of the influences of biological and environmental factors are not yet well understood for the children of alcoholic individuals, who are three- to fourfold more likely than others to become alcoholic. Sons of alcoholic parents seem more likely to tolerate alcohol loading better than do control males. Males with alcoholism are more likely to father both males and females with alcoholism than are control fathers. Alcoholic mothers, on the other hand, are much more likely to have alcoholic daughters than to have alcoholic sons. Although it is clear that there is a frequent overlap between alcoholism in parents and alcoholism and externalizing disorders in offspring, the mechanisms of transmission are much less clear (von Knorrin 1991).

**Prevention**

Developing prevention strategies is hampered by our relative ignorance about the weights of various risk factors. We do, nonetheless, know some specific and general preventive steps that will make a difference in decreasing the impact of parents’ psychiatric disorders on their offspring.

The most direct intervention is to work to have expectant mothers decrease or stop their use of alcohol and other drugs. This intervention is difficult for at least two reasons. First, addictions are difficult to modify. Second, fetal damage occurs very early in pregnancy. Therefore, women who are anticipating that they will become pregnant should modify or stop their drinking. Fetal damage is so common in offspring of regularly drinking mothers that public education and rehabilitation services are warranted. Every woman who abstains or drops to mild alcohol usage before pregnancy will decrease by one the number of children likely to suffer birth defects and later behavior problems.

Most preventive efforts are more general and focus on the chronically stressful environment, or “double loading,” that accompanies genetic predisposition for vulnerable offspring (Silverman 1989). Mental health workers who treat adults must be better trained to ask about their patients’ children and to make sure that these children receive support and, when indicated, evaluation and treatment. Although as yet there are no good data on the impact of early treatment on the long-term out-
come of psychiatric illness, it is known that the separation of children from parents and the institutionalization of children worsen their long-term prognosis. Therefore, supporting a nonill parent, if there is one, can also be helpful in protecting a child from family discord, separations, and possible child abuse.

Most studies show that, although the psychiatric disorders discussed in this chapter do run in families, for a child the risk is not only for the specific familial disorder but for a spectrum of psychopathology. Therefore, any prevention strategy must balance two sets of issues. First, most offspring will not become ill at all, the type and timing of illness are never certain, and labeling might in itself bring stress to a child. Second, environmental support, early diagnosis, and intervention might make a child more comfortable and lessen the likelihood and impact of psychopathology.

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Sarah

When Sarah was 5 years old and in kindergarten, the police visited her family, inquiring about the day care program the little girl had attended from ages 15 to 18 months. Sarah’s father went to police headquarters and was shown confiscated pornographic photos of Sarah as a toddler, her unique birthmark fully evident on her naked body. An adult penis jabbed the child’s abdomen. The young child looked confused, scared, excited, and physically uncomfortable.

Sarah’s family had had no idea anything was wrong. But in retrospect, they noted that as soon as Sarah began drawing, she drew naked adults. Breast circles, nipples, and pubic hair so characterized her art productions that nursery school teachers had asked Sarah’s parents what was wrong. The family was quite modest and could not explain Sarah’s predilection for nudes.

On psychiatric examination, Sarah said that she was afraid of someone pointing a “finger part” at her belly. She didn’t know why, but the words that the little native dolls point at the boat passengers at Disneyland’s Jungle Ride also terrified her. She could not endure the idea of someone jabbing or poking her. She believed that she might die young “in an army or something.” She had almost no memory for her days in day care as a toddler, but she did say, “I think there was grave danger at a lady Mary Beth’s house.” Her parents never discussed the pornography with Sarah; they were too mortified about it. Sarah had no dreams and no full episodic memories that corresponded to the confiscated photograph. She was an excellent student in her kindergarten class, both socially and intellectually.
Over the past 20 years, a new syndrome of "childhood psychic trauma" has been recognized and outlined. In the early 1890s, Freud identified childhood trauma as an important etiology for adult neurotic disorders, but he abandoned this field of study in the late 1890s, and it did not again command much interest until the 1970s. Sequelae of childhood trauma do not entirely conform to the DSM-IV (American Psychiatric Association 1994) criteria for adult posttraumatic stress disorder (PTSD), but, as currently defined, childhood PTSD does have enough in common with PTSD seen in adult life to permit long-term follow-up studies employing DSM criteria. Other long-term studies employing diagnostic criteria more specific to children of course teach us more regarding children's particular responses to trauma.

We consider five major studies that have followed youngsters for more than a year after a single event, an event of enough magnitude to have traumatically affected some of them. The first, a 4- to 5-year follow-up of the kidnapped children of Chowchilla, was controlled at the 4- to 5-year mark with a matched sample of randomly selected children. The second, the Oregon Health Sciences University study of adolescent Cambodian immigrants from the Pol Pot regime, was reported at the 3-year mark. The third is a University of California, Los Angeles, study of children from a ghetto elementary school in Los Angeles that was subjected to an after-school sniper attack that killed one child on the playground and wounded several others. The 14-month follow-up of that group was reported. The fourth study is a 26-month study of children's responses to an Australian brush fire. The fifth study, more about the psychology of distant traumatic events than about the psychiatry of traumatic disorder, is a 14-month follow-up of East and West Coast youngsters originally evaluated 5-7 weeks after the Challenger spacecraft exploded.

The Children of Chowchilla

In July 1976, 26 children were kidnapped by three masked men and held captive about 27 hours until they escaped. The kidnapping consisted of three major events: 1) three men wearing stocking masks commandeered the children's summer-school bus at gunpoint and drove them into a slough; 2) the men transferred the children into two blackened vans; and 3) after an 11-hour ride with no stops for bathrooms, food, or drink, the men then put the children into a truck trailer buried in a rock quarry, where the children stayed for about 16 hours until the two biggest boys dug them out.

The study of the children of Chowchilla was the first organized, prospective study of a group of children who had been psychically traumatized (Terr 1979). Because it was the first, the researcher could not anticipate the findings ahead of time. Therefore, no structured questions or control groups could be arranged in advance of the first round of interviews, which occurred 5–13 months after the kidnapping.

Four to 5 years after the Chowchilla kidnapping, the children were seen again several times in relatively open-ended sessions. One child described clinical experiences that became questions for all of the other children in their 4- to 5-year follow-up interviews, and eventually each child answered similar questions (Terr 1983). The interesting later experiences of the Chowchilla children were then put into question form and the questions were asked in interviews with children, matched for age and sex, living in towns 100 miles away (Terr 1983). The Chowchilla findings also were tested on a consecutively arriving, age-matched control group of psychiatric outpatients evaluated in San Francisco (Terr 1992).

The long-term findings of childhood trauma at Chowchilla led to the clinical impression that every child of the 25 (one child could not be located) remained traumatized 4–5 years after the ordeal. Fears of specific kidnapping-related items (of men, strangers, cars in trouble, strange vehicles, other kidnappers, the kidnappers, or being kidnapped again) were virtually ubiquitous. The children in the group still harbored clear, detailed memories of what had happened. Despite their common wish to suppress thoughts related to the kidnapping, all could still remember the kidnapping. Later, however, more children reported memories of misperceptions related to the kidnapping than originally had made such reports. A black kidnapper, woman kidnapper, fat kidnapper, blue van, and so forth emerged from these previously clear tales of what had happened. Because the children in the Chowchilla group chose to avoid one another 5 years after the kidnapping, child-to-child spread, except within families, was not a likely reason for these growing memories of misperception. More likely, the children's initial contact with these total strangers, who had kidnapped them wearing stocking masks, encouraged the kidnapped children to "add" extra imagined abductors, to pose wider theories, and to imagine other harmful individuals still at large. Afterthinking apparently exerted considerable mental effect 4–5 years following this traumatic event.
Some of the Chowchilla children experienced a number of personal death dreams in the 4–5 years after their kidnapping. Their dreams, in general, had become symbolically disguised, enough so that the children did not realize that they were still dreaming (as they indeed were) of the kidnapping. Posttraumatic play continued up to the 4– to 5-year mark, although many of the games had been subtly shifted from “bus driver” to “mobile Barbies” or from “kidnap tag” to “tie a person to a tree and leave him or her there.”

There were a number of single-incident behavioral reenactments over the 4- to 5-year period. A boy with a BB gun shot a Japanese tourist whose car had broken down outside his family’s property. Never again, he vowed, would he be rendered helpless. A girl ran away from home, taking needless chances along the Southern Pacific Railway line and in a male stranger’s apartment. Multiply repeated behavioral reenactments—of frozen paralysis, helpless passivity, angry rejoinders, aggressive clownishness, or inappropriate heroism—had become incorporated into 19 children’s personalities. In other words, those children who had reenacted enough to develop changes of behavior now exhibited bothersome character traits, traits pronounced enough to be noted and negatively discussed by parents or teachers. One boy, who had promised himself after the kidnapping to grow strong and to be heroic, died in a freak accident hauling beet carrosses. Why he was working in such a dangerous after-school job may be speculatively linked to the trauma from 4 years before. Traumatized children tend to court danger. Accidental and traumatic death after trauma may be rare, but it is a definite long-term outcome.

A small number of Chowchilla kidnap victims experienced bodily or physical reenactments after the kidnapping. They experienced chills, stomachaches, and urinary tract urgency, feelings that originally had been connected with the kidnapping. One child exhibited very short stature and, although a proven connection could not be made to the kidnapping, other examples both in pediatrics (Patton and Gardner 1963) and in fiction (Grasse 1971) point to a linkage between external shocks and growth failure.

Possibly the most striking finding at 4–5 years after the Chowchilla kidnapping was a sense of futurelessness in the children (Terr 1983). Twenty-three of the 25 children admitted to this lack of faith in the future in their 4– to 5-year follow-up interviews. Another child mentioned this sense of futurelessness in a national news television broadcast 5 years after the kidnapping. These children expected to die young or to go through more sudden, shocking events. They could not describe their ideas for possible career choices, nor did many of them expect to marry and/or to have children. When asked for their life philosophies, many noted changes after the kidnapping. “I live day by day,” or “one day at a time,” several of them said. These children did not envision a good future for the world. Several fully expected the world to run out of food or to be engulfed in nuclear war.

The comparison groups to the Chowchilla children demonstrated that one could “guess” psychic trauma in those youngsters who had repetitive dreams or death dreams, played repetitive games, harbored specific-sounding fears, and showed a diminished faith about the future—either about their own futures or the world’s future (Terr 1983). Most of those children who experienced a number of these findings or an intensity of one or two findings were found to have suffered in their short lifetimes one or several untoward and terrifying events. Although they could not be fully evaluated for all signs and symptoms of childhood trauma, several traumatized children were discovered in both control groups. Eight of the 25 psychiatric evaluation control subjects (Terr 1992) and 10 of 25 randomly selected small-town control children (Terr 1983) exhibited findings indicative either of severe externally generated fright or of psychic trauma. There obviously was much more terror in the world of children than previously had been anticipated.

In summary, then, the most important long-term findings in the Chowchilla studies were bright, clear, detailed memories; specific trauma-related fears; repeated play, behaviors, dreams (including of death), and bodily responses; and an impeded sense of the future. When control groups, evaluated for these same long-term changes were found to exhibit them, it was uncovered that they had been terrified or fully traumatized children. One unexpected finding at 4–5 years following the Chowchilla kidnapping was that the kidnapped children were doing well in school.

**The Oregon Studies of Cambodian Pol Pot Survivors**

Cambodian adolescents who had immigrated to the Pacific Northwest following the downfall of the Cambodian Pol Pot regime (Kinzie et al. 1986; Sack et al. 1986) were followed by a group of psychiatrists. Many of
the children in this study group had witnessed the deaths of their own parents in concentration camps. Most had seen horrors not to be expected in the course of an ordinary lifetime. These young people then had endured the hardships of living as “boat people” prior to immigrating to America.

Psychological and educational tests were administered to these teenagers to assess DSM-III (American Psychiatric Association 1980) criteria for PTSD and various forms of depression as well as educational competence and progress at school.

At the time of the original study, the children’s average age was 17 years. They had been in the United States an average of 2½ years. Of the 40 children who had experienced severely traumatic events, 20 met diagnostic criteria for PTSD. A high percentage had depressive symptoms. Anxiety disorders and panic attacks also were relatively common (Kinzie et al. 1986). If a child lived with a family member who had survived the Pol Pot regime, that child tended to have fewer symptoms. This entire group of children, like the kidnapped children of Chowchilla, did well in school (Sack et al. 1986).

On 3-year follow-up, diagnostic interviews were conducted in the young people’s homes. Sections of the Schedule for Affective Disorders and Schizophrenia (Puig-Antich et al. 1983) and of the Diagnostic Interview Schedule (A. J. Costello et al., unpublished manuscript, 1985), with additions, were administered during these interviews. The subjects also took the Beck Depression Inventory (Beck et al. 1961) and Impact of Event Scale (Zilberg et al. 1982) on their own; the Social Adjustment Scale (Weissman et al. 1981) and Life Events Scales (Sandler and Block 1979) were given by the interviewers (Kinzie et al. 1989). Twenty-seven of the original 46 subjects participated in all aspects of the 3-year follow-up. Thirteen of these subjects had PTSD, and 11 had depression (major; 8 minor; 1 intermittent; 2). Of the 13 children who had PTSD on long-term follow-up, 8 originally had received this diagnosis. Five were newly diagnosed. Three subjects with an initial PTSD diagnosis no longer qualified. Eleven of the 27 young people had not been diagnosed with PTSD at either time of study. There was some overall decrease of depression over the 3 years from 56% to 41% of the group, but depression obviously remained significant in these people (Kinzie et al. 1989).

The Cambodian students had witnessed, between ages 8 and 12 years, terrible death, destruction of human dignity, and disfigurement or defilement of bodies. Many had lost a parent or two to death. This study confirms that PTSD will occur in a large number of children if they are exposed to terrible events. It also shows that, although a few individuals improve with time, the majority experience their symptoms steadily 3 years after the initial evaluations. PTSD symptoms stabilize and persist. Of the children (41%) who did not develop PTSD over time, most exhibited avoidant behavior. Indeed, avoidance was the most likely reason for the high attrition rate in this study.

The most important point to be learned from the Oregon/Cambodian studies is that PTSD remains a persistent disorder once it is established in childhood or adolescence. Many of the children in the follow-up study by Kinzie et al. (1989) were 10 years past their traumatic events, yet they continued to be affected. A second lesson of the Cambodian studies is that depression can affect groups exposed to terrible events, often mixing with trauma and anxiety to create a trauma-depression-anxiety syndrome or some variant. The course of PTSD waxes and wanes over time. Avoidant findings persist, even in those children who were never given a clinical diagnosis of PTSD.

The Los Angeles Sniper Study

In February 1984, a man began shooting at an inner-city elementary school playground just after school was dismissed. Some children were trapped in their classrooms; some were pinned under fire on the playground; others had already left for home; and one-quarter of the student body were on vacation. A child and a passerby adult were killed in the attack and 13 children were injured.

A representative group of the student body (159 youngsters, or 14.5%) were carefully evaluated as part of a large long-term study. A structured interview was composed, geared to pick up signs and symptoms of PTSD as outlined in DSM-III. The investigators both tabulated previous life events in the child’s experience and assessed the severity of the child’s posttraumatic condition (Pynoos et al. 1987). The first report indicated that children would become traumatized according to their “dose of exposure” to the event. Youngsters away from the school grounds, either because they were on vacation or had left the area, were less likely to have PTSD than youngsters who were actually there. Children who were most heavily exposed (because they were on the playground near the gunfire) showed the most intrusive symptomatology and the most numbing/avoidant findings within a month of the sniper attack (Pynoos et al. 1987).
At 14-month follow-up, 100 hundred of the 159 original children who had initially been interviewed were reinterviewed with the same structured PTSD interview format. A nine-question grief inventory worked out by the authors (Nader et al. 1990) was added at this time. On follow-up at 14 months, dose of exposure continued to predict which children were most affected with PTSD. Those children who had been on the playground at the time of the shooting suffered the most posttraumatic symptoms. If a child not on the playground during the shooting had known the child who was killed during the attack, he or she was more likely to suffer traumatic symptoms a year and two months after the attack. If children originally did not have an acute traumatic reaction, they only rarely reported a new reaction 14 months afterward \((N = 1, 1\%)\). Grief symptoms were independent of the amount of exposure the children had to the gunfire, and among children less exposed to the attack, there was a rapid diminution of symptoms (Nader et al. 1990).

This study emphasizes the importance of dose of exposure to the event as a factor for developing PTSD. It also shows that children who are not as seriously exposed still can develop traumatic symptomatology if they know someone who was killed during the event. The study demonstrates that 14 months into a traumatic response, the traumatic response can be expected to hold. Few symptoms go away in an intensely exposed group; however, symptoms rapidly diminish in groups who were not as directly or as closely exposed to the traumatic event.

The Australian Bushfire Study

On February 16, 1983, a large agricultural area of Australia was burned by a massive brush fire. A total of 808 children were studied on up to three occasions in the 26 months that followed the fire. At the time of the 26-month follow-up, 365 children were studied. Because this study relied entirely on parent and teacher questionnaires, no children were interviewed or directly approached (Mcfarlane 1987).

The prevalence of children’s posttraumatic symptoms, as reported by parents and teachers, did not decrease in the period from 8 months to 26 months after the fire. When parents were scored for their own posttraumatic symptoms, their symptomatic items closely correlated with their children’s symptoms, both cross-sectionally and longitudinally. Teachers’ symptoms, on the other hand, did not correlate with their students’ symptoms.

Although the children in this study were not seen by the research team, the overall results showed that approximately one-third of the children in the study were still preoccupied with the bushfire 26 months after it had occurred (Mcfarlane 1987). Certain symptoms, such as posttraumatic play, seemed to correlate to the mothers’ failure to cope with the fire and their subsequent overprotectiveness of the children.

There seemed to be no one-on-one relationship between posttraumatic phenomena in the children and psychological disorder, as measured by Rutter Questionnaires administered to parents and teachers (Rutter and Graham 1967; Rutter et al. 1970). The level of a child’s classroom anxiety and behavioral problems at school 2 and 8 months after the fire strongly correlated with how intense a child’s posttraumatic symptoms were 26 months after the disaster. In contrast to this finding, the intensity of posttraumatic symptoms observed by the parents at 2 and 8 months after the fire was significantly correlated to the symptoms that a child had 18 months later (26 months postdisaster) (Mcfarlane 1987).

Twenty-six months after the fire, posttraumatic phenomena were found to be powerfully influenced by separation from parents in the days immediately after the fire, continuing maternal preoccupation with the disaster, and changed family functioning. These influences outweighed actual exposure to the fire (dose of exposure) or losses, sustained by the family, of home and personal items. Moreover, whether at 26 months a child would continue to be preoccupied with the bushfire was also affected by whether he or she had experienced other unrelated stresses. Those children who had undergone other upsetting events appeared to be more prone to be affected by the Australian bushfire of 1983 (Mcfarlane 1987).

This study, one in which the methodology units the children themselves, is difficult to compare with the other longitudinal studies reported in this chapter. Dose of exposure to the fire does not appear as important in establishing a child’s symptoms as was dose of exposure to a preoccupied, symptomatic mother or brief separation from the mother. Grief over a lost home or lost mementos did not seem to be a significant influence.

In an important way, Mcfarlane’s study gives findings contrary to Pynoos et al.’s study. The methodology is an important differentiator.
Interviewing children directly can assess their posttraumatic symptoms and signs more accurately than does interviewing the parents and/or teachers. But dose of exposure, the focus of the Pynoos study, has not yet been absolutely proven to be a moderator of PTSD in childhood. In a study by Schwarz and Kowalski (1991), the authors found that PTSD was more associated with children's emotional states recalled from the disaster (in this case the Winnetka shoot-out) than it was with the children's actual proximity to the shootings or to the child who was killed. In the post-Challenger tragedy study of children's symptoms (a distant trauma), there were no detectable differences in the symptoms of children exposed to the disaster from the Cape Canaveral viewing stands and those exposed from watching the event on television in school (Terr et al. 1996).

The Challenger Spacecraft Study

A combined University of California at San Francisco-Stanford research group set out to explore how children psychologically handled a distant disaster (the Challenger spacecraft explosion) over a 14-month period. The purpose of this study was to assess what single findings of childhood trauma or what combination of findings would affect latency-age and teenage subjects—those who saw the disaster live at Cape Canaveral; those who saw it live on television in Concord, New Hampshire; or those who heard about the shocking news before seeing any television in Porterville, California (a less emotionally involved group)—and how these findings would change over a 14-month period. One hundred fifty-three randomly selected children were interviewed by one researcher using a structured interview that tested for signs and symptoms of childhood trauma and grief. Background questions were included.

The long-term results of this study are reviewed in this discussion, although the study also gives insight into healthy children's immediate responses to distant disasters. At 14 months, the majority of children interviewed on both sides of the country retained memories of the event, memories that included recollection of the spot in which they were standing or sitting, recollection of the people there at the time, and recollection of details only they could have known (Terr et al. 1996). The groups who saw the explosion live in the Florida viewing stands or on television remembered the event better than did the group from Porterville who heard first about the disaster, but more than 60% of children in both groups exhibited extraordinary retention of this event at 14 months. At 14 months, more than 65% of children on both sides of the country could visualize the disaster, although, again, a significantly higher percentage of those who had seen it live and cared more about it continued to visualize the scene. A year and two months after the disaster, more than 45% of the children showed a profound attitudinal change about the space program or about going into space. By 14 months postdisaster, more than half the teenagers indicated they had limited some of their expectations for the world's future (Terr et al. 1996).

Latency-age children responded over the 14-month study period to the Challenger disaster somewhat differently than did the adolescents. There was considerably more drawing of space-related pictures and more responses of disaster-related fantasies in the elementary-age group than in the teen group (35% versus 8%, respectively; \( P = .0001 \)). Latency-age children avoided talk more than did adolescents (21% versus 5%, respectively; \( P = .003 \)) and harbored more unrealistic ideas of what had happened (29% versus 8%, respectively; \( P = .002 \)). Latency-age children also changed their minds about going into space at a greater rate than did adolescents (50% versus 18%, respectively; \( P = .0001 \)).

By 14 months following the Challenger disaster, adolescents on both sides of the country exhibited some problems of their own. The adolescents, as opposed to latency-age children, showed a higher rate of changed attitudes about the United States (48% versus 15%, respectively; \( P = .0001 \)). Adolescents, in comparison with latency-age children, developed more life philosophies based upon the Challenger disaster (36% versus 1%, respectively; \( P = .0001 \)) and more pessimistic views of the world's future (58% versus 30%, respectively; \( P = .001 \)).

Many findings related to the traumatic impact of the Challenger disaster upon children's psychologies significantly diminished over the 14-month study period (after knowledge about the disaster, talking about it, fantasies related to it, dreams, supernatural experiences, trauma-specific fears, "mundane" fears of being alone, clinging, and feeling that there was too much thinking about it).

However, our findings held steady, or even increased, over time. Fourteen months after the Challenger disaster, more adolescents held negative attitudes about space, space careers, the United States (24% at
5–7 weeks versus 47% at 14 months; \( P = .003 \), and the world’s future (37% at 5–7 weeks versus 58.2% at 14 months; \( P = .022 \)) than they previously held at 5–7 weeks after the explosion.

The Challenger study demonstrates that even when investigators examine only trauma-related symptoms and signs, not the full disorder, relatively permanent effects—at least long-term effects in children—can be found. Children’s attitudes and philosophies may foster, allowing, as the Challenger study shows, more children to express negative attitudes and views of the future at 14 months than at the time of impact. This finding suggests the possibility of how entire generations become Depression affected, Nazi affected, Kennedy-assassination affected, Challenger affected, or Gulf War affected. Columnist Ellen Goodman speculated that the quick, unquestioned success of the Gulf War might create a generation of war-approving children who believe that battles can solve the most complicated human conflicts (Goodman 1991). Goodman intuitively might have fallen upon one of the more striking long-term findings of the Challenger study. Attitudinal changes appeared to gain momentum over time following external, but distant and extreme, events. The findings in the Challenger study regarding memory were also worthy of note. Distant traumatic events created clear, detailed positional and people memories of a special nature. As opposed to more mundane and even more happy remembrances, these trauma-related memories tended to last.

### Discussion

The clinical information gleaned about childhood trauma from the five long-term studies reviewed in this chapter is important. Although it would have been preferable to review the symptoms of traumatized children 20 and 30 years later to examine exactly how childhood traumatic symptoms lead into the traumatic syndromes affecting adults who were abused as children, no such studies are available. The conclusion to be drawn from the studies we have reviewed is that, after terrifying events, children develop certain specific signs and symptoms that mark them as traumatized. Play; drawings; sharing a bed; attitudinal and philosophical shifts; fantasies; dreams; journal, poetry, and letter writing (in teenagers); supernatural experiences; avoidance of related talk and related afterknowledge; trauma-specific and mundane fears; clinging; habit acquisition (e.g., nail biting, hair sucking); behavioral and psychophysiological reenactment; and personality change are some of the more important signs and symptoms of childhood trauma. Many symptoms last for considerable periods of time. A fearful child who still visualizes or feels or smells an event, who has pessimistic world views or expectations for the future, and who creatively or through “episodes,” bodily sensations, or personality changes tends to repeat an aspect of some event is likely to be either traumatically “disordered” or experiencing important posttraumatic psychological changes.

Dose of exposure, the idea that those who experience the greatest, most immediate danger have the most severe PTSDs, is not incontrovertibly proven in children. Two long-term studies (Mcfarlane 1987; Pynoos et al. 1987) differ in their conclusions regarding dose of exposure, although Pynoos’ methodology provides better data because the children themselves were interviewed. Further long-term studies are necessary to provide further answers. Dose of exposure, of course, is an important question for treatment planning. If children in the most heavily exposed group are those best predicted to develop PTSD, then school programs, mini-marathon therapy sessions, and even radio talk shows exploring PTSD must be geared to this group. The Cambodian study offers a cross-cultural wrinkle to the complexities of childhood trauma, as somatic problems (many of them psychophysiological reenactments) are found to be more common in Asian youths than in Westerners. This finding is an important reminder that cultural patterns of emotional expression must be given recognition in our clinical descriptions. It demonstrates that PTSD and depression may coexist together for years, the two sets of symptoms often intermingled into a condition much more difficult to treat than would be either PTSD or depression alone. In situations where parents or siblings die or a person is subjected to dehumanization brutality, the combination of depressive symptoms and posttraumatic symptoms is to be expected.

Questions about psychic numbing in children remain unresolved in reviewing the five long-term studies highlighted in this chapter. Pynoos’ group finds that the worst numbing and avoidance are seen in those children most dangerously exposed to a single event. The Chowchilla study indicates, on the other hand, that psychic numbing is not ordinarily a problem following single events. Many of the Cambodian children in Kinzie’s and Sack’s series did exhibit psychic numbing, but this group, as opposed to all the others, were repeatedly exposed to the long-term horrors of Southeast Asia and of their escape boats.
Torr has proposed that there are two types of childhood trauma: one brought on by single events, not usually associated with psychic numbing and extreme avoidance, and the other brought on by many or long-standing events, regularly associated with psychic numbing (Torr 1991). She sees psychic numbing as developing from an anticipatory state associated with the child’s knowledge that he or she will be abused again or witness horrors again. Because Pynoos’ group of children lived in an inner-city ghetto, there is a chance that their direct exposures to the playground shooting was “the straw that broke the camel’s back,” the most recent and most frightening of a long series of frightening events. It will take more studies to answer the question regarding psychic numbing in childhood. The implications for what happens to childhood trauma in the adult’s life are quite important.

Finally, there apparently are few major, controlled, prospective long-term studies on children who are the proven victims of incest, extramarital sexual abuse, and/or physical abuse. Abused children have many of the signs and symptoms of childhood trauma, along with the signs and symptoms of severe personality disorder, depression, dissociative personality disorder, and/or other conditions, such as attention-deficit disorder. When these abused children grow up, they tend to populate adult psychiatric hospital units and have disorders ranging from psychosis to substance abuse. As adults, they exhibit borderline states, antisocial or narcissistic personalities, and a variety of dissociative disorders. Some formerly abused children turn out healthy. Some continue to have PTSD. How do these children end up this way? What in childhood leads to the eventual results in adulthood? Obviously, these questions are extremely important to long-term follow-up study.

References


Goodman E: This war may have made it look too easy. Boston Globe, March 6, 1991


Mood and Anxiety Disorders and Suicidal Behavior in Children and Adolescents

Sam

Sam is a handsome, tall, 19-year-old college freshman who is excelling academically at a large urban university. Although he hopes to put his past troubles behind him, he experiences episodic feelings of depression and repeated suicidal thoughts. In his current college year, Sam pursues many interests, such as writing, painting, swimming, and bike riding: is active in the college theater club; and has a number of close friends. The important stress experienced during the beginning of this college year was that Sam's parents moved.

During his life, Sam experienced recurrent episodes of depression, which he relates were associated with his responses to multiple family moves and his parents' chronic excessive marital problems. Sam frequently had feelings of sadness, crying episodes, feelings of hopelessness, guilt, preoccupations with death, defiant behavior, low frustration tolerance, temper outbursts, and runningaway behavior. When Sam was 9 years old, his parents enrolled him in a boarding school at the suggestion of Sam's psychiatrist, who was concerned that Sam was overwhelmed and depressed by the family tensions. He attended this school until he was 12 years old, when he requested that he live at home.

During this year, the family moved across the country and Sam felt uprooted. He did not want to move and had difficulty adjusting to his
new school routine. He had trouble with his peers, felt that he was teased excessively, complained that his teachers were stupid, and could not complete school assignments because he could not concentrate. Sam developed problems sleeping, threatened to harm his mother, and planned to kill himself. He ran away from home several times, once staying away for 2 days when he wandered around town contemplating killing himself with a knife. He returned home in a distraught, disorganized state. His parents immediately took him to a child psychiatrist, who was so concerned about Sam's state that he recommended psychiatric hospitalization.

Sam was hospitalized for 3 months when he was 13 years old, receiving intensive psychotherapeutic treatment and an antidepressant. His family was involved extensively in meetings with the hospital staff. When Sam showed significant improvement, he was discharged to attend a therapeutic boarding school in relatively close proximity to his home.

Sam remained in the boarding school, an environment that protected him from the daily vicissitudes of family strife, until the beginning of his senior year in high school. At that time, he moved home, on his request. Although he envisioned that senior year would be fun, he experienced a recurrence of depressive symptoms and, precipitated by a breakup with a girlfriend, took an overdose of pills he obtained in a store. He was treated by a psychiatrist for the remainder of that school year.

Just after his high-school graduation, Sam's family moved to a distant city. Sam entered college that year and lived in the dormitory. He resumed psychiatric treatment with a new psychiatrist in hopes that this intervention would help prevent recurrent depressive and suicidal states.

Sam's story highlights the profound and chronic nature of childhood depression and its potential for recovery and relapse. Although there was no family history of psychiatric problems, especially depression or suicidal tendencies, Sam's case illustrates the association between environmental stress and childhood symptoms of depression. Suicidal preoccupations, requiring intensive psychiatric intervention, occurred at the height of Sam's depressive episodes.

Recent systematic studies with children and adolescents have yielded enlightening information about the epidemiology, clinical signs and symptoms, family correlates, and physiological components of mood and anxiety symptoms and suicidal behavior. Direct observation and clinical research with children and adolescents have identified levels of impairment and long-term consequences of these states. Depression, anxiety, and suicidal behavior frequently occur concurrently in youngsters, and in certain cases feelings of anxiety and depression are part of a constellation of symptoms that fulfill criteria for mood and anxiety disorders.

**Mood Disorders**

The development of DSM-III (American Psychiatric Association 1980) and DSM-III-R (American Psychiatric Association 1987), with their definitions of criteria for identifying psychiatric disorders, promoted advances in understanding childhood depression as a psychiatric disorder of children and adolescents. Empirical observation of childhood symptomatology of depression dispelled previous beliefs that children are too developmentally immature to be afflicted with depressive disorders. The types of mood disorders identified in children and adolescents, which are similar to those observed in adults, include major depressive disorder, dysthymia, bipolar disorder, and adjustment disorder with depressed mood. Table 7-1 highlights main features of these disorders.

Epidemiological studies (Andersen et al. 1987; Bird et al. 1988; Costello et al. 1988) of children and adolescents estimate that the prevalence of major depressive disorder is 4%–1.8% and the prevalence of dysthymic disorder is 11.3%. The onset of bipolar disorder is rare before adolescence. Population studies suggest that cohorts of youngsters born more recently, especially since World War II, have higher rates of depression than cohorts born in earlier times (Klerman et al. 1985).

In general, the clinical characteristics of major depressive disorders are thought to be similar in preadolescents and adolescents. One study (Ryan et al. 1987) of 95 children and 95 adolescents, ages 6–18 years, who had major depressive disorder reported that, although most symptoms of depressive disorder were similar in these groups, the preadolescents had greater depressed appearance and more somatic complaints, such as headaches or stomachaches, psychomotor agitation, separation anxiety, phobias, or hallucinations, but the depressed adolescents had more lack of pleasure or interest in activities, hopelessness, excessive sleepiness, weight change, substance abuse, and lethal suicidal behavior. Other characteristics of major depressive disorder in children and adolescents
Table 7-1. Criteria for depressive disorders in children and adolescents

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Major depressive disorder</th>
<th>Dysthymic disorder</th>
<th>Bipolar disorder</th>
<th>Adjustment disorder with depression</th>
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<tbody>
<tr>
<td>Number needed to diagnose disorder</td>
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<td>2</td>
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<tr>
<td>Duration</td>
<td>2 weeks</td>
<td>1 year</td>
<td>Days or weeks</td>
<td>Up to 6 months in response to stress</td>
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<td>Depressed or irritable mood</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Loss of interest or pleasure</td>
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<td>X</td>
<td></td>
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<tr>
<td>Weight loss or gain</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Decreased appetite</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Insomnia</td>
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<td>Fatigue or loss of energy</td>
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<td>Worthlessness or guilt</td>
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<td>Hopelessness</td>
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<td>X</td>
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<tr>
<td>Elevated or irritable mood</td>
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<tr>
<td>Grandiosity</td>
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<tr>
<td>Increased talkativeness</td>
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<tr>
<td>Racing thoughts</td>
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<td>Increased goal-directed activity</td>
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<td>Excessive pleasurable activities</td>
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include strong family history of depressive disorders, neurophysiological indicators such as alterations in sleep patterns, and neuroendocrine alterations such as in growth hormone or cortisol responses (Puig-Antich 1980).

Course of Childhood Depression

Complex research methods have been applied to identify the natural course of depression in young children. Studies suggest that depression presents episodes of remission and relapse throughout childhood and adolescence, often concurrently with other psychiatric disorders, especially anxiety and conduct disorders. An important finding is that when an episode of major depressive disorder is resolved, children continue to have problems with interpersonal relationships involving family and peers (Kovacs and Goldston 1991; Puig-Antich et al. 1985a, 1985b).

There have been only a few long-term follow-up studies of depressed children. The New York Longitudinal Study (Chess et al. 1983) is a classic study of child development, in which children and their parents were evaluated at periodic intervals until the children were ages 18-27 years. Among 133 children in the study, six (4.5%) had a mood disorder: two children had a major depressive disorder, three a dysthymic disorder, and one an adjustment disorder with depressed mood. The long-term symptom profiles of either major depression or dysthymia were similar during preadolescence, adolescence, and early adulthood. Children with major depressive disorder had definite family histories of mood disorders, and the children’s major depressive disorder did not appear to be precipitated by situational stress. In contrast, the children with dysthymic disorder experienced chronic stress but had no family history of depressive disorders.

One of the most comprehensive prospective studies evaluating the development of children is the Dunedin Multidisciplinary Health and Development Study conducted in New Zealand with children born between April 1, 1972, and March 31, 1973 (McGee and Williams 1988). (This study also is discussed in Chapter 4 in this volume). One hundred twenty-one children were identified as having a mood disorder, and most were reevaluated at specific follow-up times. For example, at age 9 years, 6 children had a major depressive disorder, 11 a minor depressive disorder, and 23 a history of a previous episode of a mood disorder (5 had a history of a major depressive disorder and 18 a history of a minor depressive disorder). Children with a current depressive disorder, compared with those who had a history of depression or those without a history of depression, worried more and exhibited more severe antisocial behavior.

At age 11 years, 16 children had a current episode of a mood disorder and 20 a history of a mood disorder. The currently depressed children displayed significantly more symptoms of inattention, impulsivity, hyperactivity, antisocial behavior, and anxiety compared with children who either had a history of a mood disorder or had no history of a mood disorder.

At age 13 years, 16 adolescents were depressed and 21 had a history of depression. The currently depressed adolescents had significantly more symptoms of conduct disorder, anxiety/withdrawal, and psychosis than did either the adolescents with a history of depression or nondepressed adolescents.

The main results of this study suggested that depression has a chronic course, as illustrated by the finding that children who were depressed when they were age 9 years usually reported depressive symptoms at ages 11 and 13 years. In addition, antisocial and anxiety symptoms persisted concurrently with depressive episodes. Another finding was a higher prevalence of depression among boys than girls. Perhaps, as these children are followed to an older age, the prevalence of depression in females will exceed that in males, as other studies have suggested.

The most detailed prospective study of depression in preadolescents is an ongoing investigation conducted by Kovacs et al. (1984a, 1984b). Standard research instruments have been used to interview the children and their parents at regular follow-up times. In the first year of study, interviews were conducted for each child and his or her parents every 3 months and semiannually thereafter. Table 7–2 illustrates the first published reports of this study.

Co-occurrence of other psychiatric disorders (especially anxiety or conduct disorders) was frequent among these children (Kovacs et al. 1988, 1989). For example, approximately 79% of the children with major depressive disorder also had a concurrent disorder; among the children with dysthymic disorder, 93% had a co-occurring disorder; and approximately 45% of the children with adjustment disorder with depressed mood had co-occurring disorders. Table 7–3 shows the most prevalent concurrent disorders for the three diagnostic classifications.
Table 7-2. Depression in preadolescents

<table>
<thead>
<tr>
<th></th>
<th>Major depressive disorder</th>
<th>Dysthmic disorder</th>
<th>Adjustment disorder with depressed mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children</td>
<td>42</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>Age at onset</td>
<td>9-10 years</td>
<td>7 years</td>
<td>8-9 years</td>
</tr>
<tr>
<td>Duration of first episode</td>
<td>32 weeks</td>
<td>3 years</td>
<td>25 weeks</td>
</tr>
</tbody>
</table>

Source: Kovacs et al. 1984a; McGee and Williams 1988.

The results agree with those of the Dunedin study (McGee and Williams 1988), highlighting the co-occurrence of depressive disorders, antisocial behavior, and anxiety disorders. In this population of depressed children, the cumulative risk of developing a conduct disorder by age 19 years was 36% (Kovacs et al. 1988). Kovacs et al. (1989) noted that those children with anxiety and depressive disorders were younger than those without anxiety disorders. Anxiety disorder appeared to predate depression in two-thirds of the cases, especially among children with major depressive disorder.

When Kovacs et al. (1984a) examined the process of recovery from depressive disorders, they observed that the time to recovery was shorter in children with a major depressive disorder or an adjustment disorder than for children with a dysthmic disorder (Table 7-4).

Gender was not a factor in the rate of recovery from any of these depressive disorders; however, early age at onset was associated with more lengthy time until recovery from major depressive or dysthmic disorders but not from adjustment disorder. In this study, recovery rates were not influenced by co-occurrence of other disorders or treatment. However, other reports (Keller et al. 1988) suggest that the presence of co-occurring disorders decreases the rate of recovery from major depressive disorder.

Seventy-two percent of children with an initial episode of major depressive disorder had a recurrence of major depression within 5 years (Kovacs et al. 1984a). Co-occurrence of major depressive and dysthmic disorders increased risk of developing a recurrence of major depressive disorder. Sixty-five percent of children with dysthmic disorder had a first episode of a major depressive disorder within 5 years after the onset of dysthmic disorder. None of the children with an adjustment disorder had a major depressive disorder.

Other follow-up studies have evaluated the outcome of children and adolescents with depressive disorders when they become young adults (Garber et al. 1988; Harrington et al. 1990; Kandel and Davies 1986). The results suggest that presence of mood disorders in youth populations tends to be stable and recurrence rates for depression are high. Problems in psychosocial functioning expressed as problems with peers and spouses were evident among young adults with histories of depression at an earlier age. Youth depression was associated with a greater likelihood of psychiatric hospitalization and other nonaffective psychiatric disorders, such as substance abuse, antisocial personality disorder, and generalized anxiety disorder during the young adult years.

Table 7-3. Most prevalent concurrent disorders

<table>
<thead>
<tr>
<th>With major depressive disorder (79%)</th>
<th>With dysthmic disorder (93%)</th>
<th>With adjustment disorder with depressed mood (45%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysthmic disorder</td>
<td>Major depressive disorder</td>
<td>Anxiety disorder</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>Anxiety disorder</td>
<td>Attention-deficit disorder</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>Attention-deficit disorder</td>
<td>Conduct disorder</td>
</tr>
</tbody>
</table>

Bipolar Disorders

There is relatively little systematic research on the prevalence and course of bipolar disorders in children and adolescents. The disorders are rare in preadolescents and more prevalent among adolescents.

Strober and Carlson (1982) reported a 3- to 4-year prospective follow-up of 60 adolescents, ages 13-16 years, who had a major depressive disorder at the time of psychiatric hospitalization. Mania developed in
20% of these adolescents during the follow-up period. Those symptoms with the greatest power to predict bipolar outcome were precipitous onset of symptoms, psychomotor retardation, and psychotic features (Table 7-5).

Although some studies (Akiskal et al. 1983) supported these findings, others (Carlson et al. 1977) did not. An important finding was reported in another investigation (Welner et al. 1979) of psychiatrically hospitalized adolescents, suggesting that within 10 years after hospitalization 25% of 12 bipolar adolescents committed suicide. This percentage represents a high rate of suicidal mortality among adolescents with bipolar disorder.

**Suicidal Behavior**

From a historical perspective, suicide in 15- to 24-year-olds in the United States reached its peak rate in 1977, with an age-specific suicide rate of 13.4 per 100,000 population (Eisenberg 1984). However, youth suicide was not acknowledged to be a serious mental health problem until the early 1980s, when clusters of suicide occurred among teenagers in Texas, Chicago, and New York. These suicides alarmed the general community to such an extent that strong demands were voiced to develop suicide prevention programs and institute research to advance the understanding of youth suicidal behavior.

| Table 7-5. Initial symptomatology of psychiatrically hospitalized adolescents |
|-----------------------------|-----------------------------------|
| **Bipolar outcome**         | **Nonbipolar outcome**            |
| Shorter duration of symptom onset | More severe suicidal tendencies |
| Intense depressed mood      | Weight gain                       |
| Self-reproach               | Irritability                      |
| Bodily concerns             | Self-pity                         |
| Decreased concentration     | Demanding                         |
| Psychomotor retardation     | Significantly higher rate of family bipolar disorder |
| More mood congruent delusions or hallucinations |                      |
| High rate of family affective disorders |                      |

Source: Strober and Carlson 1982.

In 1989, the age-specific suicide rate for 15- to 24-year-olds (National Center for Health Statistics 1992) was 13.3 per 100,000 population. This rate reflects 4,870 deaths by suicide in this age group, is almost equivalent to the rate in 1977, and exceeds the rate of 12.2 per 100,000 for all ages in 1989. In contrast, the age-specific suicide rate for children younger than age 15 years is low (7 per 100,000). These data emphasize the scope of youth suicide as a national mental health problem. Birth cohort effects identified for suicide among 15- to 24-year-olds in the United States, Canada, and Australia (Klerman 1989) are that youngsters in this age group, especially those born after World War II—the baby boom cohort—have higher suicide rates than those born earlier. Although factors associated with such cohort effects are not specifically known, they are believed to be environmentally determined rather than related to genetic alterations.

Nonfatal suicidal tendencies that involve suicidal thinking and suicide attempts are prevalent phenomena, but relatively little information exists about the outcome of youngsters who report suicidal tendencies. In studies (Cohen-Sandler et al. 1982; Goldacre and Hawton 1985; Kuperman et al. 1988; Motto 1984; Nardini-Maillard and Ladane 1980; Otto 1972; Paepegaard 1975; Pfeffer et al. 1988, 1991; Stanley and Barter 1970) with an average follow-up of 5-15 years, the rate of suicide is low, ranging from 0% to 4.3%, although one study (Motto 1984) reported that 9% of 122 psychiatrically hospitalized male adolescent suicide attempters committed suicide within an average of 10 years after hospitalization. These adolescent suicide attempters were seriously depressed at the time of their psychiatric hospitalization. Factors present at the time of hospitalization among those who committed suicide, in contrast to those who did not, were communication of intent to attempt suicide, fear of losing one's mind, seeking help before the attempt, ambivalent or negative attitude to the treating clinician, intense tendency to sleep, psychomotor retardation, and hopelessness. Some of these symptoms were similar to those described by Strober and Carlson (1982) among adolescents with bipolar disorder. Perhaps those youngsters who committed suicide were similar to bipolar psychiatric inpatients reported by Welner et al. (1979). In addition, Kuperman et al. (1988) showed that psychiatric child and adolescent inpatients are at greater risk for suicide than youngsters in the general population.

Only a few short-term follow-up studies of suicidal preadolescents have been reported. Within an average of 5-3 years of follow-up, no suicides were reported. Pfeffer et al. (1988) reported that, in 101 preadolescent...
escents selected from the community, 11.5% of the youngsters had a history of suicidal ideation or acts and 19.4% reported suicidal ideation or acts 2 years later. Four of eight preadolescents who initially reported suicidal ideation or acts reported suicidal tendencies 2 years later. This finding suggests that, within a relatively short time, the prevalence of suicidal ideation or acts is stable among preadolescents. Factors associated with suicidal ideation or acts at the 2-year follow-up were presence of a current psychiatric disorder, symptoms of chronic depression, and history of assaultive behavior.

A longer-term follow-up study conducted by Pfeffer et al. (1991) of children selected from the community and a sample of preadolescent psychiatric inpatients is ongoing. During the course of a 6- to 8-year follow-up period of 133 subjects in this study, 20 (15%) reported at least one suicide attempt, but there were no deaths. Ten youngsters reported multiple suicide attempts during the follow-up. At least 50% of these multiple suicide attempters reported approximately 3.5 suicide attempts in the follow-up period. Presence of a mood disorder during the follow-up period most strongly predicted the occurrence of a suicide attempt in the same period; adolescents who reported a suicide attempt in the follow-up period were five times more likely to have a mood disorder than adolescents who did not report a suicide attempt. A history of suicidal ideation or a suicide attempt was an important risk factor for a future suicide attempt. Delinquency and substance abuse, as well as access to firearms, have been reported to be strong correlates of adolescent suicide (Brent et al. 1987; Fowler et al. 1986).

Anxiety Disorders

DSM-IV (American Psychiatric Association 1994) classifies three anxiety disorders specifically related to childhood: separation anxiety disorder, avoidant disorder, and obsessive-compulsive disorder. Table 7-6 outlines diagnostic criteria for these disorders. Epidemiological studies (Andersen et al. 1987; Bird et al. 1988; Costello et al. 1988) report prevalence rates of 1.1%–5.9% for anxiety disorders in community samples of children and adolescents. More specifically, prevalence rates in adolescents in the general population were reported as follows: obsessive-compulsive disorder, 5.9%; separation anxiety disorder, 2%; simple phobia, 3.6%; and social phobia, 1.1% (McGee et al. 1990).
Empirical studies suggest that anxiety disorders often co-occur with mood disorders (Costello et al. 1988) but that children with anxiety disorders are significantly younger than those with concurrent anxiety and depression (Hershberg et al. 1982; Kolvin et al. 1984; Strauss et al. 1988). Children with anxiety and depression appear to feel more anxious than those with anxiety disorder alone. Anxiety disorder also co-occurs with conduct disorder; children with these disorders are more socially impaired than children with anxiety disorder alone (Walker et al. 1991).

Important issues that require study are the characterization of symptomatology of anxiety disorders during different stages of the life cycle and the outcome of children with anxiety disorders. It is not clear whether anxiety disorders of adults, such as panic disorder with or without agoraphobia, agoraphobia without a history of panic disorder, social phobia, simple phobia, obsessive-compulsive disorder, and generalized anxiety disorder, are associated with childhood anxiety disorders. Yet these states have been reported in children—notably, panic disorder (Hayward et al. 1989; Moreau et al. 1989). Because a history of panic disorder has been associated with suicidal ideation and suicide attempts in adults (Weissman et al. 1989), the evaluation of suicidal tendencies is important in the prospective course of children and adolescents with symptoms of panic disorders.

A relation between childhood and adult anxiety disorders has been suggested: 246 girls who reported fears of thunder, animals, or injections reported similar fears as adults (Abe 1972). Thirty-three percent of these girls showed anxiety as adults. Several studies (Deltito et al. 1986; D. E. Klein et al. 1983; Perki et al. 1988) show that agoraphobic adults reported childhood histories of school refusal, but other reports (L. Berg et al. 1976) suggest that school phobia predicts agoraphobia in only a small portion of cases. The largest study of a community sample of adults, the Epidemiological Catchment Area Study (Christie et al. 1988), conducted in five communities, suggests that a high number of anxiety disorders in adults begin in adolescence.

Course of Anxiety Disorders

The course of anxiety in childhood has received some research attention. Among nonclinical samples of children (Emde and Schmidt 1978; Gittelman 1986; R. G. Klein and Last 1989; Richman et al. 1982; Rutter et
fears in preschool children and young preadolescents were noted to be stable during follow-up studies; such symptoms may predict other anxiety symptoms during follow-up periods. Children with fears, however, did not appear to develop conduct problems during follow-up. Research (Werry 1991) suggests that children with overanxious disorder are less likely to experience these symptoms within several years of follow-up.

Most follow-up studies focused on school refusal with underpinnings of separation anxiety or social phobia. Some studies (Baker and Wills 1979; I. Berg and Jacobson 1985; Coolidge et al. 1964; Waldren 1976; Weiss and Burke 1970) suggest that the best predictor of outcome was the clinical condition at the time of discharge from treatment. Clinical course appeared to be variable in that some children had persistent symptoms and others functioned well (I. Berg et al. 1976).

The complexities of the course of anxiety disorders are highlighted by variations in outcome associated with age at onset of anxiety. For example, school phobia with onset in adolescence may be associated with a poorer prognosis than onset of anxiety in childhood (Rodriguez et al. 1989). Among children ages 7–12 years who were psychiatrically hospitalized following school refusal (Flakierska et al. 1988), a high rate of anxiety symptoms was noted at the time of follow-up 15–20 years later. These patients, compared with those without a history of school refusal, were treated in psychiatric outpatient facilities more often as adults. In general, the few existing follow-up studies of children with school refusal suggest that there is a relatively good prognosis and less likelihood of agoraphobia in adulthood.

The most systematic research on outcome of anxiety disorders has been conducted by Rapeport and colleagues (C. Z. Berg et al. 1989; Swedo and Rapoport 1989) for obsessive-compulsive disorder. These studies suggest that the course of obsessive-compulsive disorder fluctuates with variations in severity and multiplicity of obsessions or compulsions. Chronicity of disorder is directly associated with the level of initial severity. For example, in a 2- to 7-year follow-up (C. Z. Berg et al. 1989), approximately 70% of children and adolescents originally evaluated had the disorder at follow-up. Those children with more severe disorders had higher rates of disorder at follow-up. These findings were corroborated by Hollingsworth et al. (1980). Children with obsessive-compulsive disorder exhibited problems with peer relationships and social interactions. Medication such as clomipramine is effective in reducing symptoms of this disorder (Leonard et al. 1989).

Conclusions

Because research on the course of mood and anxiety disorders and suicidal behavior is relatively scant, definitive conclusions about the outcome of children and adolescents with these problems cannot be drawn at present. Nevertheless, some findings are evident.

Children with depressive disorders are at risk for recurrent mood disorders and problematic psychosocial adjustment. The type of mood disorder is predictive of subsequent episodes of mood disorder. Children with early-onset major depressive disorder and dysthymic disorder are at risk for subsequent major depressive disorder or bipolar disorder. Children with major depressive disorder characterized by precipitous onset of symptoms, psychomotor retardation, and psychotic features may be at greater risk for developing bipolar disorder. Adolescents with a bipolar disorder are at risk for suicide.

Youth suicide and nonfatal suicidal behavior are major mental health problems. A history of suicidal ideation or attempts predicts future suicidal behavior. Youngsters at risk for suicidal behavior usually have a psychiatric disorder such as mood, conduct, and/or substance abuse disorders. Children or adolescents with such psychopathology warrant close follow-up and intervention to decrease the intensity of risk factors.

As a national mental health problem, youth suicide warrants public health efforts for its prevention. Although numerous programs have been instituted in schools to educate teenagers about risk for youth suicide, the beneficial effects of such programs are questionable (Shaffer et al. 1991). Nevertheless, prevention of youth suicide requires a multimodal effort involving community services to youth and families, public education, constraints on media descriptions of youth suicide, and increased research efforts (Alcohol, Drug Abuse, and Mental Health Administration 1989).

Minimal research exists on the course of anxiety disorders in children and adolescents. The few available studies suggest that variable outcomes can be expected and are determined by the type of initial anxiety disorder and its severity. The clearest evidence of stability of anxiety disorders is with obsessive-compulsive disorder. However, controversy exists about the continuity of childhood anxiety disorders, such as separation anxiety or social phobia, with anxiety disorders of adulthood. In general, children with anxiety disorders appear to have relatively good prognoses.
Because controlled treatment studies of the problems discussed in this chapter are rare, it is not possible to conclude whether intervention attenuates the longitudinal outcome of these problems. The most important issue to consider at the present time is that early identification of these problems and appropriate psychiatric treatment and follow-up may be helpful in limiting the morbidity and mortality associated with these psychopathologies.

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**Eating Disorders**

**Jane**

She was nicknamed Lady Jane from birth, perhaps a mark of her family's expectations. The house was always in perfect order, except for the family life inside it. Her mother suicided by cutting her own throat, leaving a chilling message for the family: "This is the only way." Jane was sent away to boarding school where she worked hard, got good grades, and was absorbed in acting roles with the drama club. Behind the many roles she played was a deep sense of her own unattractiveness, which became focused on body shape and weight. An obsession with dieting led to bingeing and purging, dropping out of school, and amphetamine and alcohol abuse. A series of affairs and failed marriages continued the tragedy of her personal life, which was in sharp contrast to a skyrocketing acting career. Jane's eating disorder continued until she became pregnant.

Her pregnancy marked a turning point away from her dysphoria and her eating disorder. As she described it, "My body was literally telling me things. ‘Sleep better. Eat better.’ I no longer wanted coffee or cigarettes. I bought my first books on nutrition." Life seemed to become more focused after Jane took control of her diet. The successful acting career continued. She devoted herself to political activism because, for her, principles were everything. Her political activism visibly restored her battered self-esteem. Body preoccupation continued, but the new focus on physical well-being paid major dividends for her mental state. A healthy diet and vigorous exercise became her own personal program—the Jane Fonda Workout. She became a role model for millions.
of other women. "Getting fit is a political act," she told them. "You are truly taking charge of your life." She urged women to improve their bodies in order to become healthy in mind and spirit. Sound mind, sound body was the formula that had pulled her life together. Jane even reconciled with her father, which closed the last tangled loop in her life.

**Anorexia Nervosa**

The Duchess of Windsor is famous for her quip that a woman can never be too thin or too rich. Do they go together? Not really. But the rich and famous dramatically illustrate the natural history of the disease, from rock star Karen Carpenter, who died of anorexia nervosa, to ultrathin British model Twiggy, who recovered and went on to greater success as an actress. What kind of illness strikes individuals who are so bright, so educated, and so achievement oriented? Personality traits ordinarily thought to be protective against mental illness are actually risk factors for anorexia nervosa. Parents have traditionally described them as perfect children—clean, polite, well behaved, and often excellent students and athletes (Bruch 1978).

**Background**

For centuries, what we knew about anorexia was restricted to the anecdotal clinical experience of physicians who dealt with these young women (and occasionally, young men) who starved themselves. First described in 1686 (Morton 1720) as "nervous atrophy" from "a multitude of cares and passions of the mind," it was given its name 200 years later by Sir William Gull (1868). He attributed the disorder to the "morbid mental state" of young adolescent girls and thought he saw a family disposition. Sigmund Freud did not refer directly to the condition, although several of his patients appeared to have severe anorexia (Breuer and Freud 1893/1955). But Freud's theoretical conceptual model influenced the evolving picture of anorexia nervosa. Reconstruction of anorectic patients' developmental histories led to an entanglement of the child's wishes with the parents' in these apparently well-functioning families (Bruch 1973). Indeed, "overparenting," a kind of protectiveness that stifled the development of individuality and self-expression, became the most important factor associated with anorexia nervosa.

This profile of anorexia nervosa was based on data that did not go beyond the clinical examining room. Despite medicine's commitment to scientific objectivity and research, clinicians report individual cases more often when there is a happy outcome than when it is a discouraging one. The occurrence of anorexia nervosa in adolescent girls led to its association with puberty and the adolescent maturational process so that it became a "developmental" illness, one in which psychological conflicts over growing up ended in self-starvation. Risk factors then were puberty and the maturational drive on the one hand and opposing family influences blocking the development of individuality on the other. But which girls were most vulnerable? Stressful life situations just before the onset of anorexia, such as important losses, medical illnesses, failure at school, or moves, were identified as precipitating factors (Russell 1981).

**New Directions**

Understanding an illness such as anorexia nervosa requires more than a series of cases from clinical practice. It requires the study of a representative spectrum of the disease, all the way from mild, reversible cases to severe and progressively deteriorating ones. The cases of brilliant clinicians from Gull to Bruch are rich in detail but tell us little about the course of the disease in the general population. A broader view of the illness through longitudinal outcome studies is needed. Tracking down the natural course of the illness, with and without treatment, has been the research direction in the second half of the twentieth century. The purpose of this wider sweep is to develop more valid data for describing and understanding the condition. Outcome studies of the disorder have tried to identify 1) its average duration (in recovered patients), 2) the percentage of patients with a chronic course, 3) its mortality rate, 4) the effect of various treatments, and 5) the prognostic factors. But how long an observation time is required before results can be considered outcome? Which criteria should be used, and what about the importance of trusted factors such as weight, eating habits, and attitudes toward the body? How are these outcome factors to be evaluated without bias (Theander 1985)? The answers are clear. Outcome must be tracked by in-
dependent raters, not by the treating physicians. Observation time needs to be extended; a long-term disorder needs long-term follow-up before outcome can be plotted with any confidence.

Longitudinal Studies

The early outcome studies were discouraging, of course, compared with clinical case reports. Some of the previous clinical impressions were confirmed and others were not. But the studies began to distinguish the features of good outcome from poor. Hsu et al. (1979) found that poor outcome not only was associated with poor social and parental relationships in childhood, but also with an older age at onset and greater weight loss during the illness. As an important sidelight, his study confirmed “weight phobia” as the central symptom of anorexia. At follow-up, two-thirds of the patients were of normal weight yet still afraid of being “fat.” To the surprise of clinicians, disturbed family relationships persisted in those who were described as recovered. Reversing these relationships was not the key to recovery.

Halmi and Falk (1982) and Halmi et al. (1979) further studied the personality traits of anorexic patients. Again, the personality traits were found to be more than premorbid traits; obsessive-compulsive symptoms persisted long after the disorder had passed. More importantly, these studies found that specific personality characteristics had a stronger association with outcome than did specific therapies.

A Swedish study of a large group of anorexic patients (Theander 1985) found that fewer than one-third had recovered and more than one-third were ill for more than 6 years. Most importantly, the study found a distinct relationship between anorexia nervosa and affective disorder, confirming what clinicians had suspected for years. Underlying psychopathology was becoming better defined. Depression, anxiety, and obsessive-compulsive traits were intimately linked to the illness and were found to persist years after recovery. Recent longitudinal studies suggest that young adults with anorexia nervosa that began in adolescence frequently have obsessive-compulsive disorder (OCD) and avoidant personality disorder as well (Gillberg et al. 1995).

A group of researchers in Copenhagen (Tolstrup et al. 1985) followed a large sample of patients for more than 10 years. Half were found to be healthy and well-functioning regardless of treatment (none versus medical versus psychiatric). But when anorexia assumed a chronic course, it caused varying degrees of permanent impairment of function in one or more spheres of life. Unexpected was the finding that even the so-called recovered group experienced a significant decline in social functioning.

In a subsequent review, the authors of the Swedish study (Theander 1985) summarized what was known to date from longitudinal studies: the longer the follow-up, the more patients recovered and the more patients died. After 10 years, only a few still had the disorder alone, but most had other problems, both medical and psychological. The work by Theander (1985) also set common criteria for improvement: regular menstruation, stable body weight, reasonable eating habits, and a realistic conception of body size. Other studies have shown that after 6 or 7 years 1) most anorexia nervosa subjects no longer met the criteria for the disorder, but many continued to meet the criteria for other eating disorders; 2) there was a high rate of OCD; and 3) affective disorders tended to follow the course of the eating disorder rather than precede or postdate it (Rastam et al. 1995).

As cross-national studies became more common, standards were necessary for investigators using clinical assessments. The key, of course, was a comparison group of nonanorexic women so that baseline parameters, ranging from body satisfaction to social adjustment, could be measured and evaluated. The work of Canadian researchers using such a control group (Toner et al. 1986) confirmed the previously found association of affective disorder with anorexia, this time using DSM-III (American Psychiatric Association 1980) criteria. In other words, compared with the number of women of average weight, significantly more women with anorexia nervosa met DSM-III criteria for affective/anxiety disorder at long-term follow-up.

What Have We Learned?

Favorable prognostic signs have become better defined by these long-term follow-up studies: earlier onset, shorter illness, less severe weight loss, continued perception of hunger, better family relationships, and uninterrupted school or work history. Unfavorable prognostic factors include bulimia associated with the anorexia, severe weight loss, more frequent hospital admissions, and severe disturbances in body image.
However, even good outcome means continued problems for most. Recovered anorexic patients show distorted attitudes toward eating, weight, and food (Clinton and McKinley 1986; Hall et al. 1984). Most continue diet restrictions and consider themselves overweight (Kaye et al. 1986). Many also show some sign of psychiatric impairment, most often chronic depression (Nausbaum et al. 1985).

The natural history of anorexia nervosa appears to range from 1) permanent recovery with or without sequelae to 2) a chronic course to 3) a downhill course, including untimely death. After 5 years, the outcome of the disorder roughly follows the rule of thirds: approximately one-third of anorexic patients are relatively symptom free, one-third have symptoms but are functioning, and one-third are incapacitated. But categorization by outcome subgroups (Theander 1983) does not tell the whole story. Mortality rate ranges from 5% to 10%, averaging 1.5% per year. The disorder is a serious one.

**Bulimia Nervosa**

Much less is known about anorexia’s sister illness, bulimia nervosa. Its status as an illness is only a few years old, and long-term studies are lacking.

Bulimia was recognized as a symptom at the turn of the century by Osler (1892) and Janet (1903). By the 1960s, bulimia had become identified in fully half of anorexic patients (Casper 1983). Efforts to establish a prevalence pattern for bulimia in the general population resulted in seemingly very high rates (Halmin et al. 1981), leading to media reports of an epidemic of bulimia among college-age women. However, these studies were based on bulimia symptoms from self-report questionnaires drawn from a narrow age and social-class range, which blurred the focus on the development of a condition with specific criteria for caseness. First described as a discrete illness in Britain by Russell (1979), the future of bulimia nervosa was assured by DSM-III-R (American Psychiatric Association 1987), which identified its specific criteria as persistent overconcern with body shape and weight. Bulimia nervosa now appears to affect 1%–2% of high school– and college-age females, whereas 5%–15% report bulimic symptoms (Bushnell et al. 1990). Because of bulimia’s recent debut as an illness, the pinpointing of its course as accurately as that in anorexia nervosa is premature. But what is known for certain?

There are three main findings. First of all, there is a moderately high frequency of crossover between anorexia nervosa and bulimia nervosa in both directions, suggesting an important connection between them (Herzog et al. 1988). Second, preliminary follow-up data (Hsu and Sobkiewicz 1989) suggest that bulimia nervosa will have a pattern similar to anorexia nervosa; that is, some patients will continue to be ill at follow-up, whereas others apparently will have recovered. Third, affective disorder is more common among those with bulimia nervosa who do not improve, just as with those who have anorexia nervosa. Indeed, some come to a tentative conclusion that the worst outcome is associated with depression combined with anorexia nervosa combined with bulimia nervosa (Sohlberg et al. 1989).

**Conclusions**

What is known about the outcome of the eating disorders? More is known about the outcome of anorexia nervosa than bulimia nervosa. Longitudinal studies have confirmed clinical experience that the course of eating disorders can be completely reversible in some young women, chronic in others, and fatal in a few. At highest risk for severe outcome are those whose illness begins at an older age and when the anorexia is combined with bulimia, when the weight loss is extreme, when attitudes toward food and weight are bizarre, and when the illness has a longer duration. These negative signs (and their opposite positive signs—early onset, shorter duration, minor weight loss, good family relationships, and social adjustment) have a stronger association with outcome than any treatment intervention. This fact is startling. The prognosis in anorexia has not improved because standard treatment approaches have not replaced the theoretical formulations and techniques used by clinicians over the centuries. Nevertheless, some previously held, if fragile, clinical impressions have been confirmed as important diagnostic features. Anorectic patients with hysterical personality traits have been found to have a more favorable prognosis than those who have obsessive-compulsive traits, perhaps suggesting that it is easier to outgrow an illness that is more psychosocial than biological (“soft” versus “hard” anorexia). Those patients with a higher level of psychosexual maturity, heterosexual interest, and/or a functional marriage are better off. So are those with an internal rather than external locus of control (Santonastaso et al. 1987), confirming the belief that a sense of helpless-
ness and ineffectiveness is, if not universal, an important feature for more serious prognosis. The loop between childhood and adulthood is not yet closed. A study of a large, random sample population found that certain early eating habits were predictive of anorexia nervosa (Marchi and Cohen 1990). The circle will be closed if the future anorexic college student can be recognized in the toddler picking at her food in the high chair.

There is no question that large group follow-up studies are generally less encouraging than are individual case reports. But this is a scientific era—an era of facts rather than an era of ideas—and facts are inevitably more discouraging than theories. Although the focus has shifted from the internal psychodynamic issues to the external descriptive factors, their meaning is unclear. For example, it is now known that eating disorders are more common in sisters and mothers of patients than in the general population (American Psychiatric Association 1994). A population-based study of female twins supports the notion of a spectrum of anorexic-like syndromes in women, which are familial and share familial etiological factors with major depression and bulimia nervosa (Walters and Kendler 1995). The concept of genetic loading may be replacing the sacred family patterns associated with eating disorders. Yet family interactions and child-rearing practices are still critical risk factors that are more important in some cases than in others. They are simply more difficult to measure by today's scientific standards.

Generalizing from individual cases to the population at large must be done cautiously because statistical studies do not indicate what will happen to the individual patient. The course of illness can be only superficially understood by rating instruments. One of the mysteries of anorexia nervosa is the unpredictability of the prognosis in individuals (Russell 1977). Vulnerability is an individual matter. Eating disorders may form a spectrum, ranging from normal eating and a lack of concern about weight to moderately disordered eating and a normal concern about weight, and from impaired function to more serious mental and physical illness due to bulimia nervosa or anorexia nervosa.

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Attention-Deficit/ Hyperactivity Disorder

John

John was first seen in consultation when he was 3 years old on referral from his pediatrician. The prenatal, perinatal, and postnatal history was negative for any physical insult, and he was a “healthy baby.” However, as an infant, he was irritable and could not be soothed. His sleep pattern was erratic and he did not sleep for any length of time. He wiggled all the time. At age 4 months, he was attempting to pull himself up to a standing position. At age 7 months, he was trying to walk and at 8 months he was a “runner.” He was not well-coordinated and had frequent accidents, falling and bumping into furniture. His parents described him as hyperactive, impulsive, and distractible, with a short attention span, low frustration tolerance, and emotional lability. Although he was friendly, outgoing, and liked other children, they were wary of him because in his eagerness to be friends, he would rush toward them, often grabbing them or bowling them over. In a shopping mall, he was overstimulated and would run off. He was not afraid of being lost. John, at age 3 years, slept about 5-6 hours at night. He would wake up and wander through the house, “make a mess in the kitchen,” or wake up his parents or siblings. His preschool teacher said that he could not continue to attend the school unless something were done to decrease his impulsivity.

John’s father said that John reminded him of himself when he was a child. Also, the brother of John’s father had a son who was diagnosed as having attention-deficit/hyperactivity disorder (ADHD) and who responded to stimulant medication. John’s parents had read some lit-
erature on ADHD and recognized the need for structure and consistency with John. They did not have any difficulty with John's older brother and sister.

John's pediatrician had prescribed an antihistamine for his condition, but his improvement was modest. In the initial consultation, his parents were given specific recommendations on behavioral management techniques and techniques to implement a structured parenting approach. Also, a preschool program that had fewer children and a structured approach was recommended.

John continued to exhibit ADHD signs and, when he was age 5 years and in kindergarten, stimulant medication was prescribed. He responded to the medication. In succeeding years, attempts were made to discontinue or decrease the medication without success. In fact, it had to be increased, but he did not develop side effects. He did not have a learning disability nor did he develop a conduct disorder. Periodically he would be "stubborn" but did not develop all the signs of an oppositional defiant disorder.

In junior high school, he had difficulty because he now was changing classes every hour and could not "settle down." He had difficulty concentrating on homework, and he required medication to help him concentrate when he did homework. John was well coordinated and enjoyed sports. He was social and gracious, but he often "talked too much" in class. In high school, he did not want his peers to know he was taking medication, so the long-acting preparation of the stimulant was prescribed and he continued to benefit from the medication.

John had both hyperactivity and a short attention span. Like many children with ADHD, he developed symptoms at an early age, and they continued into high school. Again, like many hyperactive boys, he had a father who had had similar problems as a child. John's symptoms were alleviated to some extent by stimulant medication, but it was found necessary to continue the medication through high school. Although the symptoms of hyperactivity and short attention span were once thought almost always to decrease with age, in some cases they do not, so that even as adults these people benefit from taking medication.

**Epidemiology and Course**

Two books, one by Barkley (1990) and one by Weiss and Hechtman (1986), provide comprehensive reviews of the ADHD literature. This chapter focuses on longitudinal studies of the condition.

Gittelman et al. (1985) found that 31% of their study group had attention-deficit disorder with hyperactivity that persisted into adult life and a higher incidence of conduct and substance abuse disorders than control subjects. Follow-up studies indicate that 30%–50% of ADHD cases continue into adulthood. ADHD appears to lead to increased psychopathology and antisocial outcome in about 25% of adults.

Barkley et al. (1990) reported an 8-year follow-up study of 1,234 hyperactive children and 66 healthy control subjects into adolescence. More than 80% of the hyperactive children had ADHD, and 60% had either oppositional defiant disorder and/or conduct disorder at outcome. Cigarette and/or marijuana use and negative academic outcomes were significantly higher in the ADHD group. The pattern of symptoms was found to be stable over time and associated with greater risk for family disturbance, as well as negative academic and social outcomes in adolescence. Substantially greater numbers of hyperactive subjects were found to have negative outcomes than in previous studies. The evidence of psychopathology was similar, 71%–84%, in the Mendelson et al. (1971) retrospective study. Conduct disorder was 43% at follow-up, similar to 45% in the Gittelman et al. (1985) sample. Substance abuse appeared to be associated with conduct disorder in hyperactive subjects (Gittelman et al. 1985). Purely hyperactive subjects did not have higher cigarette, alcohol, or drug use compared with control subjects, but hyperactive subjects with conduct disorders had rates of cigarette and marijuana use that were two to three times greater than alcohol use. Conduct disorder appeared to mediate the development of substance use in hyperactive adolescents. Conduct disorder did not appear to increase the risk for grade failure, but the presence of hyperactivity led; pure hyperactive subjects and those with conduct disorder had similar rates that were three times greater than that of the control group. Conduct disorder increased the risk for school suspension, expulsion, and school dropout rates.

Barkley (1990) summarized adult outcome studies. ADHD children in adulthood have problems with behavior in general, and 50%–65% continue to have ADHD symptoms. Twenty to 45% have some antisocial behavior, with about 25% qualifying for the diagnosis of antisocial personality disorder. They have more problems with self-esteem than do non-ADHD adults. Barkley (1990) emphasized the need to consider a combination of variables: family socioeconomic status (SES), childhood intelligence and aggression, poor parental management techniques, parent psychiatric disturbance, and family dysfunction. He noted that
the best outcome is associated with milder ADHD symptoms, higher intelligence, well-adjusted parents, and stable family environment. In general, the majority of ADHD children as adults satisfactorily adjust to their symptoms. IQ, low initial aggressivity, and low initial antisocial behavior appear to be important factors for good outcome of ADHD. IQ appears to be important for academic achievement, and low initial aggression in childhood is important for a low incidence of later adult aggression, as well as for good overall adolescent and adult functioning.

**Predictive Factors**

Predictive family factors have been studied by several investigators (Loney et al. 1981; Mendelson et al. 1971; Minde et al. 1972; Stewart et al. 1979; Weiss et al. 1971). Children who were unsocialized/aggressive tended to have fathers who were antisocial. Poor mental health of the parents, coupled with poor mother-child relationship and punitive child-rearing practices, predicted overt antisocial behavior in adolescence. Long-term outcome was more positive for subjects whose parents were consistent and firm and respected the children (Werner and Smith 1977). In adolescence, family factors as well as achievement enter into the prediction of aggressive, hyperactive, and delinquent behavior.

Predictive factors pertaining to treatment are somewhat difficult to evaluate because the subjects who often had the most interventions were those who had the greatest difficulties and often, on follow-up, were the least improved. Also, the specific interventions sometimes are not described in sufficient detail. The group that received more psychiatric treatment was more aggressive and distractible on initial assessment (Minde et al. 1972). An extensive review of the efficacy of remedial programs for children with learning disabilities showed that few studies found long-term benefits from the programs (Helper 1980). A 25-year retrospective follow-up study of 18 hyperactive patients who received supportive treatment and more appropriate school placement concluded that there was no correlation between outcome and the amount of help the subjects received (Menkes et al. 1967). Some studies concluded that psychotherapy, counseling, and remedial help are not particularly predictive of long-term outcome in hyperactive children. The problem in assessing the long-term impact is that those requiring the interventions have more problems to begin with and are more likely to have a poorer outcome. Well-controlled studies with matched subjects have yet to be done.

Studies on the long-term effect of stimulant drug treatment have been reported (Conrad and Insel 1967; Loney et al. 1975; Weiss et al. 1975). Long-term treatment in childhood did not significantly affect hyperactive adolescents’ outcome, but if the subjects were taking stimulant medication and had a good family situation, there was a significant correlation with good outcome as judged by academic achievement, emotional adjustment, and absence of delinquency. There appears to be an interaction between family factors and medication. The majority of studies of treatment with medication alone have shown an absence of long-term improvement when assessed in adolescence. However, most studies support the need for a comprehensive, multimodal treatment approach, combining medication, special education, parent counseling and training in child management, individual therapy, and classroom consultation (Satterfield et al. 1981). If this approach continued for several years, the program improved the prognosis for ADHD children, especially those with aggression. However, Gittelman et al. (1980) randomly assigned 61 ADHD subjects to three treatment groups. Groups receiving methylphenidate and behavior modification therapy or methylphenidate alone did better than the group receiving behavior modification alone. Most researchers tend to believe that a combination of behavior therapy and medication is the best approach to the treatment of ADHD (Pelham and Murphy 1986). This finding is supported by a study (Feldman et al. 1979) of 81 hyperactive subjects as adolescents and 48 hyperactive subjects as adults. Only 8% of the adolescents and 10% of the adults had serious problems. The positive outcome was attributed to the fact that they received comprehensive treatment in a multidisciplinary setting. Weiss and Hechtman (1986) noted that, as young adults, adolescents who had received stimulant treatment previously usually got along better with co-workers than did the untreated hyperactive subjects. Control subjects were seen as working more independently. Compared with a control group, the stimulant-treated hyperactive subjects had more difficulties with aggression. However, the untreated group had even more difficulties with aggression and antisocial behavior in the past year, with stealing, and with using alcohol and nonmedical drugs. Stimulant-treated hyperactive subjects seemed to do
better than the untreated hyperactive subjects as adults in several areas: fewer car accidents, seeing their childhood more positively, better social skills and self-esteem, fewer problems with aggression, and less need for current psychiatric treatment. Stimulant treatment of hyperactive subjects in childhood may not eliminate educational, work, and life difficulties, but it may result in less social ostracism, with hyperactive subjects having better feelings toward themselves and others.

Weiss and Hechtman's book (1986) is a follow-up study of ADHD children as young adults that includes extensive reviews of the significant literature. The authors caution that associations made between initial factors and adult outcomes do not prove causality. However, certain predictive variables stand out: SES and mental health of family members. IQ enters almost every outcome measure and is particularly important in educational achievement and nonmedicinal drug use. Weiss and Hechtman (1986) stress the role of aggressiveness, emotional instability, and low frustration tolerance in influencing outcome.

Wallender and Hubert (1985), in an extensive review of the literature, concluded that young adults with ADHD had employment histories and work ratings comparable to those of control subjects. These young adults also had more car accidents, lower self-esteem, less socializing, and more restlessness. The authors observed that although adult adjustment to ADHD, which frequently is ostensibly normal, may be better than is predicted from childhood and adolescent functioning, there may be differences between young adults with ADHD and their peers without ADHD.

Childhood intelligence, hyperactivity, child-rearing practices, SES of parents, and emotional stability in the home interact to predict academic achievement. Childhood antisocial behavior is associated with an increased number of firings from jobs, and childhood aggression is associated with increased likelihood of criminal activities in adult life. Factors that contribute to a lesser degree of criminal activity in adult life are associated with several childhood factors: IQ, hyperactivity, SES, mental health of family members, and emotional climate in the home.

No single factor in childhood predicts adult adjustment of ADHD children. However, the significant associated factors appear to be intelligence, minimal aggression, emotional stability in childhood, family environment, and child-rearing practices of the parents. In John's case, discussed at the beginning of this chapter, his parents sought treatment for him at an early age and John had a winning personality, both of which may have played a major role in successful outcome.

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Conduct Disorder

Carl

Carl was referred for evaluation because his mother complained that he was “stubborn,” did not mind her, hit other children, and was aggressive. His father believed that Carl was “all boy” and stated that Carl’s mother was too lenient in her discipline and that Carl would outgrow any difficulties he had now. His father thought that eventually Carl would see “who was the boss,” since he believed consistent spanking would change Carl’s behavior, although there was little “wrong” in what Carl did now.

The psychiatrist recommended therapy for Carl and counseling for his parents. The father attended two sessions to please Carl’s mother but said it was a waste of time and refused to return. When seen alone, Carl’s mother said that her husband demeaned her, sometimes hit her “but not too hard,” and as a boy had engaged in delinquent behavior. As a youth, Carl’s father had been apprehended for breaking and entering and had been imprisoned for a year. He also drank excessively and became “mean” when drunk. She thought of leaving him but stayed in the marriage for economic reasons. She was afraid she could not manage if she were alone. Meanwhile, Carl showed modest improvement in therapy, but his mother discontinued therapy under pressure from her father.

When Carl entered school, his teachers viewed him as oppositional and disobedient. He was evaluated for learning disabilities, but none was found. At age 8 years, he was classified as emotionally impaired because of acting-out behavior and was placed in a special class.
He consistently tried to boss his peers and modeled himself after older boys who were "tough." He wanted to be seen as tough, too, and when he was age 10, he began to be truant from school and to steal. Repeated attempts at counseling were unsuccessful, and at age 12 years he was placed in a group home under court supervision. He returned home at age 14 and within a year was apprehended for repeated breaking and entering. With a reputation for aggressive, risk-taking behavior, he was remanded to a training school for delinquent boys and then to a group home. As a young adult, he was charged with assault and battery, convicted, and given a jail sentence. He was diagnosed as having antisocial personality disorder by the court clinic.

Carl's history illustrates many of the features seen in individuals diagnosed in childhood with conduct disorder. Many children with conduct disturbance do not go on to be criminals, but their risk of later delinquency and school failure is high.

Carl's symptoms began early in life. It is possible that his aggressive behavior was contributed to by biological or neurological factors and that this behavior was inherited as a temperamental trait. Unquestionably, Carl's aggression was reinforced and magnified by his father's encouragement. Not only did his father dismiss and excuse Carl's misbehavior, but he also represented to Carl a role model who had been delinquent as a youth and aggressive and abusive to his wife. Carl received little help during early childhood, at a time when therapy might have been effective. His bullying of other children must have made him unpopular and may have reinforced his defiance of others, a cycle of social failures that further marginalizes a child and diminishes his or her opportunities for corrective experiences. Carl became delinquent before junior high school and was placed in a group home, where his peer role models also may have been delinquent or troubled. He remained violent as a young adult and eventually went to jail.

**Epidemiological, Genetic, and Risk Factor Studies**

A report from the Institute of Medicine (1989) notes that the prevalence of conduct disorder in children is from 2% to 6%. The rate is estimated to be 6.5% in boys ages 4–11 years and 10.5% in boys ages 12–16 years. For girls at the same ages, the rates are 1.8% and 4.1%, respectively.

The genetic contribution to conduct disorder has been investigated in studies of twins and adopted children. There is a greater concordance of criminality and antisocial behavior in monozygotic compared with dizygotic twins (Cloninger et al. 1978). Criminal and antisocial behavior is greater in adoptees when the biological parents have exhibited similar behavior (Cadoret 1978). However, most investigators concur that genetic and environmental factors interact; the risk for conduct disorder is greatly increased when both genetic and environmental factors are present (Cadoret et al. 1983; Cloninger et al. 1982; Mednick and Hutchings 1978).

What risk factors predict conduct disorder (Glueck and Glueck 1959; Mitchell and Rosa 1981; Rutsma-Street et al. 1985)? Boyle and Offord (1990) found that conduct disorder is significantly associated with being raised by a single parent. This finding does not exclude genetic or environmental factors because absent fathers are less likely to be optimally functioning themselves, and single mothers are more likely to be struggling with bills and discipline. Kazdin (1986) has summarized the risk factors for conduct disorder continuing into adulthood as antisocial behavior. Significant risks are early onset of antisocial behavior (before ages 10–12 years) and a history of many and different types of antisocial behavior in various settings. Behaviors such as aggression, truancy, impulsiveness, stealing, and oppositional behavior indicate greater risk for adult antisocial behavior. Parental antisocial behavior, parental alcoholism, unemployment, poor supervision of the child, inconsistent discipline, marital discord, abuse, and large family size are all factors that both contribute to childhood conduct disorder and predict adult antisocial behavior.

The more risk factors, the greater the risk of conduct disorder: a cascade effect. In the face of a large number of risk factors, even intellectual ability, usually a positive variable, is not a powerful protective factor. However, a study of 12 schools (Rutter et al. 1979) found that teacher and school characteristics positively or negatively influenced children's school attendance, behavior, delinquency rates, and academic performance.

Quay (1987) drew the following seven conclusions from a survey of predictors of delinquency:

1. Early conduct problems are predictive of delinquency, including serious delinquency, and in some cases, of recidivism.
2. Young adolescents who are still aggressive are at a high risk for delinquency and continued aggressive behavior.
3. Committing serious juvenile offenses is a predictor of continued delinquency in adulthood.
4. Family variables, poor supervision, and parents' rejection of the child are strong predictors. Lack of discipline, lack of involvement, parents' criminality, aggression, and marital discord are moderately strong predictors.
5. Poor educational performance is associated with conduct disorder; however, there is disagreement about whether this poor performance is cause or effect.
6. Conduct problems in elementary school predict eventual chronic offenders.
7. Highly aggressive children more often become violent delinquents.

Although academic and intellectual functioning are associated with other variables such as socioeconomic status (SES) and family size, when SES and family size are controlled, academic and intellectual functioning predict antisocial behavior. West (1982) concluded that presence of any one of the following five factors doubled the likelihood of a child's being delinquent: 1) below average IQ, 2) low family income, 3) large family (five or more siblings by the child's 10th birthday), 4) parents who in the judgment of the investigator performed child-rearing duties unsatisfactorily, and 5) a parent with a criminal record (this factor was the most powerful predictor).

Certain characteristics of parents place children at risk for conduct disorder. Parents' criminal behavior and alcoholism are only two factors (Rutter and Giller 1983), but they are strong and consistent factors. If parents were school truants and dropped out of high school, their children were at risk for the same behavior and conduct disorder (Robins 1978). Robins also noted that the prognosis is poor for children with conduct disorder: 50% of conduct disorder children referred to clinics will become adults with antisocial behavior. Additionally, fathers' degree of aggression as children correlates well with level of aggression in their children (Huesmann et al. 1984).

A number of additional parent-child factors have been associated with conduct disorder. Harsh discipline (Farrington 1978; Glueck and Glueck 1968), abuse of the child and spouse (Behar and Stewart 1982; Lewis et al. 1983), lax and inconsistent discipline (Glueck and Glueck 1950; W. McCord et al. 1959), poor supervision and absence of consistent rules (Glueck and Glueck 1968; Robins 1966; H. Wilson 1980), and less parental acceptance, warmth, affection, emotional support, and attachment (Locher and Dishion 1984) have all been found to be associated with development of conduct disturbance.

Chronic marital discord, interpersonal conflict, and aggression in parental relationships also have been implicated as risk factors for development of conduct disorders in children (Hetherington and Martin 1979; Rutter and Giller 1983). Severity of marital discord appears to be the most significant factor.

**Social Class and Conduct Disorder**

More children with conduct disorders are in the lower socioeconomic class than the middle and upper classes; this finding is compounded by the fact that members of the lower socioeconomic class, in general, are from larger families, live in overcrowded households, and are poorly supervised. Social class and property are not powerful factors for conduct disorder if family size, overcrowding, and poor supervision are controlled for in studies of conduct disorder. When family income and household quarters are adequate, family size is less of a risk factor (West 1982).

**Outcome Without Treatment**

One of the earliest reports on outcome of conduct disorder without treatment was by Robins (1966). It is also one of the most frequently cited studies on the adult outcome of childhood conduct disorders. Five hundred child guidance clinic patients were compared with 100 nonpatient children. Eighty-two percent of the subjects were interviewed as adults and official records were obtained on 98%. By every measure, as adults, those with conduct disorder were significantly more disturbed than subjects who had other diagnoses in childhood. As adults, the conduct disorder patients had higher arrest rates, had fewer full-time jobs, were hospitalized more, were more socially alienated, had higher rates of alcohol abuse, and reported feeling ill more frequently.

The results of a long-term follow-up of 200 subjects by Cass and Thomas (1979) were similar to Robins' (1966) results. Other follow-up studies at 4 years (Wodarski 1979), 18 years (Paretra 1981), and 25 years (W. McCord and Sanchez 1983) also have reported poor outcomes of
various forms of treatment in children with conduct disorder or delinquent youths.

Robins (1979) concluded that "antisocial personality seems to be a real syndrome in American males, one that rarely occurs in the absence of serious antisocial behavior in childhood" (p. 232).

At the time of Robins' work, conduct disorder was differentiated between two subtypes: socialized (youths whose antisocial behaviors were learned from those in their environment but who nonetheless were capable of empathy and attachment) and undersocialized (youths who were exploitative, unattached, and incapable of empathy). Robins observed differences in childhood behaviors related to undersocialized as compared with socialized conduct disorder. Henn et al. (1980) found that the youngsters with undersocialized conduct disorder did not adjust well in an institutional setting and were resistant to change. Quay (1986) noted that conduct disorder, especially the undersocialized type, shows considerable persistence from childhood to adulthood. Individuals who were found to be offenders as adults had conduct disorder as children and adolescents.

**Outcome With Treatment**

Two reviews in the 1970s (Lipton et al. 1975; J. A. McCord 1978) concluded that treatment of conduct disorder, whether in community, residential, or institutional settings, was not effective. In contrast to earlier treatment studies, which were pessimistic about the effects of treatment, findings from more recent studies offer hope that the course of conduct disorder is not immutable.

Several pioneering treatment programs have reported a degree of success. The California Community Treatment Program (Palmer 1974) initially was based on nonresidential treatment. Later, in recognition of the fact that 25%-35% of the youths did not respond to the community intervention program, a residential treatment program was added. On 18-month follow-up, those in residential treatment had a 58% re-arrest rate versus a 94% re-arrest rate for those who had initially been judged to need residential treatment but did not receive it. There were also significant differences between the two groups in number of offenses on follow-up. Palmer suggested that delinquent behavior can probably be reduced with community and residential programs if there is careful diagnosis and placement in appropriate programs.

Jesness (1975) reported on a program (the Close-Holton experiment) in which the effects of behavior modification and transactional analysis were compared. The study was carried out in two institutions, each housing 400 youths between ages 15 and 17 years, under the California Youth Authority. The study is one of the few that gave estimates of how much each setting implemented the programs as originally outlined in the protocols. Outcome was assessed by using a number of instruments and follow-up reconviction rates for up to 2 years. Youths in both programs made academic progress beyond what was expected. Behavior modification was more effective in changing behavior of those who were termed acting-out personalities. By 2 years, 47% of youths from each setting violated parole and had been returned to the institution. Positive regard, a measure of the staffs' impressions of a subject's relationship with the staff, was higher in the group that had more improvement and accounted for as much of a variance of outcome as did the two treatments. The two treatments were approximately equal, and both were better than no treatment.

In contrast to the institutional setting of the California Youth Authority program, Wolff et al. (1976) described a program (Achievement Place) featuring small group-home treatment and based on behavior modification principles. A trained child care couple lived in a home with six youths who had repeated contacts with juvenile authorities. Follow-up of the original group compared with the control group did not reveal significant differences in offense rates, although during the treatment phase the treatment group did better than the control group.

Strain et al. (1982) reported a 3- to 9-year follow-up of children ages 3-5 years who exhibited severe and prolonged tantrums, continual opposition to requests, and physical aggression toward parents. Both teachers and parents reported improvement, and the behavior of the former patients was similar to that of their peers. Only the age that treatment began and family intactness were related to current levels of behavior. These two variables, family intactness and age that treatment began, are repeated in the literature. The earlier treatment begins, the greater the chance of success.

Safer et al. (1981) reported a 4-year follow-up of a behavioral program for disruptive junior high school students. The program was a collaborative one between a community mental health center and the school. It was a comprehensive, behavioral, in-school, regular education project characterized by a token economy, parent contracting, major subjects taught in morning, small class enrollment, small group and in-
individualized instruction, an early release contingency option, and frequent parent-school communications. Follow-up findings indicated that former students in the program had reduced suspensions, expulsions, and grade failure. In senior high school, they achieved a significantly higher entry rate, greater attendance, better classroom conduct, and a lower frequency of withdrawal from school.

Sanchez (1986) conducted a 25-year follow-up study of 165 men who were in a school for juvenile delinquents in 1950–1960. The study assessed the efficacy of milieu therapy. The antisocial subjects benefited most from the therapy regardless of treatment duration. With treatment lasting more than four years, almost 75% showed enduring benefit.

Shapiro and Sherman (1983) suggested that a child who becomes sociopathic in adolescence will be relatively unamenable to traditional psychiatric interventions designed for individual adolescents, although Garrett (1985) concluded that interventions such as contingency management, cognitive-behavior therapy, family therapy, and some of the life-skill observations warranted further research. Kazdin (1985) observed that techniques focusing on the problem-solving skills of the child and parents, child-rearing practices, and family interaction and family therapy have promise for treatment. Again, the younger the child is when treatment begins, the better the prognosis. Absence of marital discord and parental psychopathology was a significant protective factor against the development of conduct disorder in childhood and adolescence.

Although the literature on treatment of antisocial adolescents leads to negative conclusions for long-term effects (Kazdin 1987; J. Q. Wilson and Herrnstein 1985), there appears to be some optimism for successful treatment with children and preadolescents (Kazdin 1987; Patterson et al. 1989) when parent-training techniques, child social skills training, and academic remediation are used concurrently.

It is too late to help Carl, the youth discussed at the beginning of this chapter, but there may be hope for his children.

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Outcome of Childhood Pathology:
Single Versus Comorbid Disorders

Almost all of the children described in the vignettes that begin most of the previous chapters had more than one psychiatric problem (i.e., had comorbid conditions). This chapter, on effects of comorbid disorders in childhood, can be read with their stories in mind.

Comorbidity, the simultaneous occurrence of two or more childhood psychopathological conditions, is a perplexing and interesting problem in child psychiatry. From a developmental perspective, comorbid disorders may reflect amorphous, nonspecific expressions of symptom patterns in younger children, in contrast to clearer clinical presentations in older children or adolescents. Such “boundary” problems between disorders may be due to nonspecific early responses to family psychopathology (Carlson 1990). Similarly, it has been suggested that co-occurring disorders in children and adolescents may result from shared risk factors or overlap between risk factors—for example, in comorbid depression and conduct disorder, depressed parents for the former and family disorder for the latter (Rutter 1989). Comorbidity simply may be the changing expression of a disorder with age or developmental stage; thus, the apparent development of a new disorder may reflect the developmental progression of the same underlying pathological process. Also, psychopathology may interfere with the developmentally appropriate acquisition of social and academic skills, which become increasingly important for daily functioning in later childhood and adolescence. As a result, a comorbid second or third disorder may
develop because early problems remain unresolved (Caron and Rutter 1991).

In this chapter, data from cross-sectional and longitudinal studies of child and adolescent psychopathology are examined to determine the extent to which existing data illuminate questions of etiology, the developmental progression from one disorder to another is mapped, and factors influencing the course and outcome of disorders alone or in combination are revealed. Other chapters in this volume have drawn more heavily on clinical samples; this chapter has drawn principally on epidemiological studies. Epidemiological studies hold great promise to clarify the nature of risk and protective factors that mediate the course and outcome of single and comorbid forms of disorder, apart from factors related to treatment seeking or referral (e.g., severity, comorbidity). Also, whereas the other chapters in this volume focus more on the outcome of specific disorders, this chapter compares and contrasts the outcomes of single and comorbid presentations of disorder.

Prevalence of Psychopathology: Age and Sex Differences

Some evidence concerning continuities and discontinuities of single and comorbid forms of psychopathology can be found in recent prevalence studies of child and adolescent psychopathology. During the past decade, there has been a remarkable increase in the available data on child and adolescent disorders based on general population studies. Gould et al. (1981) reviewed 25 studies (published 1928 through 1974) and estimated the prevalence of childhood disorders to be 11.8%. Reviews of epidemiological studies by Brandenburg et al. (1990), Costello (1990), Fleming et al. (1989), and Offord et al. (1987) have indicated that the prevalence of child and adolescent mental disorders based on DSM-III (American Psychiatric Association 1980) criteria ranges from 5% to 26%. The larger, more methodologically rigorous general population studies suggest prevalence rates in a narrower range (17.6%–22%). Most of the studies show, in childhood, a higher prevalence rate of disorders for boys than for girls, but in adolescence the rate is higher for girls than for boys. Many of these gender-related differences are disorder and age specific (Table 11–1).

For instance, rates of conduct disorder tend to be higher in adolescence than in childhood, peaking in mid-adolescence. Consistently, rates are substantially higher for boys than for girls (Anderson et al. 1987; Bird et al. 1988; McGee et al. 1992b; Offord et al. 1987; Velez et al. 1989). Recent data from the New York Child Longitudinal Study (Cohen et al. 1993) suggest that the prevalence rate of conduct disorder decreases in late adolescence. Rates for oppositional defiant disorder also tend to be higher in adolescence than in childhood but, unlike rates for conduct disorder, are quite similar for boys and girls (Anderson et al. 1987; Bird et al. 1988; Cohen et al. 1993; Feeney et al. 1993; McGee et al. 1992b; Velez et al. 1989). In contrast, rates for attention-deficit disorder generally have been found to be higher for boys than for girls and tend to peak in late childhood and early adolescence.

In the instance of the more commonly occurring anxiety disorders and the overarching diagnostic category of anxiety disorders, the prevalence rates tend to be high, especially for girls (Feeney et al. 1993; Kashani et al. 1987, 1989). For specific conditions, such as separation anxiety disorder, the rate tends to be highest in late childhood (Velez et al. 1989) and quite low in adolescence. Whether separation anxiety disorder may be a forerunner of other anxiety disorders (e.g., overanxious disorder, which is more prevalent in adolescence) is an interesting unanswered question. For overanxious disorder, in contrast, there is some evidence that the rate is relatively low during childhood (Costello et al. 1988) but rises during early adolescence (Velez et al. 1989). Data from the New York Child Longitudinal Study sample (Cohen et al. 1993) suggest that the increased cases in adolescence are attributed to primarily by girls.

Depressive disorder rates were quite variable across studies, ranging from a low of 1.4% in a New Zealand sample (Anderson et al. 1987) to the highest figures reported in the Ontario Child Health Study sample (13.6%) (Offord et al. 1987). Rates for depressive disorders tend to be
more similar for boys and girls in childhood than in adolescence; in ado-
lescence, they generally were higher for girls than for boys (e.g., Cohen 
et al. 1993).

From a developmental perspective, questions must be raised con-
cerning the antecedents, correlates, and sequelae of these disorders and
the extent to which these factors are sex related. For attention-deficit dis-
order, it is possible that sex-related predispositions and biological sub-
strates of the disorder may account for higher rates in boys than for girls.
For both affective and anxiety disorders, there are higher rates for girls
than for boys. It is unclear to what extent various psychosocial and bi-
ological factors may contribute to the emergence of gender differences in
early to mid-adolescence. Possibly age- and sex-related patterns found
in diagnostic prevalence studies are a function of the particular taxon-
omy embedded in DSM descriptive language. However, similar pat-
tterns have been reported in studies using non-DSM dimensional
approaches. For example, Achenbach et al. (1991) conducted a national
survey of problems and competencies among children ages 4–16 years,
collecting data on 2,600 referred and 2,600 matched nonreferred chil-
dren. They found a decline with age for total behavior problems in the
nonreferred sample (but an opposite tendency in the referred sample).
They also found that externalizing problems decreased, whereas inter-
nalizing problems increased with age. In general, their findings sup-
ported the sex difference findings from the general population studies
described previously, in that boys tended to score higher on exter-
nalizing problems and syndromes, whereas girls tended to score higher
on internalizing problems and syndromes.

**Continuities and Discontinuities**

Consider the stability and continuity of disorders diagnosed in child-
hood. Data are available on continuities and discontinuities in child and
adolescent disorders. Some derive from general population studies that
focus on categorical classification of disorders (diagnoses based on DSM
and International Classification of Diseases [ICD] criteria), and some derive
from studies focusing on emotional symptoms or behavior problems.
McGee et al. (1992b) examined the longitudinal course of disorders in
750 children seen at age 11 years and at age 15 years as part of the
Dunedin, New Zealand, study (McGee and Williams 1988). (See also
Chapters 4 and 7 in this volume.) At each time of assessment, they in-
quired about the preceding 12 months. Of the 66 children who had a dis-
order at age 11 years, only 42% had a disorder at age 15 years. Of the 147
children with diagnoses at age 15 years, the majority (81%) had been di-
agnosed free at age 11 years. Regardless of diagnoses at age 11 years, 4
years later, at age 15, boys were more likely to have externalizing disor-
ders and girls were more likely to have internalizing disorders.

In later reports from the same study, Feehan et al. (1993) followed
the longitudinal course of disorders in 890 adolescents of the Dunedin
sample seen at age 15 years and again 3 years later at age 18 years, also
focusing on the 12 months preceding the interview. Of the adolescents
with diagnosed conditions at age 15 years (n = 191), 63% also had a dis-
order at age 18 years. Of the 323 adolescents with diagnoses at age 18
years, the majority (62.5%) were diagnosis free at age 15 years. Whereas
externalizing disorders at age 15 years were associated with both inter-
nalizing and externalizing disorders at age 18 years, internalizing disor-
ders at age 15 years were more likely to be associated with internalizing
than with externalizing disorders at age 18 years.

In further analyses, Feehan et al. (1993) used anxiety, depression,
substance use, and conduct disorder symptom scores to explore differ-
ences among adolescents with transient (age 15 years only), recurrent
(ages 15 and 18 years), and new (age 18 years) disorders. For adolescents
age 15 years, the combined scores for the four symptom scales were sig-
nificantly higher in the recurrent than in the transient group, and the
new disorder group had elevated symptom scores compared with the
no-diagnosis group. For adolescents age 18 years, the recurrent disorder
group had significantly higher total symptom scores than those of the
new disorder group. Moreover, the adolescents in the recurrent group
were more likely than adolescents in the new disorder group to have an
externalizing disorder as well as three or more disorders.

In an epidemiological study in Mannheim, Germany, Esser et al.
(1990) reported that of 71 children with diagnoses at age 8 years, only
51% continued to have a disorder at age 13 years. In addition, of 78 chil-
dren with diagnoses at age 13 years, 54% had been disorder free at age 8
years. The best predictors among several child and family attributes of
psychiatric disorder in children at age 13 years were psychiatric disor-
der, specific learning disabilities, and family adversity at age 8 years as
well as a number of life events when children were between ages 8 and
13 years. Two significant indicators of remission (disorder at age 8 years,
no disorder at age 13 years) were absence of conduct disorder at age 8
years and improvement of adverse family conditions.
It is instructive to consider cross-age comparisons of disorders if disorders are grouped into three categories: 1) internalizing or neurotic (neurotic and emotional disorders plus emotional problems with conduct symptoms), 2) externalizing or disruptive behavior disorders and conduct disorders, and 3) developmentally related disorders (attention-deficit/hyperkinetic syndromes plus specific child psychiatric syndromes such as autistic disorder). So examined, the data show that children with neurotic disorders had the best prognosis; children with conduct disorder had the worst prognosis. Thus, of the children with neurotic diagnoses at age 8 years, about 75% were diagnosis free at age 13 years. In contrast, of the children with conduct disorders at age 8 years, most still had conduct disorders at age 13 years. Of the children with developmentally related disorders at age eight years, about half were diagnosis free at age 13 years.

Verhulst and Althaus (1988) reported on persistence and change in behavioral/emotional problems, based on parent report of children ages 4–11 years over a 2-year period (N = 1,412). Of children ages 4–5 years, 6–11 years, and 12–14 years with scores in the deviant range (above the 90th percentile) at initial assessment, a large percentage (46%, 55%, and 56%, respectively) continued to score in the deviant range 2 years later. Verhulst and van der Ende (1993) examined predictive relations of syndromes in the same children ages 4–11 years across a 6-year period. Based on quantitative scores, the highest correlations generally were between the same syndromes across time—that is, for aggressive behavior (r = .58), attention problems (r = .47), withdrawn behavior (r = .46), anxious/depressed behavior (r = .45), delinquent behavior (r = .37), and social problems (r = .36). Based on categorical scores (deviant versus nondeviant), odds ratios of the degree to which deviance in each of the syndromes predicted deviance in the same as well as the other syndromes 6 years later yielded similar results. In general, the highest odds ratios were found for deviance in the same syndrome and within each of the broadband syndromes (internalizing and externalizing problems).

Summary

From general population studies comes evidence of less continuity in psychiatric disorders from childhood to early adolescence (e.g., Esser et al. 1990) or from early to mid-adolescence (e.g., McGee et al. 1992b) than from mid- to late adolescence (e.g., Feehan et al. 1993). In general, studies indicate that of children and adolescents with disorders at a particular time, more than half previously had been diagnosis free.

From studies of particular disorders we learn the following: children with externalizing disorders are more likely than children with internalizing disorders to have a diagnosable condition at follow-up. It is noteworthy that the majority of those who have internalizing disorders in early adolescence are diagnosis free when assessed in childhood (e.g., Esser et al. 1990). Adolescents with externalizing disorders earlier in adolescence are almost equally likely to have internalizing or externalizing disorders in later adolescence, whereas those with internalizing disorders earlier in adolescence are more likely to continue to have internalizing disorders than to develop externalizing disorders (Feehan et al. 1993). Those with recurrent disorders are more likely to have multiple disorders than those who previously had been diagnosis free. Among adolescents, there is some evidence of greater continuity for externalizing disorders for boys and for internalizing disorders for girls. Moreover, boys with either internalizing or externalizing disorders are more likely to have externalizing than internalizing disorders at follow-up (e.g., McGee et al. 1992b).

Single Versus Comorbid Disorders: Predictors, Course, and Outcome

Longitudinal studies focusing on the course and predictors of comorbid disorders in nonreferred samples are few. Therefore, community- and school-based studies that report on behavior problems, as well as those that report on psychiatric disorders, are reviewed.

In the Ontario Child Health Study, Fleming et al. (1993) studied the longitudinal course of conduct disorder and major depressive symptoms in 650 adolescents (333 boys and 317 girls), ages 13–16 years, who were followed up 4 years later when they were ages 17–20 years. The investigators compared four diagnostic groups: 1) those with major depressive symptoms, 2) those with conduct disorder, 3) those with both major depressive symptoms and conduct disorder, and 4) healthy control subjects (table 11–2).

Moffitt (1990) examined the developmental trajectories of 435 boys in the Dunedin sample identified for study by their self-reported delin-
sequent behavior and clinical diagnosis of attention-deficit disorder at age 13 years (Table 11-3). Four groups were formed: 1) those with attention-deficit disorder and delinquency, 2) those with attention-deficit disorder only, 3) those with delinquency only, and 4) healthy control subjects.

Available data at ages 3, 5, 7, 9, 11, and 13 years on antisocial behavior, family adversity, verbal cognitive ability, and reading achievement were compared in these four groups. At all ages, boys in the attention-deficit disorder plus delinquency group consistently had higher levels of antisocial behavior, greater family adversity, poorer verbal ability, and lower levels of reading achievement than did the boys in the three other groups. In relation to the other groups, the children in the attention-deficit disorder plus delinquency group also showed motor skills deficits early in life and verbal IQ deficits by age 5 years. The greatest increase in antisocial behavior in the attention-deficit disorder plus delinquency group occurred between ages 5 and 7 years, coinciding with relatively low reading achievement following school entry. At that early age, those in the attention-deficit disorder plus delinquency group had a level of antisocial behavior that was not in evidence in the delinquency only group until age 13 years. The delinquency only group had trajectories similar to those of the attention-deficit disorder only group and control group until age 13 years, when the level of their antisocial behavior, which defined them as delinquent, approached that of the attention-deficit disorder plus delinquency group.

Anderson et al. (1989) compared cognitive and social correlates for children at ages 5, 7, 9, and 11 years who had DSM-III disorders diagnosed at age 11 years in the Dunedin sample (N = 798). The following groups were examined: those with anxiety/depression (n = 23), those with attention-deficit disorder (n = 36), those with conduct disorder/oppositional defiant disorder (n = 21), those with multiple disor-

<table>
<thead>
<tr>
<th>Table 11-3. Attention-deficit disorder and delinquency</th>
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<tbody>
<tr>
<td>Attention deficit disorder + delinquency</td>
</tr>
<tr>
<td>Birth cohort</td>
</tr>
<tr>
<td>Cases</td>
</tr>
</tbody>
</table>

Source: Moffit 1990.
The investigators used “strict and multiple diagnostic criteria” (Table 11–5).

Verhulst and van der Ende (1993) examined the course of attention, conduct, and anxiety/depression problems in the deviant range (cross-informant syndromes on the Child Behavior Checklist [CBCL; Achenbach 1987], based on parent report), including comorbid problems, over a 6-year period in children ages 4–11 years. Focusing on attention and conduct problems, the investigators compared children who were deviant at initial assessment in both syndromes (n = 76) with children who were deviant only in attention problems (n = 35) or only in conduct problems (n = 12). They found that children with “mixed” problems had the worst outcome 6 years later. Similarly, focusing on anxiety/depression and conduct problems, they compared children who initially were deviant in both syndromes (n = 62) with children who were deviant only in anxiety/depression problems (n = 40) or only in conduct problems (n = 14). Again, those with mixed problems had the worst outcome 6 years later. Finally, focusing on attention and anxiety/depression problems, the investigators compared children deviant in both syndromes (n = 56) with children deviant only in attention (n = 13) or only in anxiety/depression problems (n = 27). The mixed group had the worst outcome 6 years later. In addition, Verhulst and van der Ende (1993) compared children who initially were deviant in both internalizing and externalizing behaviors (n = 56) with children who were deviant in only one of these syndromes (internalizing, n = 15; externalizing, n = 27) and in the normal range on the other. At the broadband level, the children in the mixed category also had the worst outcome.

Another study of the course of comorbid behavior problems was conducted by Capaldi (1992), who examined elevated conduct problems (above the 70th percentile on the Teacher Version of the CBCL [Achenbach 1982]), elevated depression symptoms, and co-occurrence of elevated conduct problems and elevated depression symptoms in a

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**Table 11–4.** Comorbidity course of attention-deficit disorder

<table>
<thead>
<tr>
<th>Age of onset</th>
<th>Comorbid by age 11</th>
<th>Comorbid by age 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 3</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>Ages 5–6</td>
<td>61%</td>
<td>77%</td>
</tr>
<tr>
<td>Age 7</td>
<td>27%</td>
<td>31%</td>
</tr>
</tbody>
</table>

**Source:** McGee et al. 1992a.

**Table 11–5.** Frequency of generalized neuropsychological deficits

<table>
<thead>
<tr>
<th>Multiple disorders</th>
<th>Attention deficit disorder</th>
<th>Anxiety</th>
<th>Conduct disorder</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.3%</td>
<td>15.4%</td>
<td>71.1%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Source:** Frost et al. 1989.
Community sample of sixth-grade boys who attended schools in a high-crime area. They were followed up after 2 years, when they were in eighth grade ($N = 201$). Assessment of conduct problems was based on teacher ratings on the CBCL; assessment of depression symptoms was based on boys’ self-report on the Children’s Depression Rating Scale (CDRS-R; Poznanski 1979). Across the 2-year period, stability of conduct problems was greater ($r = .78$) than stability of depression symptoms ($r = .40$). Moreover, among boys in the early-onset conduct problems group, there was a significant increase in depression symptoms, but there was no significant increase in conduct problems among boys in the early-onset depression symptoms group.

Of the 35 boys initially in the conduct problems group, 42% were in the same group 2 years later, 22% changed to the conduct problems plus depression symptoms group, 8% changed to the depression symptoms group, and 25% no longer had conduct problems. Of the 30 boys initially in the depression symptoms group, 36% did not change, 10% changed to the conduct problems group, 3% changed to the conduct problems plus depression symptoms group, and almost half (48%) no longer had depression symptoms. Of the 23 boys initially in the conduct problems plus depression symptoms group, 48% were in the same group 2 years later, 26% changed to the conduct problems group, 17% changed to the depression symptoms group, and only 9% no longer had symptoms. Thus, the boys in the conduct problems plus depression symptoms group had the worst outcome, whereas those in the depression symptoms group had the best outcome.

In an 18-year follow-up study of child and adolescent depression, Harrington et al. (1991) found different outcomes between those with initial diagnoses of depression and those with initial diagnoses of depression comorbid with conduct disorder ($n = 68$). The investigators examined whether depression comorbid with conduct disorder is different from depression alone and whether depression is secondary to conduct disorder. Of the 68 depression patients, 46% had one conduct disorder symptom (DSM-III-R [American Psychiatric Association 1987] criteria) and 21% had three or more other symptoms. Of the psychiatric control subjects ($n = 68$), 25% had three or more other symptoms. At the 18-year follow-up, the Lifetime Version of the Schedule for Affective Disorders and Schizophrenia (Spitzer and Endicott 1975) was administered (Research Diagnostic Criteria [RDC]). In the short term, those with depression plus conduct disorder improved less and appeared more handicapped than those with depression alone; in adulthood, those with depression plus conduct disorder were more likely than those with depression alone, as well as healthy control subjects, to have antisocial personality disorder and were more likely than those with depression alone to be at risk for alcohol abuse and dependence. In addition, trends indicated that those with depression only were at greater risk for a major depressive disorder in adulthood than those with depression plus conduct disorder but that those with depression plus conduct disorder were more impaired than those with depression only. It appears that depression plus conduct disorder has different implications than depression only so that adolescents with depression plus conduct disorder have a course consistent with conduct disorder, whereas those with depression only have a course relatively more consistent with “pure” depressive disorders in adulthood.

**Temporal Ordering of Comorbidity**

Relatively little is known about the temporal order of comorbid conditions. Rohde et al. (1991) reported on the temporal order of comorbid depression in their community sample of adolescents ages 14–18 years ($N = 1,710$). Based on current and lifetime comorbidity of depression, they found that, with the exception of eating disorders, there was a significantly greater likelihood for comorbid disorders to follow than to precede depression (79.1% versus 20.9%, respectively). This likelihood also applied to substance abuse (64.5% versus 35.5%), disruptive behavior (71.8% versus 28.2%), and especially anxiety (85.1% versus 14.9%). In the same sample, Lewinsohn et al. (1991) examined the temporal order of comorbid depressive disorders, major depressive disorder, and dysthymic disorder and found that of 292 adolescents with a lifetime diagnosis of major depressive disorder, 43 (14.7%) had had two episodes (both major depressive disorder). None of the adolescents with a lifetime diagnosis of dysthymic disorder had had more than one episode. For 21 of the 23 (91.3%) adolescents who had a lifetime diagnosis of major depressive disorder and dysthymic disorder, the episode of dysthymic disorder preceded the episode of major depressive disorder, a temporal sequence that did not differ for males and females. These findings suggest that it is highly likely that a dysthymic episode in adolescence will be followed by an episode of major depression.

Kovacs et al. (1989) reported on comorbid anxiety disorders in a
sample of 104 of 143 depressed children, who had come into the study during its first 6 years when the mean follow-up interval was 3 years. Of those children, 43 (41.3%) had depression comorbid with anxiety disorders at the outset, 32 had comorbid separation anxiety, and 17 had comorbid overanxious disorder. Another three children developed anxiety disorders over the observation period. The age-corrected cumulative risk to age 18 years for anxiety disorder in childhood-onset depression was .47, with anxiety most likely to manifest before a child was age 12 years. However, the presence of anxiety did not appear to influence the risk for subsequent depressive episodes. The children with comorbid anxiety disorders were younger than the other children in the sample. Among the children who had comorbid major depressive disorder and anxiety, anxiety preceded major depressive disorder two-thirds of the time; in one-third of these children, the onset of anxiety was either at the same time as major depressive disorder or followed the onset of major depressive disorder. Comorbid anxiety was equally likely to persist and not persist after major depressive disorder had remitted. Temporal order findings were different for the small number of children who had dysthymic disorder comorbid with anxiety (n = 9). In only two of the nine patients did anxiety precede the onset of dysthymic disorder. Thus, the temporal order findings for dysthymic disorder comorbid with anxiety, but not for major depressive disorder comorbid with anxiety, are similar to the findings in lifetime diagnoses by Rohde et al. (1991) that comorbid disorders appear more likely to follow than to precede depressive disorders.

Kovacs et al. (1988) reported on comorbid conduct disorder in the same 104 children when the mean follow-up interval was 3 years. They found that 17 of the children (16.3%) had comorbid conduct disorder at the outset and that another 7 children developed conduct disorder after their index episode of depression remitted (23% total). Five of the 17 depressed children who had comorbid conduct disorder had several episodes of conduct disorder, and 3 of these 5 children eventually developed bipolar disorder. Two of the seven children who developed conduct disorder later also eventually developed bipolar disorder. There were no sex differences for depression with or without conduct disorder. However, the presence of attention-deficit disorder in depressed girls, but not in boys, appeared to shorten the time to onset of conduct disorder. Older age at onset of depression was associated with the presence of comorbid conduct disorder, and conduct disorder was most likely to manifest at ages 11–14 years. The age-corrected cumulative risk to age 19 years for conduct disorder in childhood-onset depression was .36. Among the children who had major depressive disorder or dysthymic disorder comorbid with conduct disorder, conduct disorder was most likely to follow the onset of depression. Comorbid conduct disorder was likely to persist after depression remitted. Thus, the findings for depressive disorders comorbid with conduct disorder in the Kovacs et al. (1988) study were similar to those in the study by Rohde et al. (1991).

Summary

In general, children and adolescents with multiple disorders are more likely to have continuing problems than those with a single diagnosis. There is evidence that children with comorbid disruptive disorders tend to have an early onset of problem behavior and difficulties with social and academic functioning that persist into adolescence (e.g., Anderson et al. 1989; Fergusson et al. 1993; Frost et al. 1989; McGee et al. 1992; Moffitt 1990). Children with emotional disorders or problems that are comorbid with disruptive disorders also appear to fare worse than children with only one of these disorders or problems (e.g., Fleming et al. 1993; Verhulst and van der Ende 1993). Among adolescents with diagnoses of major depressive symptoms comorbid with conduct disorder at ages 13–16 years, for instance, there was a higher rate at follow-up 4 years later of alcohol and drug abuse and dependence than among adolescents with major depressive symptoms only and a higher rate of major depressive symptoms, dysthymic disorder, generalized anxiety disorder, and alcohol abuse and dependence than among adolescents with conduct disorder only (Fleming et al. 1993). Similarly, among sixth-grade boys, those with both conduct problems and depressive symptoms were more likely to continue to have problems in eighth grade (91%) than were boys with conduct problems only (75%) or boys with depressive symptoms only (52%) (Capaldi 1992). Verhulst and van der Ende (1993) consistently found more children scoring in the deviant range in two syndromes than in only one of the syndromes. Initial behavior problems predicted not only similar but also different problem behavior 6 years later. Their findings led them to suggest that comorbidity may reflect the actual complexity of child psychopathology.
Conclusions

A basic finding in developmental studies of child and adolescent psychopathology is that boys and girls differ in how psychopathology is expressed and these differences tend to become more pronounced over time. Thus, depression may be twice as common in girls as in boys, especially after puberty, whereas attention-deficit/hyperactivity disorder may be more common in boys than in girls, regardless of age. Basic patterns of prevalence show these differences, but it is less clear if patterns of comorbidity also differ in boys and girls. For example, beyond simple prevalence questions, once there is evidence of depression, is it more (or less) likely in boys or girls to be comorbid with other conditions (e.g., conduct disorder, oppositional defiant disorder, attention-deficit/hyperactivity disorder, or anxiety disorder)? Only Bird et al. (1993) have begun to address such questions by examining age and sex differences in observed versus expected comorbidity among more than two disorders (i.e., attention-deficit disorder, conduct disorder/oppositional defiant disorder, anxiety, and depression). They found only one significant age difference for attention-deficit disorder plus depression (a higher than expected observed rate among children ages 9–12 years than among adolescents ages 13–16 years) and no significant sex differences. The general lack of such data, especially in longitudinal form, is not surprising. Large samples would have to be followed over time so that permutations in various comorbid subgroups can be examined by gender and age. In fact, such an effort may require aggregation across studies that use uniform methods of assessment and diagnosis.

Longitudinal research is needed to address many developmental questions. Children and adolescents must be studied repeatedly to examine developmental pathways and temporal ordering of various forms of psychopathology and to explore the possibility that one condition may be the early manifestation of a later form of psychopathology. A good example of the type of research needed is the work that Loeber et al. (1993) have done on oppositional defiant disorder and conduct disorder, which suggests that oppositional defiant disorder is an early manifestation of conduct disorder. A closely related consideration is that one disorder may precede or lead to another. Other examples of this type of research are the work of Kovacs et al. (1988, 1989) on depression and McGee et al. (1992a) on attention-deficit disorder.

This review of longitudinal studies suggests that what we call comorbidity may be a categorical description of the complex nature of the developing human organism. The less-differentiated expression of psychopathology in young children becomes more clearly defined as their personality begins to crystallize and their central nervous system approaches maturity, especially after puberty and mid-adolescence. The Rohde et al. (1991) study, for example, found comorbid disorders to be significantly lower in depressed adults than in depressed adolescents ages 14–18 years (42% in currently depressed adolescents and 43% in adolescents with a lifetime diagnosis of depression, with comparable current and lifetime rates in adults of 7.7% and 25.4%, respectively), suggesting that the finding of comorbidity may indeed be related to developmental phenomena.

Validity of various taxonomic approaches has been debated. The dichotomy between categorical (seeking to describe discrete syndromes, as in DSM) and dimensional (seeing symptoms as existing on a continuum) is characteristic of this debate. Edelbrock and Costello (1988) have suggested that a combination of categorical and dimensional approaches should be useful in the assessment of child psychopathology. Beyond problems with the validity of taxons, however, the various current descriptive approaches provide an opportunity to examine the phenomenology of emotional and behavioral problems. Given the complexity of the task, it would be prudent to try systematically to link the existing assessment approaches in order to determine which descriptors best apply under which conditions. Gould et al. (1993), taking the same approach as did Edelbrock and Costello (1988) with a referred sample, examined the convergence between CBCL syndromes and DSM-III diagnoses in a general population sample and came to similar conclusions (i.e., that it is informative to use dimensional as well as categorical assessment strategies). Their finding of direct linear relationships between corresponding CBCL scale scores and the percentage of children with DSM-III diagnoses, for example, makes it clear that such a dual approach should be especially useful in the investigation of comborbid disorders. Referring to the Puerto Rico study by Bird et al. (1992), Gould et al. (1993) stated, “Given the magnitude of comorbidity in the present community sample it would be a daunting and tedious task to define a sufficient set of combination categories to represent the extensive co-occurrence of disorders” (pp. 310–311).

If comorbidity reflects severity of psychopathology, then children with comorbid disorders would be seen more frequently at mental health and social services facilities than children with noncomorbid dis-
orders. Indeed, data confirm this theory. In the Puerto Rico Psychiatry Epidemiologic Study, Bird et al. (1993) reported that, among children and adolescents with one diagnosis, 23% were receiving services, whereas, among those with two or more diagnoses, 77% were receiving services. The Dunedin Multidisciplinary Health and Development Study also showed that children age 13 years with multiple diagnoses (25%) were significantly more impaired than children with a single diagnosis (Frost et al. 1989).

It is clear that comorbidity must be considered in the design of research on disorders in children and adolescents—especially in the selection of psychiatric control groups—as well as in clinical practice. Brown and Barlow (1992) suggested that the following three questions need to be addressed in treatment research: 1) does the presence of certain comorbid disorders or symptoms affect the short- and long-term response to treatment? 2) what type of adjustments should and can be made to extant treatments to enhance treatment efficacy when comorbidity is present? and 3) what is the course of comorbid disorders and symptoms after successful treatment of the principal disorder? Comorbidity is likely to have implications for the evaluation of treatment efficacy.

As Kendall and Clarkin (1992) have noted, the study of comorbidity is "the premier challenge facing mental health professionals in the 1990s" (p. 853). Studies of the frequency of comorbidity and related conditions are greatly needed to include examination of symptom overlap and its potential role in defining boundaries between related disorders in addition to studies of different effects of treatment on children with comorbid disorders and on children who have the same disorder but different etiological factors.

Such studies may best be accomplished within the context of longitudinal epidemiological research with broad, developmentally appropriate measures of adaptations, strengths, and risk and protective factors across domains as well as measures of psychopathology. In this type of research, examining how children move into and out of areas of risk, dysfunction, and comorbidity is critical. If such research is to be fully successful, it must draw on both categorical and dimensional approaches to assessment. For maximum benefit to the mental health field, research must go beyond establishing base rates of child and adolescent disorders, must address taxonomic problems that exist in current child psychopathology research, and must determine how individual children change over their course of development. Although it is extraordi-

narily difficult and expensive to conduct longitudinal studies, the planned nationwide longitudinal epidemiological study of child and adolescent psychopathology in the United States could begin to address many pressing questions. Research problems posed by comorbidity are daunting, and much of the research in child psychopathology over the last decade has not addressed this issue satisfactorily. To the extent that children with comorbid disorders have been excluded from studies, past results may not be generalizable to children with comorbid conditions (usually the majority of children) who are seen in mental health settings. In addition, to the extent that children with comorbid disorders have been included in studies but their comorbidity characteristics have not been fully described, findings from studies may not be fully applicable to the presumed primary disorder. Such difficulties may explain discrepant or contradictory findings across studies.

The issue of comorbidity is not just one of methodological subtlety. It reaches to the heart of how we conceptualize child psychopathology. Through vigorous attempts to address these issues, by investigators from all relevant disciplines (clinical, epidemiological, developmental) who study children, we can hope to see quantitative and qualitative improvements in our conceptual approaches to child psychopathology over the next decade. Only by avoiding the reification of any of our current taxonomic and assessment approaches and by systematically building in "crosswalks" between the various alternatives, should we rise to the challenge facing mental health professionals in the year 2000 and beyond.

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Summary and Conclusions

Longitudinal studies are difficult to do well. Too short a study and the results may be meaningless. Too long a study and the subjects cannot be found, money runs out, and research methods become seriously out of date. Despite these problems, there have been some longitudinal studies done that have greatly advanced our understanding of the nature and treatment of psychopathology in childhood. Without these studies, much less would be known about the clinical course of important disorders, the effects of treatments, and the various risk and protective factors. None of these studies has been perfect. Some longitudinal studies did not focus on quite the right questions, some produced contradictory results, and others produced results that were hard to interpret.

What have we learned from the longitudinal studies reviewed in this Group for the Advancement of Psychiatry (GAP) report? Many of the things that we have learned have been surprising—even counterintuitive. Pre- and perinatal insults need not necessarily lead to serious consequences in later life. Premature infants, if raised in nondeprived settings, are not likely to be mentally retarded or learning disabled. Today, of course, premature infants who would not have been kept alive 15 years ago are surviving. Will this advancement lead to an untoward outcome? We do not know. New longitudinal studies need to be done.

Certain serious illnesses emerging later in childhood may be associated with a greater risk of psychopathology. This risk is true at least for those with asthma. Psychological factors, such as psychological stress, also may lead to exacerbation of asthmatic attacks. Whether other illnesses are associated with a greater risk of psychopathology simply has not been studied adequately.
Infant temperamental characteristics can be classified and measured; however, they appear to predict little in terms of later personality development or psychopathology. Although temperamental characteristics measured in infancy correlate poorly with temperamental characteristics measured at age 4 or 5 years, they appear to be much more stable and correlate well with temperament at ages 8 and 12 years. Some of these temperamental characteristics, particularly aggressiveness and negativity at age 5 years, are serious risk factors for behavioral psychopathology at age 8 or 12 years and, possibly, at later ages as well. Aggressive, negative 5-year-olds do not necessarily grow out of their problems. Their problems are important and should be dealt with when children are age 5 years.

What does appear to be important is early language development. Delays in language development or developmental language disorders are risk factors for later psychopathology. Fifty percent of school-age children with language problems requiring speech and language therapy also have diagnosable psychopathology.

Hyperactivity and short attention span are characteristics that tend to persist into later childhood—even adulthood. Alone, each of these characteristics may not be a risk factor for later psychopathology, but, when accompanied by oppositional behavior and conduct disorder, the outcome is detrimental to the child. Many studies have shown that children with these comorbid problems are at risk later for becoming delinquent and antisocial. Conduct disorder in childhood, which is much more common in males, is a risk factor for later delinquency, even if it is not associated with hyperactivity. Again, early intervention is important. The effects of comorbidity in this instance can be serious. Comorbidity in general, especially as children grow older, leads to adverse social, academic, and psychopathological outcomes.

Depression does occur in children, in all of its adult manifestations. Mania, in contrast, is rarely seen in children younger than age 12 years. Depression in school-age children can be severe or mild. In contrast to adolescents with depression, depressed children are more likely to have somatic complaints and phobias rather than loss of interest in activities. Depression in children, as in adults, may manifest itself episodically. A child or an adolescent who has had one depressive episode is at high risk for developing a second episode in the future, often within 2–5 years. In adolescents, the risk of suicide may be as great as in adults, and a suicide attempt may be predictive of later successful suicide.

Depressed children are also more likely than nondepressed children to be anxious or to be diagnosed as having attention-deficit disorder with or without hyperactivity.

Anxiety disorder and obsessive-compulsive disorder are also seen in children. It is likely from what is known that obsessive-compulsive disorder in children is related to that seen in adults, but whether the anxiety disorders are so related remains to be seen. Other longitudinal studies are necessary.

Anorexia nervosa has a much more ominous prognosis than we thought in the past. Even those individuals who recover from their eating disorder later are liable to show other continuing psychopathology, including depression. As many as 50%–60% of adolescents with eating disorders continue to have the disorder at the end of 5 years, and some will die of it. Early onset, severe weight loss, and poor family relationships are all factors that predict poor outcome. Bulimia, often associated with anorexia, may have an equally negative outcome, but this is only inferred. Again, more longitudinal studies are required.

Childhood trauma, both acute and chronic, only recently has been investigated, which is surprising in view of the fact that it may have been around for many thousands of years. Even a single incident of severe trauma (such as the episode in Chowchilla in which 26 children were kidnapped by three men and held captive underground in a bus for 27 hours) will continue to exert its effects years later. Five years after the kidnapping episodes, the children had numerous fears, frightening dreams, and detailed (if at times erroneous) memories of the event. Their play was filled with reenactments of the trauma, and the children had a sense that there was no future for them. Meanwhile, the parents generally believed that their children had recovered fully from the trauma and suffered no ill effects. Some children who had witnessed a sniper attack at their school had symptoms of posttraumatic stress disorder (PTSD) 14 months later. Those who had received the greatest "dose" of exposure were the most likely to have PTSD.

Although the longitudinal studies discussed in this report reveal some important facts about psychopathology, they do not reveal what treatment works best. However, they do highlight some important observations about treatment. One of the most important factors to consider in planning treatment for a child is the functioning of his or her parents. Risk factors for the development of psychopathology in children are mental illness in the parents, such as severe depression or schizophrenia; parental alcohol or substance abuse; or parental violence. In certain instances, there may be an interaction between heredity
and the relationship between parent and child. For example, a boy may inherit from his overly aggressive father a propensity toward aggression and then may be pushed by his abusive father to express his aggression to an even greater degree than he otherwise might have done. In other instances, it is likely that family chaos and violence are nonspecific risk factors that exacerbate psychopathology in family members. Mental health professionals who treat disturbed patients who are parents should always be concerned that their patients’ children may be at risk for psychopathology and should inquire if the children may need evaluation and care.

A second lesson from longitudinal studies of treatment is that multidimensional treatment is better than a single modality treatment. Aggressive, hyperactive children who have conduct disorder may need medication, and their parents may need training in parental skills; the children themselves may benefit from psychotherapy, social skills training, and cognitive therapy. If children are seriously delinquent or out of control, temporary residential treatment may be needed as well. Longitudinal studies emphasize that the wise therapist must take into account multiple factors important to each child, including diagnosis; hereditary, temperamental, and personality factors; parental behavior and psychopathology; history of trauma and abuse; parents’ need to learn new skills; responsiveness of the child to therapy; and efficacy of medication.

Beyond what we have learned about family factors associated with child and adolescent psychopathology, we also have learned that bold experiments initiated at the societal level, such as Project Head Start and the New Haven School Development Program, are effective in helping children and their families, although not always in ways that were initially anticipated. These programs should be expanded and strengthened, as indeed the United States government currently seems to be doing.

All of these findings summarize what the GAP Committee on Child Psychiatry has learned from its review of longitudinal studies of psychopathology in children and adolescents. As with most projects we undertake, we began with the expectation that committee members would learn from one another and from the literature we reviewed and discussed. It has been a profitable experience for us, and we hope that all practitioners find this report to be a useful one.

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