Developmental psychopathology and public health: Past, present, and future

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Abstract
Children’s healthy mental development has never been the focus of long-term, committed public health policy in the way that early physical health and development have been. We discuss four types of societal response to illness—cure, care, control, and prevention—and trace the history of public health in terms of its special responsibility to control and prevent disease. We identify four periods in the history of public health: the Sanitarian era (up to 1850), the Bacterial era (1850–1950), the Behavioral era (1950–present), and the Communitarian era (the next century). Looking at this history from the viewpoint of the developmental psychopathology of the first 2 decades of life, we trace progress in public health responses to children with mental illness, from a philosophy of control by isolation toward one of preventive intervention. We examine primary, or universal, prevention strategies that have been tried, and we suggest some that might be worth reconsidering.

Children’s mental health and development have never been the focus of long-term, committed public health intervention in the way that early physical health and development have been. It may be coincidental that there is no evidence of a fall in the prevalence of child psychopathology in recent decades, a period that has seen such dramatic improvements in physical health and development, often as a result of public health initiatives. We think not. So we believe that there is value, for this millennial volume, in looking at the history of the developmental psychopathology of the early years of life from a public health viewpoint. We shall present evidence that developmental psychopathology of childhood and adolescence is emerging as one of the major public health problems of industrialized nations, and argue that in the new century we shall need to attack the problem using both new and old weapons—public health as well as clinical science.

What is Public Health?
According to the latest edition of the Oxford Textbook of Public Health, “Public health is the process of mobilizing local, state, national, and international resources to solve the major health problems affecting communities” (Holland, Detels, Knox, Fitzsimons, & Gardner, 1991, p. 49). Another recent definition, provided by the Institute of Medicine, states that the mission of public health is “the fulfillment of society’s interest in assuring the conditions in which people can be healthy” (Institute of Medicine, 1988, p. 7). This definition goes on to say that the aim of public health is to generate organized community effort to address the public interest in health by applying scientific and technical knowledge to prevent disease and promote health. The mission of public health is addressed by private organizations and individu-
A third definition of the role of public health can be found in the name of one of the United States’s main public health agencies: the Centers for Disease Control and Prevention (CDC). Cure, care, control, and prevention are the four pillars of health care (Table 1). Clinical or therapeutic medicine focuses on the cure or care of the individual patient presenting for treatment, while public health medicine focuses on the prevention and control of illness in the community. Attempts to deal with child psychopathology, or any other type of pathology, need to use both clinical and public health stratagems. But at this time the training of the vast majority of those involved in the mental health care of children is grounded in clinical rather than public health principles and practice. A licensed clinician will have thousands of hours of supervised training in the treatment (i.e., care and cure) of individual children and families but almost none in the use of public health methods to prevent and control the development and spread of mental illness.

**Prevention**

Public health prevention efforts are designed largely for “persons not motivated by current suffering” (Gordon, 1983, p. 108). The goal is to reduce morbidity and mortality through changes to the environment, the individual, or the disease-causing agent. For example, separating drinking water from wastewater reduces exposure to waterborne pathogens, vaccination increases individuals’ immunity to smallpox, and pasteurizing milk kills dangerous bacteria, in each case affecting risk to the population before the onset of disease.

**Control**

When disease cannot be prevented, the role of public health is to control the impact of one sick individual on the rest of the population. This may involve the use of coercion to protect the community against people who are seen as at high risk of harming others, through spreading disease or committing acts of violence. Protecting the community also extends to protecting the individual against self-harm through suicide or drug abuse. Compulsory admission to isolation units or psychiatric hospitals are examples of control; another example is the intensive effort made to track down and test the partners of people with sexually transmitted diseases, in order to control the spread of communicable diseases in the community.

Throughout history, the implicit justification for public health intervention in the lives of individuals has been the belief that the sickness of one person may be a threat to the health of others. Different types of disease have been seen as carrying different degrees of public threat at different historical periods. Table 1 indicates a classification along two dimensions: the degrees of perceived dangerousness to the health of the community, and the time frame of the illness, from brief or acute to chronic or persistently episodic. “Socially dangerous” conditions include health problems that pose a hazzard to the community because of the risk of either infection or violence (including self-harm). “Socially safe” conditions are ones against which the community has not seen the need to protect itself in the same way (although that percep-

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**Table 1. Four approaches to health care**

<table>
<thead>
<tr>
<th>Type of Care</th>
<th>Type of Illness</th>
<th>Example</th>
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<tbody>
<tr>
<td>1. Cure</td>
<td>Socially “safe,” acute</td>
<td>Broken leg</td>
</tr>
<tr>
<td>2. Care</td>
<td>Socially “safe,” chronic/degenerative</td>
<td>Cardiovascular disease</td>
</tr>
<tr>
<td>3. Control</td>
<td>Socially “dangerous,” chronic/episodic</td>
<td>Schizophrenia</td>
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<tr>
<td>4. Prevention</td>
<td>1, 2, 3, and communicable diseases</td>
<td>Cholera</td>
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</tbody>
</table>
Table 2. Phases in the history of public health

<table>
<thead>
<tr>
<th>Phase</th>
<th>Response to Child Psychopathology</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>1. Sanitarian, before 1850</td>
<td>Control</td>
<td>Prison, transportation</td>
</tr>
<tr>
<td>2. Bacterial, 1850s to 1950s</td>
<td>Control</td>
<td>Long-stay specialist institutions</td>
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<tr>
<td></td>
<td>Cure</td>
<td>Psychoanalysis</td>
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<tr>
<td>3. Behavioral, 1950s to present</td>
<td>Control</td>
<td>Short-stay specialist institutions</td>
</tr>
<tr>
<td></td>
<td>Cure</td>
<td>Psychotherapy, behavioral therapy, drugs, MST</td>
</tr>
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<td></td>
<td>Prevention</td>
<td>School and media behavior change programs</td>
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<tr>
<td>4. Communitarian, the 21st century</td>
<td>Control</td>
<td>Short-stay specialist institutions</td>
</tr>
<tr>
<td></td>
<td>Care</td>
<td>“Wraparound” community-based programs</td>
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<tr>
<td></td>
<td>Cure</td>
<td>Drugs, behavioral therapy, genetic engineering</td>
</tr>
<tr>
<td></td>
<td>Prevention</td>
<td>Primary mental health care, genetic counseling, social capital investment</td>
</tr>
</tbody>
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tion may prove later to be mistaken). It goes without saying that there is considerable overlap among the stages and categories, but this classification is useful for framing the history of public health response to psychopathology in children. It produces four categories: (1) acute, noncommunicable conditions such as broken bones; (2) chronic, often degenerative conditions, such as cardiovascular disease, that are not seen as communicable; (3) socially dangerous but not infectious illnesses such as mental illness and drug abuse; (4) socially dangerous communicable diseases such as plague, cholera, and smallpox. Clinical and public health medicine have taken responsibility for different categories at different times in the past millennium and, as we shall discuss, the boundaries are still shifting (Susser, 1996).

In this paper we trace four developmental stages in the history of public health (Table 2), and examine public responses to the mental health of children at each stage in terms of care, control, and prevention. The first era—“Sanitarian,” in Susser’s terminology (Susser, 1996)—can be traced back to the Middle Ages, and lasted until the middle of the 19th century. At first, isolation was the only public health measure available, but in the 19th century communal action to clean up the environment began to show dramatic effects. The second phase (“Bacterial”) began with the discovery of microbes that caused specific diseases, and lasted until the middle of the 20th century. The third phase (“Behavioral”) has lasted until the present, and has concentrated on chronic or degenerative conditions with an emphasis on individual behavioral change as the key preventive mechanism. In the fourth phase (“Communitarian”), which is only just beginning, we identify an emerging interest in communal responsibility for some of the underlying, preventable causes of illness, including child psychopathology.

Phase 1: The Sanitarian Era

In the “prehistoric” period of public health, roughly before 1850, “organized community effort to address the public interest in health” (Institute of Medicine, 1988, p. 7) was largely restricted to attempts to control diseases perceived as communicable and socially dangerous, such as plague or leprosy. The only method known to be effective was to isolate those infected with the disease or likely to be harboring it. Asylums of various kinds were built to house lepers and others thought to be infectious. Others perceived as the socially dangerous sick, such as the mentally ill, were also isolated (Foucault, 1965). Other types of illness—accidents, acute illnesses (some of which were infectious diseases not yet recognized as such), nonthreatening mental illness, chronic degenerative conditions—were cared for mainly at home; short-term hospital care was restricted to those too poor or isolated to have a family able to care for them, and often
increased the risk of death through nosocomial infection.

For centuries public health, wielding its sole weapon of isolation, had little impact on the health of nations. It failed, for example, to control the spread of the plague that decimated the population of Europe during the 14th and 15th centuries, despite the vast powers, extending to torture and execution, given to some public health authorities (Sobel, 1999). Nor did clinical medicine have much impact at the level of the health or longevity of the population. Indeed, as industrialization in the 19th century pulled people out of small villages and into the new conurbations, life expectancy actually fell; for example, in the 1840s life expectancy at birth was around 40 years for Great Britain as a whole, but only half that in the industrial cities of the Midlands (Hodgkinson, 1973).

While many of these deaths would later be ascribed to poor nutrition and overwork (Wilkinson, 1998), the direct cause of many was infectious disease. What to do about it was the problem. It was clear that dirt and overcrowding were closely connected with disease, but at this period it was hard to differentiate among the specific diseases and impossible to pinpoint the immediate causes. Public health proponents, known as “Sanitarians,” fought bitterly for the reforms in public sanitation, street cleaning, and water purity that nowadays we take for granted. Their efforts were driven as much by moral indignation at the degradation of urban life as by any firm scientific evidence linking filth with disease; indeed, the most prevalent causal theory, linking disease to the “miasma” created by polluted stagnant water, was etiologically wrong (Holland et al., 1991). Ruth Hodgkinson’s history of public health in the Victorian age from contemporary sources (Hodgkinson, 1973) provides a vivid glimpse of the passions and furies that accompanied the slow pace of reform; the desperation of reformers battling entrenched interest groups (private physicians among them); public reluctance to vote funds for necessary public action such as the building of sewage systems; and the corruption of legislators who had been “bought” by water companies and landowners resisting legislation and regulation. The current battle with the tobacco companies perhaps gives us a glimpse into those struggles.

The Sanitarian approach to public health had little to say about noncommunicable diseases of any kind. Throughout this period, the socially dangerous sick continued be contained in institutions, and the nondangerous acute and chronic sick to be cared for at home.

Public health and developmental psychopathology before 1850

Throughout the Sanitarian period the most pressing public health concern relating to children was how to increase their chance of physical survival to adulthood. While occasional case descriptions of deranged children can be found (for a review, see Parry–Jones, 1994), there was no organized attempt to develop a nosology of child psychopathology, nor, with one exception, was the prevalence of child psychopathology discussed as a matter for public concern. The one exception was bad behavior, conduct disorder, or delinquency (Costello & Angold, in press). Reference to badly behaved children as a legitimate object of public concern and action can be found as far back as the Old Testament:

18. If a man have a stubborn and rebellious son, which will not obey the voice of his father, or the voice of his mother, and that, when they have chastened him, will not hearken unto them:
19. Then shall his father and his mother lay hold on him, and bring him out unto the elders of his city, and unto the gate of his place;
20. And they shall say unto the elders of his city, This our son is stubborn and rebellious, he will not obey our voice; he is a glutton, and a drunkard.
21. And all the men of his city shall stone him with stones, that he die: so shalt thou put evil away from you; and all Israel shall hear, and fear. (Deuteronomy 21:18–21)

Here we see the legal code providing for the community to take on the responsibility of acting as an agent of social control on behalf of the family, if the family chose.

Children as a public health nuisance: Felony, pauperism, and prostitution. Child vagrancy
or homelessness became an acute problem in the growing cities of industrial Europe from the 17th century, but particularly during the 18th and early 19th centuries. While it is hard to get a sense of the size of the problem, a report of the Society for the Suppression of Juvenile Vagrancy, published in 1830, estimates the number of vagrant boys in London at 15,000 (no mention of the number of girls; Brenton, 1830). There was often little enough to distinguish emotionally or behaviorally disturbed children from other poor children in the public eye, but it was clear that both were a public nuisance and a threat to the community’s health and well-being. Public attitudes toward child vagrants are conveyed in this ordnance to the Constables of the City of London, issued in 1732:

This Court taking notice, that divers Poor Vagrant Children are suffered to skulk in the Night-time, and lie upon Bulks, Stalls, and other places in the Public Streets of this City, whereby many of them perish by the Extremity of the Weather, and other Inconveniences ensue. Therefore to prevent the same for the Future, This Court doth desire the several Aldermen of this City to call before them the several Constables and Beadles within their respective Wards, and to give them strictly in charge, that if they or any of them shall find any poor Vagrant-Child, or Children, or others, lurking in the Publick Streets of this City in the Night-time, that they immediately apprehend such, and secure him, her, or them in their Watch-house, or some other convenient Place, until they convey them before some Justice of the Peace for this City and Liberty thereof, that they may be examined and sent to the Places of their Legal Settlements, or otherwise disposed of according to the Law. ("Mayor’s Proclamation, November 28, 1739"; Maitland, 1739)

Treatement of child psychopathology in the Sanitarian era of public health

In the absence of a clear taxonomy or causal model, the treatment most widely recommended was the traditional public health solution: isolation to control the spread of contagion. The literature of the early 19th century contains hundreds of plans, proposals, and recommendations for reformatories, asylums, refuges, institutional training, penitentiaries, agricultural workhouses, compulsory emigration to the Colonies, or transportation for life. In the words of one treatise, published in England in 1829:

The difficulty of dealing with the destitute children of the Metropolis consists not so much in providing a suitable punishment for the actually delinquent as in disposing of the multitudes against whom no offence can be proved. However much their waywardness and wretchedness may be deplored, and however strongly their incipient guilt may be suspected, still having committed no offence known to the law, they are not within cognizance of the civil power. Now it appears to us that it would be real humanity toward these unfortunate creatures to subject them to compulsory and perpetual exile from England. (Wade, 1829, p. 164)

The conflict between protecting children and protecting the adult community from children through control and isolation is clear in these proposals; the extent of progress that we have made toward resolving the conflict can be measured in the recent debate over Newt Gingrich’s suggestion that more orphanages would be one solution to America’s current problems with the poor.

Phase 2: The Discovery of Bacteria

In an amazing 20-year period, from 1877 to 1897, pathogenic organisms were identified for anthrax, typhoid, leprosy, malaria, tuberculosis, glanders, cholera, erysipelas, diphtheria, staphylococcal and streptococcal infections, tetanus, pneumococcus, Malta fever, soft chancre, gas gangrene, plague, botulism, and dysentery (Rosen, 1958). The era of modern medicine and public health was dawning. In the words of one distinguished epidemiologist, “Even those who despair of human progress in other fields usually concede that the conquest of the major communicable diseases is one of the great and lasting achievements of the present century” (Stewart, 1972, p. 572). The focus of public health activity swung from the sewer to the laboratory, from agitation to science. This phase dominated public health thinking for about a century, roughly until the 1950s.

The basic public health model of this period looked for a causal agent that caused dis-
ease when it lodged in a host individual. The model also required an environment that supported the agent–host interaction. This model arose from observations that, although a bacterium might be identified as the necessary cause of a given disease, it was rarely sufficient to ensure that disease occurred. Over time, communicable disease epidemiologists developed sophisticated mathematical models to predict the spread and course of epidemics in different environments, while others produced a range of methods to attack the diseases. Sometimes they had no option but to use the old methods of disease control, isolating cases to prevent contagion, but increasingly the strategies moved toward disease prevention, through immunization of the potential host (e.g., rubella), eradication of the agent (e.g., smallpox), and cleaning up the environment (e.g., malaria).

It is worth noting, however, that for many diseases the fall in mortality and morbidity rates preceded by many years the development of an effective clinical treatment of the disease. For example, by the time a reasonably effective treatment was developed for tuberculosis, in the 1940s, mortality in the United States was already one tenth of what it was at the end of the 19th century, when the disease was the second most common cause of death (Holland et al., 1991). Identifying the agents of communicable diseases was only one step to finding a cure, and the next step was often many decades away. But the identification of causal agents seemed to galvanize the efforts to clean up the environment that had been struggling on, with mixed success, for decades. The passion for cleanliness that shines through the rhetoric of the early public health proponents was finally given a basis in science, and the combination was revolutionary; mortality and morbidity came tumbling down. Sometimes caricatured as the “one bug, one drug, one shot” phase of public health, it is the reason why most of us are alive today.

Public health and developmental psychopathology in the Bacterial era of public health

Just as an early stage in developing a science of disease prevention was to describe and distinguish among a multitude of pathogens, so in the later 19th century we see a movement toward defining many different types of child behavioral problems and creating a plethora of specialist institutions to deal with them. In this case, however, no psychomicrobes could be discerned under the microscope, and the distinctions that were drawn were based on increasingly careful observation and description of behavior and environment. Three broad currents of research during this period had a powerful influence on attitudes toward the cure, care, control, and prevention of child psychopathology, both at the time and in the future: traditional psychiatry, psychoanalysis, and developmental psychology.

The traditional medical model of child psychopathology. The dominant medical theory of child psychopathology in the late 19th century was genetic: heredity and degeneration caused disease, which started with scarcely perceptible signs in early childhood but took a progressive and irreversible course and would probably be transmitted to future generations if the affected individual were permitted to breed (von Gontard, 1988). In the language of Table 1, child mental illness was viewed as a chronic, often degenerative disease that could be socially dangerous, though probably not contagious.

By the end of the 19th century, progress was being made toward distinguishing among different types of mentally disturbed children. Binet (Binet & Simon, 1908) pioneered tests to pick out the truly retarded from the recalcitrant among the poor performers in school. Institutions specifically for the feeble-minded appeared in Europe in the mid-19th century and in the United States soon after, although specialized provision for the care of mentally retarded children in the community was rare until the 20th century. Epilepsy was described as early as 1715 (de Mandeville, 1715), and made up a large proportion of young asylum admissions (Parry–Jones, 1990), but it was not until the end of the 19th century that it was reliably diagnosed. Among the psychiatric disorders, anorexia nervosa was described in the 1870s as a disease of young women (Lasègue, 1873), and cases of melancholia were described, and noted to be rare before
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puberty (Griesinger, 1867). Dementia praecox was identified by Kraepelin (Kraepelin, 1919), who also described manic–depressive insanity in adolescents (Kraepelin, 1921). Hyperactivity was identified as a distinct syndrome in the 1930s (Bradley, 1937), and autism at around the same time (Kanner, 1943). This careful descriptive work was a first step away from the control-by-isolation response, and toward a clinical treatment model.

Until Freud, few psychiatrists of this period had a coherent theory of the development of psychopathology, and there was little agreement among those few. Drawing on new knowledge about evolution, the famous British psychiatrist Henry Maudsley proposed a developmental sequence of manifestations of such disorders as melancholia and conduct disorder. He argued that the moral qualities are the most vulnerable to disease of all human mental capabilities, because they are located in the cerebral cortex, evolutionarily the most recently developed part of the brain: “the finest flowers of evolution, the finest function of mind to be affected at the beginning of mental derangement of the individual” (Maudsley, 1883, p. 244). It is not clear whether Maudsley believed in the inheritance of acquired characteristics, but he was clear that mental illness was passed from one generation to the next. “The different forms of insanity that occur in young children . . . are almost always traceable to nervous disease in the preceding generation” (Maudsley, 1879, p. 68). Such a coherent causal theory was, however, rare at this time.

The psychoanalytic model of child psychopathology. Although Freud himself accepted that individuals had innate or constitutional characteristics, he developed what we might today describe as an epigenetic view of development. “Hereditary factors depend for their pathogenic impact on the accidental influences with which they interact” (Freud, 1965, p. 138). Children whose libido “disposed” them to pathology could be saved by the right environment, or therapy, or both. Thus, although even mild symptoms could be ominous, the course was not inevitable. This view can be seen most clearly in the writings of Anna Freud (Freud, 1965) and in work on delinquency of Freud’s student August Aichhorn. “Every child is at first an asocial being in that he demands direct primitive instinctual satisfaction without regard for the world around him. This behaviour, normal for the young child, is considered asocial or dissocial in the adult.” (Aichhorn, 1935, p. 4). Children were seen as inherently “dissocial” and in need of training to help them to adjust to the demands of society. Training is only complete when “suppression of instinctual wishes is transformed into an actual renunciation of these wishes” (Aichhorn, 1935, p. 5). Caught early enough, delinquency could be prevented by proper teaching, supported where necessary by psychotherapy.

Developmental psychology and child psychopathology. A third line of investigation began during this period, one that has become increasingly important in the past 20 years. The new discipline of developmental psychology that emerged during this period applied to psychological development principles drawn from biology, especially embryology, such as those of a dynamically active organism, differentiation, hierarchical integration, equifinality, and multifinality. As Nagel (1957) defined it,

The concept of development involves two essential components: the notion of a system possessing a definite structure and a definite set of pre-existing capacities; and the notion of a sequential set of changes in the system, yielding relatively permanent but novel increments not only in its structure but in its modes of operation. (Nagel, 1957, p. 15)

From the earliest stages of developmental psychology, the focus was on the laws governing normal development. Mentally ill subjects were seen as valuable objects of study, providing clues to mechanisms through which development goes wrong, and thus giving insights into the boundaries of those laws (Cicchetti, 1990). However, as the general principles of developmental psychology became clearer, and research methods worked out, the process could be turned on its head, and psychopathology described in terms of aberrations from “normal” developmental pathways. For example, observational work from several
sources, both human and animal, generated theories about the “developmental task” of attachment in the 1st year of life, and led in turn to statements about the limits of normality and the various types of abnormality (Bowlby, 1958, 1973; Harlow, 1958; Lorenz, 1965).

*Treatment of child psychopathology in the Bacterial era of public health*

*Child psychiatry.* The management implications of the medical approach to child psychopathology pointed toward control rather than cure, and indeed well into the 20th century the care of children with serious psychiatric disorders was mainly in residential institutions. Distinctions were drawn among insanity, idiocy, epilepsy, neurological disorders, and just plain orphanhood (Parry–Jones, 1994), and custodial institutions set up that specialized in different kinds of problem. It is estimated the about 5–6% of admissions to lunatic asylums throughout the 19th century were of persons under 20 years of age (Thur- nam, 1845). An unknown number of other children were in prisons, orphanages, and asylums. And as late as 1914 a report on the mental health of school children recommended “permanent sequestration in state colonies of all epileptics, insane, and feeble-minded” (Wallin, 1914). Child psychiatrists not caring for children in institutions tended either to be psychoanalysts or to work in child guidance clinics whose ethos was strongly psychoanalytic.

*Psychoanalysis.* While traditional medicine stuck to control as its main response to childhood mental illness, others experimented with the language and methods of prevention. From 1894 on, child guidance and mental hygiene clinics began to appear throughout Europe and the United States, with the goal of preventing the onset of serious disorders and deflecting neglected, abused, or delinquent children from custodial institutions rather than interning them there. The major inspiration for this new focus on preventive mental health intervention came from the developmental theories of Sigmund Freud. Psychoanalysis thus made important contributions to both the care–cure and the prevention of child psychopathology: In the first case, it introduced the “talk therapies” pioneered with adult patients. In the second, it developed an approach to prevention that blurred the boundaries between normal development and pathology, being inextricably intertwined with education and child rearing in general. Aichhorn referred to the therapist’s role as one of a “remedial educator,” taking over when standard educational methods have failed, working together with educators on the task of making the child “fit for his place in society”: “When symptoms of delinquency are not predominantly neurotically determined, pedagogical skill is important because of the necessity to regulate the child’s environment” (Aichhorn, 1935, p. 9). Neuroses demanding psychoanalytic therapy were present in some, but not all, cases, and where present needed treatment as part of what would nowadays be called “multisystem therapy.” Unfortunately, very little research was done on the effectiveness of psychoanalytic interventions for either cure or prevention.

*Developmental psychology.* As recently as 1995 Cicchetti and Cohen wrote that “Despite the logical links that exist between the provision of interventions to children, adolescents, and adults and developmental theory and research, far too few bridges have been forged between these realms of knowledge” (Cicchetti & Cohen, 1995, p. 13). The explosion of research on normal development in the Bacterial era generated a vast normative literature on child rearing (for reviews see, e.g., Beekman, 1977; Lomax, Kagan, & Rosenkrantz, 1978). Given the ready application of this new knowledge to normal development, the paucity of developmentally driven interventions for emotionally or behaviorally disturbed children is remarkable. The main psychological contributions to treatment and prevention at this period were based on behaviorist principles, which were derived from work with animals, and later applied to children, but were not grounded in developmentally theory. Behaviorally based methods of controlling children’s behavior, such as the token economies used in many reformatories...
and inpatient units, were widely adopted (and are still in common use today). From a public health point of view, scientific psychology during this era undoubtedly provided more humane and individualized methods for controlling severe psychopathology, but it did not contribute much toward the goal of replacing control with prevention.

**Phase 3: The Behavioral Era**

By the second half of the 20th century the impact of communicable diseases on the burden of illness had been contained to a quite extraordinary extent, at least in developed countries. Chronic, often degenerative diseases replaced communicable diseases as the focus of public health attention, increasingly so as efforts to “cure” them in the clinical care system continued to show disappointing results despite enormous expenditures (e.g., the “War on Cancer”). It became clear that the one bug–one drug–one shot solution that worked so well for communicable diseases simply did not work for these illnesses. Longitudinal community studies showed that the hypothesis of a single cause for cardiovascular disease was untenable (Kannel, 1990), and epidemiologists coined the term “risk factor” to designate factors associated with an increased probability of disease that may or may not be causally related to its onset. Most chronic diseases appear to have more than one cause—and most risk factors, more than one pathological effect.

This change in focus led to a change in public health strategies for preventing illness. The task of maintaining freedom from communicable diseases had already shifted from health-related agencies to other public and private agencies: water and power companies, building inspectorates, the Federal Drug Administration, the Environmental Protection Agency, and so on. Primary care providers in the United States, or special clinics in other countries, were responsible for seeing that children got their “shots.” The role of public health agencies in relation to communicable diseases shifted to one of monitoring the nation’s safety and warning of potential outbreaks. In the case of chronic and degenerative disorders, public health developed in two directions. First, it led or supported communal action to reduce environmental hazards, now mainly carcinogens and other industrial toxins—in many ways a strategy that returned to the philosophy and methods of public health’s first, Sanitarian, phase: communal action (often through legislation) to reduce a danger that is common to all. The second direction was to set up programs to bring about individual behavior change—for example, to prevent lung damage and reduce obesity and hypertension through stopping smoking, exercise, and diet. (“Behavioral” is used to describe programs directed at changing individual attitudes and behavior, not in the strict sense of applying the principles of behavioral psychology.) At the height of enthusiasm for this individualistic approach to disease prevention several countries, with the United States in the lead, mounted huge demonstration projects and case–control studies involving large numbers of cities, designed to bring about changes in individual behavior through campaigns of exhortation, encouragement, feedback, and reward. The classic case is the Multiple Risk Factors Intervention Trial (MR. FIT) of the 1970s, a mutlicity intervention attempting to change the eating and exercise patterns of men identified as at risk for heart disease (Cutler, Neaton, Hulley, Kuller, Paul, & Stamler, 1985; Heyden, Schneider, & Fodor, 1987; Hulley, Ashman, Kuller, Lasser, & Sherwin, 1979).

At the beginning of this third era of public health, mental illness was still mainly a problem for control, with “curative” psychoanalytic treatment available only for the wealthy few. However, from the beginning of this period the language of treatment and prevention was being used. The National Institute of Mental Health, founded by the National Mental Health Act of 1946, was dedicated to clinical research into the causes and treatment of mental illness, but its early agenda, shaped by the public health enthusiasm of its first direc-
tor. Robert Felix, was to treat mental illness as a public health problem to be controlled, in the end, largely through prevention and primary care. According to Felix the role of the federal government, through NIMH, was “to help the individual by helping the community; to make mental health a part of the community’s total health program” (Felix, 1949, p. 401). Community mental health, with mental health services freely available in “storefront” locations for walk-in consultations, was a model that reached its finest flowering in the community mental health centers set up in the 1960s and 1970s.

How many children need services? Having set the goal of accessible mental health care for all, NIMH and state providers of mental health services became concerned about the proportion of the adult and child populations for whom such services would be needed. Psychoanalysis, which had firm control of both the theory and practice of child psychiatry at the time, tended to see almost every child as a potential beneficiary of treatment. Federal and state governments, on the other hand, tended to concern themselves with the much smaller number of children needing long-term or institutional care, because they often ended up with financial responsibility for this group. Psychiatric epidemiologists for the first time began to ask questions about the relationship between these two extremes (MacFarlane, Allen, & Honzik, 1954). How many of the children with the kind of symptoms that, to psychoanalytic child psychiatry of the time, predicted future maladjustment—children described by the child psychiatrist Leo Kanner as “breath-holders, nail-biters, nose-pickers, and casual masturbators” (Kanner, 1945, p. 1136)—really needed treatment? The first study to use epidemiologically acceptable methods—standardized questions with adequate reliability and validity; information from both child and parent; representative samples drawn from the general population, rather than from hospital records; and adequate sample size—was conducted by Rema Lapouse and Mary Monk in Buffalo, New York, in 1955. Like MacFarlane before them, and others throughout the world (e.g., Shepard, Oppenheim, & Mitchell, 1966), they found that almost half of children aged between 6 and 12 years had a large number of fears or worries, and of the behaviors (bed wetting, nail biting, thumb sucking, nightmares) thought to be indices of anxiety. However, further analysis (Lapouse & Monk, 1959) showed very little association between the anxiety and the behaviors held to be caused by them. This groundbreaking study changed the public health significance of childhood behavioral and emotional symptoms by showing that (a) they were almost universal at low levels; (b) they were not strongly related to the psychiatric disorders they were supposed to index; and (c) they were much more common in younger children, indicating a developmental process by which children came to master their fears and anxieties.

The period since 1950 has seen the development of new taxonomies of psychiatric disorder based on careful description of observed or reported behaviors and feelings, rather than on etiologic theory, in successive editions of the International Classification of Disease (World Health Organization, 1978, 1987) and the Diagnostic and Statistical Manuals (American Psychiatric Association, 1952, 1968, 1980, 1987, 1994). These taxonomies were designed for clinical use in treatment settings, but epidemiologists quickly developed measurement tools that allowed them to examine the need for mental health care in the population as a whole, using psychiatric diagnosis as the criterion. The evidence of more than a dozen studies is quite clear: 1 child in 5 in the general population has a psychiatric disorder (Brandenburg, Friedman, & Silver, 1990; Costello, 1989; Roberts, Attkisson, & Rosenblatt, 1998), and 1 in 20 has a disorder that causes significantly impaired functioning, preventing the child from performing in a developmentally appropriate way in the everyday tasks of school, home, and peer relationships (Costello, Messer, Reinherz, Cohen, & Bird, 1998), a level of pathology defined by the federal government as serious emotional disturbance (SED; U.S. Government, 1993). The same studies also show a very large gap between “need for services” and use of the
child mental health services available in the community. For example, in one community study, even among children with SED in the past 3 months, only one in four had seen a mental health specialist during that period (Burns, Costello, Angold, Tweed, Stangl, Farmer, & Erkanli, 1995).

The treatment of children with psychiatric disorders in the Behavioral era of public health

Cure, care, and control. There has been a dramatic increase in the number and variety of services for children with psychiatric disorders in the last half of the 20th century. What has not emerged is an integrated system of cure, care, control, and prevention.

Paradoxically, the time when institutionalization was losing ground as a response to adult mental illness coincided with a period of massive expansion in hospital beds for adolescents in the United States. Isolation of those mentally ill adults seen as socially dangerous was still the norm in the 1950s, but over the next 3 decades large numbers of those who would have been consigned to custodial care in earlier years were now seen as amenable to therapy in the community, or to a combination of approaches. The mental hospitals lost their populations of chronic patients, while new acute care units sprang up across the developed nations. The pattern for children was different. Children had previously made up only a small proportion of the population of long-term psychiatric patients, but between 1975 and 1986 the child and adolescent inpatient population in the United States increased by a third, while the outpatient population increased by two thirds (Burns, 1991). The numbers in residential treatment centers for behaviorally disturbed youth rose from 25,500 to 44,000 (66% population-adjusted increase). Partial hospitalization, which hardly existed in 1975, had over 12,000 patients in 1985 (Burns, 1991). Kiesler and Simpkins (1991) noted that from 1980 to 1986 there was an 87% increase in admissions for adolescent psychiatric treatment in hospitals without specialty psychiatric units, with an increase of more than 600,000 days of care. This increase was almost entirely restricted to adolescents between ages 13 and 15 years, and was paid for chiefly (80%) by commercial insurers and Medicaid. This response to adolescent psychiatric disorders did not occur in Europe, which argues that it was less an attempt to control a public health problem than it was a response by the insurance and medical industries to a remunerative opportunity. The rapid fall in numbers of beds and lengths of stay for adolescents since the advent of managed care points in the same direction. A disquieting development that has accompanied the fall in numbers of children hospitalized is the increase in placements in residential correctional facilities. There are at present more than 100,000 youth in residential correctional institutions of various sorts in the United States (Gallagher, 1999).

In the same period, new pharmacological and psychotherapeutic treatments gave clinicians the capacity to cure, or control outside the hospital, a wide range of previously intractable disorders of childhood: attention-deficit hyperactivity disorder, adolescent depression, some anxiety disorders, and obsessive–compulsive disorder among them. Some of the agencies responsible for the control of the most intractable cases, those that present a risk to themselves or the community, developed “wraparound” strategies (Clarke, Schaefer, Burchard, & Welkowitz, 1992; VanDenBerg & Grealish, 1996) to provide a system of care that gives severely disturbed children a life that approaches “normal” as closely as possible, rather than controlling them by long-term isolation. Thus, care, cure, and control became intermixed as efforts intensified to provide an integrated “system of care” for children with mental illness (Stroul & Friedman, 1996).

Prevention. During this period a range of dangerous social problems such as violence and drug abuse, previously treated as challenges to public order and dealt with by the criminal justice system, began to be considered as clinical and public health issues, as research demonstrated the very high prevalence of psychiatric disorders in incarcerated youth (Davis, Bean, Schumacher, & Stringer, 1991; Edens &
The burgeoning specialties of cognitive and cognitive–social psychology were brought to bear on the task of tailoring messages to the developmental stage and group ethos of adolescents. For the first time, the young became the target of preventive behavioral interventions in their own right.

While different programs claim different success rates, looking at the broad picture it is hard to claim that the strategy of targeting individual behavior change in adolescence has been a great success. Adolescent smoking has continued to climb, at a time when adult smoking has fallen. Drug use dipped slightly in the mid-1990s and then rose again. If violence has not increased as much as people feared, it has not fallen much either. Teen suicides have not fallen. If the pathologies in question were tuberculosis or polio, we would not be claiming much success on the basis of the results of these campaigns.

Phase 4: The Communitarian Phase—Back to the Future?

In the past decade a small group of researchers has begun arguing for a move away from programs targeting individual attitudes and behavior, and a return to interventions at the level of the community to improve the population’s health. This approach has been labeled “Communitarian” (Susser & Susser, 1996) in line with a parallel movement in political philosophy (Etzioni, 1996; Tam, 1998).

The first reason for this shift is the limited success of the “individual behavior change” approach, discussed earlier. At a recent meeting of the American College of Epidemiology, Leonard Syme, one of the heroes of modern prevention trials, concluded that interventions costing the United States over $300 million have produced almost no measurable reduction in cardiovascular mortality (Syme, 1998). It has also become clear that gains in some groups have been offset by losses in others: men have reduced their smoking, but women and children have not; the upper classes have controlled their weight, but the
lower classes have not. While life expectancy is increasing, it is doing so more slowly among the poor than among the rich, so that the differential is increasing (Backlund, Sorelie, & Johnson, 1996). The same thing is found in the infectious disease area; efforts to control the spread of AIDS in the United States through behavioral interventions, successful for several years, appear to be losing their effectiveness, and the incidence of new cases is rising again, especially in poor and minority populations (CDC, 1996).

A second factor that has forced a rethinking of public health policies is the extraordinary fall in life expectancy in parts of Eastern Europe in the years immediately preceding and following the collapse of the Soviet empire. Life expectancy for men in Russia fell from 64 years in 1990 to 58 years in 1994 (Notzon, Komarov, Ermakov, Sempson, Marks, & Sempos, 1998). Cardiovascular disease was the main cause of death, but infectious diseases thought to be under firm control, such as tuberculosis, reemerged as major threats. Clearly, these tragedies cannot be ascribed to failures of individual-based public health strategies; their causes must lie somewhere in the breakdown of social organization that preceded and followed the fall of the Berlin Wall.

Third, some uncomfortable critics began to point out the moral ambiguity inherent in policies that often had the effect of moving, rather than removing, a risk factor. For example, in the United States the emphasis on giving up smoking as a way to control the public health damage from cigarettes ignored until very recently the tobacco industry’s responsibility for producing a health-damaging product, and thus gave the industry time and encouragement to “shift its promotional activities to developing countries, so that more people are exposed to tobacco smoke than ever before” (Pearce, 1996, p. 680). The same can be said about industrial pollution; wealthier parts of the United States have exported the health risks to the poorer, mainly Southern states, or to countries such as China and Mexico (Pearce, Matos, Vainio, Boffetta, & Kogevinas, 1994).

The fourth force behind the change in paradigm sprang from the observation that the social class distribution of the chronic degenerative diseases was changing. For example, Michael Marmot showed that in 1951 heart disease was more common in men of the two highest social classes of the British five-level occupational grading system, but by 1961 it was more common in men of the two lowest classes. A similar, but less pronounced, change was observed for women (Marmot, Adelstein, Robinson, & Rose, 1978). While the earliest studies confirming this social class gradient in mortality and morbidity across all developed countries focused on class gradients in health-related behaviors such as smoking, diet, and exercise, later studies noted that even after controlling for health behaviors, income, and education, people lower in the social “pecking order” had worse health and died younger from chronic and degenerative diseases, homicide, gun violence, and suicide.

Income inequality and public health

In an important extension to the work on poverty and mortality, several recent studies have shown that while expectancy within a country was correlated with income, differences in average life expectancy between developed nations (and, within the United States, between states) showed only a low correlation with average income but a high correlation with income inequality within each country (Brunner, 1997; Ford, Ecob, Hunt, Macintyre, & West, 1994; Kaplan, Pamuk, Lynch, Cohen, & Balfour, 1996; Kawachi & Kennedy, 1997; Keating & Hertzman, 1999; Kennedy, Kawachi, Glass, & Prothrow-Stith, 1998; Kennedy, Kawachi, Lochner, Jones, & Prothrow-Stith, 1997; Kennedy, Kawachi, Prothrow-Stith, Lochner, & Gupta, 1998). For example, Kennedy and colleagues have demonstrated that differences among states in the age-adjusted homicide rate, firearm homicide rate, firearm assault rate, and firearm robbery rate, adjusting for median income and firearm availability in each state, are highly associated with income inequality (Kennedy, Kawachi, Prothrow-Smith, et al., 1998). These data have been used by Communitarians to argue that the health effects of poverty do not simply have to be accepted as an inescapable fact.
of life; things can be done to ameliorate them at the level of the community.

Primary prevention and developmental psychopathology. Primary prevention programs to prevent the development of psychiatric disorder would function like fluoride in the water supply, or pasteurization of milk, or compulsory seat belts in cars; everyone would be required to use them, and as a result some people would be protected. Primary prevention programs can be expensive, since everyone receives them, but on the other hand no resources are needed to single out those most likely to benefit, and no one is stigmatized as “high risk.”

One way to consider primary prevention from the viewpoint of developmental psychopathology is to think about the key developmental tasks or issues of various stages of childhood and adolescence, in terms of environmental risk factors that might be most dangerous at each stage. For this discussion, we assume that for most children in the United States the “average expectable environment” required for normal physical development is available (Darwin, 1864; Ho, 1984; Scarr & McCartney, 1983; Winnicott, 1989). The questions for each developmental stage are (a) What (if anything) is needed for normal psychological development beyond what is necessary for physical development? (b) What are the effects of less than “adequate” environments? and (c) What would be the appropriate public health response at the level of primary (universal) interventions? Answering these questions in full requires an extensive program of literature review and empirical research, which public health and prevention scientists have yet to provide. Here we take a single example: primary prevention to support optimal mental health and development during the 1st year of life.

In the 1st year, biological regulation and attachment are key issues (Sroufe & Rutter, 1984). Primary interventions that might be expected to support these processes could be encapsulated as those supporting the amount of time that the child can spend with the primary caregiver, given that time together is the irreducible requirement for forming a relationship. Thus, income support for new mothers, as practiced in many European countries and Australia, would be relevant, as would job se-
curity guarantees, increased maternity leave, and paternity leave. Other kinds of primary prevention might be directed toward the quality of time spent with caregivers—for example, the expansion of small “street-corner” parks, or the encouragement of informal baby groups to give parents company, advice, and role models. All of these operate at the level of federal, state, or local community change rather than being directly aimed at individual behavioral change. It can be argued that these measures have nothing to do with “public health”; these are issues of economics or public amenity. The same arguments were raised about many primary prevention interventions when they were first introduced, such as restrictions on hours of work or a minimum employment age (Hodgkinson, 1973). Another way to express this approach to primary prevention is to use the language of “social capital” (Coleman, 1994); communities can choose to “invest” in children’s development in the hope that the investment will pay off later by reducing the social and economic costs of mental illness.

Targeted interventions and developmental psychopathology. Secondary or targeted interventions single out high-risk groups for services that others do not receive or have to pay for out of their own pockets. Examples are early intervention programs for low-birthweight or other high-risk infants and their parents (e.g., Olds & Kitzman, 1990; Ramey, Bryant, Wasik, Sparling, Fendt, & Lavange, 1992), some of which have shown considerable short-term or long-term success. In the language of prevention science, these successful programs have been selective preventive interventions, “targeted to individuals or a sub-group of the population whose risk of developing mental disorders is significantly higher than average” (National Institute of Mental Health, 1998, p. 17). So far, most of these programs have only been implemented as trials or demonstration programs; none has been applied to every “high-risk” child in the community (Head Start comes closest to this). Such programs are known be more effective in experimental or demonstration settings than similar efforts applied in the “real world” (Weiss & Weisz, 1990; Weisz, Donenberg, Han, & Kauneckis, 1994; Weisz, Weiss, & Donenberg, 1992; Weisz, Weiss, Han, Granger, & Morton, 1995). Other problems with secondary or targeted prevention programs are that they are notoriously difficult to evaluate in the “real world,” to move from the demonstration stage into the general population, and to keep going at a high level of effectiveness once the charismatic leaders who put them in place have moved on (Sechrest, 1985).

Conclusions, Recommendations, and Implications for Policy

We started this paper by pointing out that most clinicians (and clinical researchers) have been trained to think exclusively within a model of health care that deals with illness at the level of the individual seeking treatment. The clinician has no professional responsibility for anyone, sick or well, who does not come for treatment. We have argued, taking Table 1 as a framework for the argument, that the clinical model’s view of dealing with illness has always been, and continues to be, applicable mainly to cure and care—that is, to the treatment of the “socially safe” categories of illness, whether acute or long term, (or, in some cases, the care of the severely ill within controlled environments such as psychiatric hospitals). As more is learned about them, specific disorders can move—as, for example, epilepsy has—from socially dangerous, untreatable conditions requiring control by isolation to chronic but “socially safe,” often treatable conditions dealt with by clinicians in the community. However, there is still a large group of conditions for which “cure” is still only a hope rather than an expectation, and a somewhat overlapping group of conditions that can create risk to the rest of the population.

Unfortunately, evidence is accumulating that the psychopathologies of childhood are rarely single episodes but frequently show powerful continuities throughout childhood and into adulthood. Currently most of the data are retrospective (Burke, Burke, Regier, & Rae, 1990; Christie, Burke, Regier, Rae,
Boyd, & Locke, 1988; Neumark & Anthony, 1997; Robins & Price, 1991), but the limited prospective data available show the same thing (Cohen, Cohen, & Brook, 1993; Costello & Angold, 1995; Feehan, McGee, & Williams, 1993). Furthermore, these disorders of childhood do not always fall into the “socially safe” categories. For example, it is clear from a review of longitudinal studies that psychiatric conditions occurring between ages 6 and 14 years significantly increase the risk of a child’s committing serious delinquency at ages 15–25 years (Lipsey & Derzon, 1998). There is also a high rate of psychiatric disorder in children who attempt or commit suicide (Fergusson & Lynskey, 1995; Lewinsohn, Rohde, & Seeley, 1993; Ohring, Apter, Ratsoni, Weizman, Tyano, & Plutchik, 1996; Patton, Harris, Carlin, Hibbert, Coffey, Schwartz, & Bowes, 1997; Reinherz, Giaconia, Silverman, Friedman, Pakiz, Frost, & Cohen, 1995; Suominen, Henriksson, Suokas, Isometsä, Ostamo, & Lönnqvist, 1996). Thus the dual responsibilities of public health—prevention and control—will continue to be relevant to child psychopathology even in a new era in which, as we hope and expect, treatments to care for and cure specific disorders increase in range and effectiveness.

As Table 1 indicates, the shift from control to prevention, which first began more than 100 years ago for the infectious diseases, has been a long time coming to child psychopathology. But the agencies responsible for disease prevention (as well as control) are now beginning to look seriously at this area. The history of public health in the control and prevention of infectious and noninfectious diseases gives us a long list of methods that might be applied to the prevention of child psychopathology, ranging from the person-focused behavioral change programs of recent decades to new—old strategies of investment in social capital to support the critical developmental tasks of children and families. In the new millennium, we can hope that public health’s responsibility for controlling socially dangerous mentally illness will dwindle away, while its role in prevention expands along with improved understanding of what can be prevented, when, and how.

Some of the social policy changes needed to bring about the shift from control to prevention are already taking place. A key event has been the identification of several psychiatric disorders among the diseases causing the highest rates of disability adjusted life years (DALYs) in the World Health Organization’s studies of the global burden of disease (Murray & Lopez, 1996). For the first time the WHO, and in the United States the CDC, have begun to treat mental illness as a major public health problem. Second, we are beginning to realize the importance of treating mental illness as a responsibility of primary care providers as well as specialists. The Surgeon General, in his 1999 Report on Mental Health (U.S. Public Health Service, Office of the Surgeon General, 1999), identified primary care as one of the most important areas for developing mental health services in the next decade. However, if the past history of public health is any guide to its future role in mental health, we can expect some lively battles before we learn to see a healthy environment for emotional and behavioral development as a communal good as worthy of public investment as drains and sewers.

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