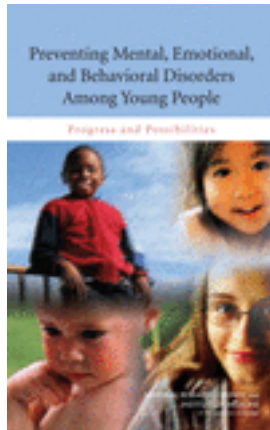


Free Executive Summary



Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities

Mary Ellen O'Connell, Thomas Boat, and Kenneth E. Warner, Editors; Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth and Young Adults: Research Advances and Promising Interventions; Institute of Medicine; National Research Council

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For multi-user PDF licensing, please contact customer service. Mental health and substance use disorders among children, youth, and young adults are major threats to the health and well-being of younger populations which often carryover into adulthood. The costs of treatment for mental health and addictive disorders, which create an enormous burden on the affected individuals, their families, and society, have stimulated increasing interest in prevention practices that can impede the onset or reduce the severity of the disorders. Prevention practices have emerged in a variety of settings, including programs for selected at-risk populations (such as children and youth in the child welfare system), school-based interventions, interventions in primary care settings, and community services designed to address a broad array of mental health needs and populations. Preventing Mental, Emotional, and Behavioral Disorders Among Young People updates a 1994 Institute of Medicine book, Reducing Risks for Mental Disorders, focusing special attention on the research base and program experience with younger populations that have emerged since that time. Researchers, such as those involved in prevention science, mental health, education, substance abuse, juvenile justice, health, child and youth development, as well as policy makers involved in state and local mental health, substance abuse, welfare, education, and justice will depend on this updated information on the status of research and suggested directions for the field of mental health and prevention of disorders.

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Summary

Several decades of research have shown that the promise and potential lifetime benefits of preventing mental, emotional, and behavioral (MEB) disorders are greatest by focusing on young people and that early interventions can be effective in delaying or preventing the onset of such disorders. National priorities that build on this evidence base should include (1) assurance that individuals who are at risk receive the best available evidence-based interventions prior to the onset of a disorder and (2) the promotion of positive MEB development for all children, youth, and young adults.

A number of promotion and prevention programs are now available that should be considered for broad implementation. Although individuals who are already affected by a MEB disorder should receive the best evidence-based treatment available, interventions before the disorder occurs offer the greatest opportunity to avoid the substantial costs to individuals, families, and society that these disorders entail.

Most MEB disorders have their roots in childhood and youth. Among adults reporting a MEB disorder during their lifetime, more than half report the onset as occurring in childhood or adolescence. In any given year, the percentage of young people with these disorders is estimated to be between 14 and 20 percent. MEB issues among young people—including both diagnosable disorders and other problem behaviors, such as early drug or alcohol use, antisocial or aggressive behavior, and violence—have enormous personal, family, and societal costs. The annual quantifiable cost of such disorders among young people was estimated in 2007 to be \$247 billion. In addition, MEB disorders among young people interfere with their abil-

ity to accomplish normal developmental tasks, such as establishing healthy interpersonal relationships, succeeding in school, and transitioning to the workforce. These disorders also affect the lives of their family members.

A 1994 report by the Institute of Medicine (IOM), *Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research*, highlighted the promise of prevention. In response to a subsequently burgeoning research base and an increasing understanding of the developmental pathways that lead to MEB problems, the Substance Abuse and Mental Health Services Administration, the National Institute of Mental Health, the National Institute on Drug Abuse, and the National Institute on Alcohol Abuse and Alcoholism requested a study from the National Academies to review the research base and program experience since that time, focusing on young people. The Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth, and Young Adults was formed under the auspices of the Board on Children, Youth, and Families to conduct this review (see Box S-1 for the complete charge).

The 1994 IOM report reaffirmed a clear distinction between prevention and treatment. The current committee supports this distinction. The prevention of disability, relapse, or comorbidity among those with currently existing disorders are characteristics and expectations of good treatment. Although treatment has preventive aspects, it is still treatment, not prevention. The strength of prevention research using this concept of prevention, coupled with the need for focused research on risks prior to the onset of illness, warrants the field's continued use of a typology focused on interventions for those who do not have an existing disorder. Interventions classified as *universal* (population-based), *selective* (directed to at-risk groups or individuals), or *indicated* (targeting individuals with biological markers, early symptoms, or problematic behaviors predicting a high level of risk) are important complementary elements of prevention. Going beyond the 1994 IOM report, we strongly recommend the inclusion of mental health promotion in the spectrum of mental health interventions.

The volume and quality of research since 1994 have increased dramatically. Clear evidence is available to identify many factors that place certain young people or groups of young people at greater risk for developing MEB disorders, as well as other factors that serve a protective role. Box S-2 summarizes key advances since 1994.

A number of specific preventive interventions can modify risk and promote protective factors that are linked to important determinants of mental, emotional, and behavioral health, especially in such areas as family functioning, early childhood experiences, and social skills. Interventions are also available to reduce the incidence of common disorders or problem behaviors, such as depression, substance use, and conduct disorder. Some interventions reduce multiple disorders and problem behaviors as well as

BOX S-1
Committee Charge

- Review promising areas of research that contribute to the prevention of mental disorders, substance abuse, and problem behaviors among children, youth, and young adults (to age 25), focusing in particular on genetics, neurobiology, and psychosocial research as well as the field of prevention science.
- Highlight areas of key advances and persistent challenges since the publication of the 1994 IOM report *Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research*.
- Examine the research base within a developmental framework throughout the life span, with an emphasis on prevention and promotion opportunities that can improve the mental health and behavior of children, youth, and young adults.
- Review the current scope of federal efforts in the prevention of mental disorders and substance abuse and the promotion of mental health among at-risk populations, including children of parents with substance abuse or mental health disorders, abused and neglected children, children in foster care, children whose parents are absent or incarcerated, and children exposed to violence and other trauma, spanning the continuum from research to policy and services.
- Recommend areas of emphasis for future federal policies and programs of research support that would strengthen a developmental approach to a prevention research agenda as well as opportunities to foster public- and private-sector collaboration in prevention and promotion efforts for children, youth, and young adults, particularly in educational, child welfare, and primary care settings.
- Prepare a final report that will provide a state-of-the-art review of prevention research.

increase healthy functioning. While the evidence on the costs and benefits of interventions is limited, it suggests that many are likely to have benefits that exceed costs.

In addition, a number of interventions have demonstrated efficacy to reduce risk for children exposed to serious adversities, such as maternal depression and family disruption. Like family adversities, poverty is a powerful risk factor, and its reduction would have far-reaching effects for multiple negative mental, emotional, and behavioral outcomes. Numerous policies and programs target poverty as a risk factor by giving priority to low-income children and their families and by promoting resources for healthy functioning of those living in poverty through, for example, early childhood education programs, programs to strengthen families and schools, and efforts to reduce neighborhood violence.

The 1994 IOM report expressed hope that identification of the genetic

BOX S-2
Key Areas of Progress Since 1994

- Evidence that MEB disorders are common and begin early in life.
- Evidence that the greatest prevention opportunity is among young people.
- Evidence of multiyear effects of multiple preventive interventions on reducing substance abuse, conduct disorder, antisocial behavior, aggression, and child maltreatment.
- Evidence that the incidence of depression among pregnant women and adolescents can be reduced.
- Evidence that school-based violence prevention can reduce the base rate of aggressive problems in an average school by one-quarter to one-third.
- Promising evidence regarding potential indicated preventive interventions targeting schizophrenia.
- Evidence that improving family functioning and positive parenting serves as a mediator of positive outcomes and can moderate poverty-related risk.
- Emerging evidence that school-based preventive interventions aimed at improving social and emotional outcomes can also improve academic outcomes.
- Evidence that interventions that target families dealing with such adversities as parental depression and divorce demonstrate efficacy in reducing risk for depression among children and increasing effective parenting.
- Evidence from some preventive interventions that benefits exceed costs, with the available evidence strongest for early childhood interventions.
- Evidence of interactions between modifiable environmental factors and the expression of genes linked to behavior.
- Greater understanding of the biological processes that underlie both normal brain function and the pathophysiology of MEB disorders.
- Emerging opportunities for the integration of genetics and neuroscience research with prevention research.
- Advances in implementation science, including recognition of implementation complexity and the importance of relevance to the community.

determinants of mental illnesses was on the horizon. It is now recognized that most disorders are not caused by a small number of genes and that this area of research is highly complex. An emerging area of research involves the influence of the environment on the expression of a specific gene or set of genes, the importance of epigenetic modification of gene expression by experience, and direct injury to neural systems that give rise to illness. This exciting new knowledge has the potential to inform future preventive interventions.

The future of prevention requires combined efforts to (1) apply existing knowledge in ways that are meaningful to families and communities and (2) pursue a rigorous research agenda that is aimed at improving both the quality and implementation of interventions across diverse communities.

PUTTING KNOWLEDGE INTO PRACTICE

No concerted federal presence or clear national leadership currently exists to advance the use of prevention and promotion approaches to benefit the mental health of the nation's young people. Infusing a prevention focus into the public consciousness requires development of a shared public vision and attention at a higher national level than currently exists.

Recommendation: The federal government should make the healthy mental, emotional, and behavioral development of young people a national priority, establish public goals for the prevention of specific MEB disorders and for the promotion of healthy development among young people, and provide needed research and service resources to achieve these aims. (13-1)

Mental, emotional, and behavioral disorders among young people burden not only traditional mental health and substance abuse programs, but also multiple other service systems that support young people and their families—most notably the education, child welfare, primary medical care, and juvenile justice systems. According to one estimate, more than a quarter of total service costs for children who have these disorders are incurred in the school and juvenile justice systems. Similarly, a quarter of pediatric primary care visits address behavioral issues. The cost savings of prevention programs likewise are experienced in a range of service systems. A national-level response therefore requires the creation of a designated entity with the authority to establish common prevention goals, to direct relevant federal resources, and to influence the investment of state, local, or private resources toward these goals as well as coordination and leadership across and within multiple federal agencies.

Recommendation: The White House should create an ongoing mechanism involving federal agencies, stakeholders (including professional associations), and key researchers to develop and implement a strategic approach to the promotion of mental, emotional, and behavioral health and the prevention of MEB disorders and related problem behaviors in young people. The U.S. Departments of Health and Human Services, Education, and Justice should be accountable for coordinating and aligning their resources, programs, and initiatives with this strategic approach and for encouraging their state and local counterparts to do the same. (13-2)

Federal resources should support the continued evaluation and refinement of programs to increase understanding of what works for whom and

when. The braiding of programmatic funding from service agencies, such as the Substance Abuse and Mental Health Services Administration, with evaluation funding from research agencies, such as the National Institute of Mental Health, would advance these efforts. Establishment of an ongoing national monitoring system that is capable of regular reporting on the incidence and prevalence of specific disorders, as well as the rates of exposure to key risk and protective factors, is needed to assess performance compared with national goals.

Determining what is “evidence-based” is an important component of ensuring that these efforts have a positive impact on the lives of young people. Priority should be given to programs that have been tested and replicated in real-world environments, that have reasonable cost, and that are supported by tools that will help to implement key elements of the programs with fidelity. Federal and state agencies should not endorse programs that lack empirical evidence solely on the basis of general community endorsement. In turn, states and communities need to consider the relevance of available models to their own needs, priorities, and cultural contexts. They should evaluate programs and systems that they adopt, so as to continue to build the prevention knowledge base. Programs should also engage in and document the results of quality improvement efforts to continuously enhance program outcomes.

Recommendation: States and communities should develop networked systems to apply resources to the promotion of mental health and prevention of MEB disorders among their young people. These systems should involve individuals, families, schools, justice systems, health care systems, and relevant community-based programs. Such approaches should build on available evidence-based programs and involve local evaluators to assess the implementation process of individual programs or policies and to measure community-wide outcomes. (13-3)

Concurrently, concerted attention should be paid to developing a workforce that has the knowledge base and skill sets necessary to research, implement, and disseminate relevant interventions in diverse community contexts and cultures. Training and certification programs for the next generation of professionals working with young people should include the latest knowledge of the early trajectories of disorders and of prevention approaches in a life-course framework. Box S-3 provides a list of other specific recommendations relevant to putting knowledge into practice.

BOX S-3

Recommendations: Putting Knowledge into Practice

Funding and Implementation

- Congress should establish a set-aside for prevention services and innovation in the Community Mental Health Services Block Grant, similar to the set-aside in the Substance Abuse Prevention and Treatment Block Grant. (12-1)
- The U.S. Departments of Health and Human Services, Education, and Justice should braid funding of research and practice so that the impact of programs and practices that are being funded by service agencies (e.g., the Substance Abuse and Mental Health Services Administration, the Office of Safe and Drug Free Schools, the Office of Juvenile Justice and Delinquency Prevention) are experimentally evaluated through research funded by other agencies (e.g., the National Institutes of Health, the Institute of Education Sciences, the National Institute of Justice). This should include developing appropriate infrastructure through which evidence-based programs and practices can be delivered and evaluated. (12-2)
- The U.S. Departments of Health and Human Services, Education, and Justice should fund states, counties, and local communities to implement and continuously improve evidence-based approaches to mental health promotion and prevention of MEB disorders in systems of care that work with young people and their families. (12-3)
- The U.S. Departments of Health and Human Services, Education, and Justice should develop strategies to identify communities with significant community-level risk factors and target resources to these communities. (8-2)
- Researchers and community organizations should form partnerships to develop evaluations of (1) adaptation of existing interventions in response to community-specific cultural characteristics; (2) preventive interventions designed based on research principles in response to community concerns; and (3) preventive interventions that have been developed in the community, have demonstrated feasibility of implementation and acceptability in that community, but lack experimental evidence of effectiveness. (11-4)
(Also in Box S-5, Recommendations for Researchers)
- Federal and state agencies should prioritize the use of evidence-based programs and promote the rigorous evaluation of prevention and promotion programs in a variety of settings in order to increase the knowledge base of what works, for whom, and under what conditions. The definition of evidence-based should be determined by applying established scientific criteria. (12-4)

Data Collection and Monitoring

- The U.S. Department of Health and Human Services should be required to provide (1) annual data on the prevalence of MEB disorders in young people, using an accepted current taxonomy (e.g., the *Diagnostic and Statistical Manual of Mental Disorders*, the *International Statistical Classification of Diseases*) and (2) data that can provide indicators and trends for key risk and protective factors that serve as significant predictors for MEB disorders. (2-1)

continued

BOX S-3 Continued

- The Substance Abuse and Mental Health Services Administration should expand its current data collection to include measures of service use across multiple agencies that work with vulnerable populations of young people. (2-2)

Workforce Development

- Training programs for relevant health (including mental health), education, and social work professionals should include prevention of MEB disorders and promotion of mental, emotional, and behavioral health. National certifying and accrediting bodies for training should set relevant standards using available evidence on identifying and managing risks and preclinical symptoms of MEB disorders. (12-6)
- The U.S. Departments of Health and Human Services, Education, and Justice should convene a national conference on training in prevention and promotion to (1) set guidelines for model prevention research and practice training programs and (2) contribute to the development of training standards for certifying trainees and accrediting prevention training programs in specific disciplines, such as health (including mental health), education, and social work. (12-7)
- Once guidelines have been developed, the U.S. Departments of Health and Human Services, Education, and Justice should set aside funds for competitive prevention training grants to support development and dissemination of model interdisciplinary training programs. Training should span creation, implementation, and evaluation of effective preventive interventions. (12-8)

NOTE: The first number refers to the chapter in which the recommendation appears; the second number references its order of appearance in the chapter.

CONTINUING A COURSE OF RIGOROUS RESEARCH

The National Institutes of Health (NIH) fund research related to the prevention of MEB disorders through multiple centers and institutes. A significant body of research now points to common trajectories across multiple disorders and highlights the potential for interventions to affect multiple disorders. However, no definition of prevention is shared across agencies, no NIH-wide planning or accounting of prevention spending exists, and there are no common research priorities. In addition, most NIH research centers address single disorders. The ability of prevention research to approach issues from a comprehensive developmental perspective would be aided by cross-institute dialogue and by coordinated funding for interventions that address co-occurring outcomes, common risk and protective factors, and shared developmental pathways.

Recommendation: The National Institutes of Health, with input from other funders of prevention research, should develop a comprehensive 10-year research plan targeting the promotion of mental health and prevention of both single and comorbid MEB disorders. This plan should consider current needs, opportunities for cross-disciplinary and multi-institute research, support for the necessary research infrastructure, and establishment of a mechanism for assessing and reporting progress against 10-year goals. (13-5)

Continued investment in research can lead to interventions that will mitigate risks and strengthen protective factors prior to the onset of disorders and that will help to set young people on an appropriate developmental course. Substantial evidence has shown that the incidence of many disorders and problem behaviors can be reduced significantly, thereby justifying the need for dedicated efforts to refine these approaches.

Recommendation: Research funders¹ should establish parity between research on preventive interventions and treatment interventions. (13-4)

The report makes a number of specific recommendations aimed at identifying areas of focus for future research in a 10-year plan that will inform future federal, state, and local initiatives (see Box S-4). The following focus areas should serve as the research priorities for both federal agencies and foundations, and they should stimulate prevention partnerships:

- **Approaches to screening in conjunction with intervention.** Screening can take place at multiple levels, including the level of the population to identify communities at risk (e.g., high-poverty neighborhoods), the level of groups to identify those at risk (e.g., children with depressed parents), and the level of individuals to identify those who have either behavioral symptoms or biological markers indicating the likelihood of developing a disorder (e.g., young children who exhibit highly aggressive behavior). However, screening without community acceptance and sufficient service capacity to respond to identified needs is of limited value. Models are needed that partner screening with implementation of evidence-based interventions.
- **Implementation.** Implementation has only recently been identified as an area of research in its own right. The effectiveness of state

¹The term “research funders” is used throughout the recommendations to refer to federal agencies and foundations that fund research on mental health promotion or prevention of MEB disorders.

BOX S-4

Recommendations: Continuing a Course of Rigorous Research

Overall

- Research funders* should fund preventive intervention research on (1) risk and protective factors for specific disorders; (2) risk and protective factors that lead to multiple mental, emotional, and behavioral problems and disorders; and (3) promotion of individual, family, school, and community competencies. (4-3)
- Research funders should invest in studies that (1) aim to replicate findings from earlier trials, (2) evaluate long-term outcomes of preventive interventions across multiple outcomes (e.g., disorders, academic outcomes), and (3) test the extent to which each prevention program is effective in different race, ethnic, gender, and developmental groups. (10-1)
- The National Institutes of Health and other federal agencies should increase funding for research on prevention and promotion strategies that reduce multiple MEB disorders and that strengthen accomplishment of age-appropriate developmental tasks. High priority should be given to increasing collaboration and joint funding across institutes and across federal agencies that are responsible for separate but developmentally related outcomes (e.g., mental health, substance use, school success, contact with justice). (12-5)
- Research funders should strongly support research to improve the effectiveness of current interventions and the creation of new, more effective interventions with the goal of wide-scale implementation of these interventions. (7-2)

Screening Linked to Interventions

- Research funders should support a rigorous research agenda to develop and test community-based partnership models involving systems such as education (including preschool), primary care, and behavioral health to screen for risks and early mental, emotional, and behavioral problems and assess implementation of evidence-based preventive responses to identified needs. (8-1)

Implementation

- The National Institutes of Health should be charged with developing methodologies to address major gaps in current prevention science approaches, including the study of dissemination and implementation of successful interventions. (10-2)
- Research funders should fund research and evaluation on (1) dissemination strategies designed to identify effective approaches to implementation of evidence-based programs, (2) the effectiveness of programs when implemented by communities, and (3) identification of core elements of evidence-based programs, dissemination, and institutionalization strategies that might facilitate implementation. (11-1)
- Research funders should fund research on state- or community-wide implementation of interventions to promote mental, emotional, or behavioral health

or prevent MEB disorders that meet established scientific standards of effectiveness. (11-2)

Adaptation

- Research funders should prioritize the evaluation and implementation of programs to promote mental, emotional, or behavioral health or prevent MEB disorders in ethnic minority communities. Priorities should include the testing and adoption of culturally appropriate adaptations of evidence-based interventions developed in one culture to determine if they work in other cultures and encouragement of adoption when they do. (11-3)

Neuroscience Linkages

- Research funders, led by the National Institutes of Health, should dedicate more resources to formulating and testing hypotheses of the effects of genetic, environmental, and epigenetic influences on brain development across the developmental span of childhood, with a special focus on pregnancy, infancy, and early childhood. (5-1)
- The National Institutes of Health should lead efforts to study the feasibility and ethics of using individually identified genetic and other neurobiological risk factors to target preventive interventions for MEB disorders. (5-4)
- Research funders, led by the National Institutes of Health, should dedicate resources to support collaborations between prevention scientists and basic and clinical developmental neuroscientists. Such collaborations should include both basic science approaches and evaluations of the effects of prevention trials on neurobiological outcomes, as well as the use of animal models to identify and test causal mechanisms and theories of pathogenesis. (5-2)
- Research funders, led by the National Institutes of Health, should fund research consortia to develop multidisciplinary teams with expertise in developmental neuroscience, developmental psychopathology, and preventive intervention science to foster translational research studies leading to more effective prevention efforts. (5-3)

Economic Analyses

- The National Institutes of Health, in consultation with government agencies, private-sector organizations, and key researchers, should develop outcome measures and guidelines for economic analyses of prevention and promotion interventions. The guidelines should be widely disseminated to relevant government agencies and foundations and to prevention researchers. (9-1).
- Funders of intervention research should incorporate guidelines and measures related to economic analysis in their program announcements and provide supplemental funding for projects that include economic analyses. Once available, supplemental funding should also be provided for projects with protocols that incorporate recommended outcome measures. (9-2)

continued

BOX S-4 Continued

Competencies

- Research funders, led by the National Institutes of Health, should increase funding for research on the etiology and development of competencies and healthy functioning of young people, as well as how healthy functioning protects against the development of MEB disorders. (4-1)
- The National Institutes of Health should develop measures of developmental competencies and positive mental health across developmental stages that are comparable to measures used for MEB disorders. These measures should be developed in consultation with leading research and other key stakeholders and routinely used in mental health promotion intervention studies. (4-2)

Technology

- Research funders should support research on the effectiveness of mass media and Internet interventions, including approaches to reducing stigma. (7-3)

Other Research Gaps

- Research funders should address significant research gaps, such as preventive interventions with adolescents and young adults, in certain high-risk groups (e.g., children with chronic diseases, children in foster care), and in primary care settings; interventions to address poverty; approaches that combine interventions at multiple developmental phases; and approaches that integrate individual, family, school, and community-level interventions. (7-4)

NOTE: The term “research funders” is used to refer to federal agencies and foundations who fund research on mental health promotion or prevention of MEB disorders.

and community-level implementation processes and approaches is one of the frontiers of future prevention research.

- **Analysis of adaptation.** Little research has addressed factors that either facilitate or impede the transfer or adaptation of evidence-based interventions that have been developed for a single setting to a range of other ethnic, linguistic, and cultural groups. Additional research is needed to ensure the availability of interventions that are culturally relevant and that have been informed by the nation’s many ethnic, linguistic, and cultural environments.
- **Linkages with neuroscience.** Environment and experience have powerful effects on modifying brain structure and function, including influences on the expression of genes and their protein products that can dictate or alter the course of development. Cross-disciplinary collaborations that formulate and test hypotheses concerning the

roles and interactions among multiple genetic and epigenetic influences on brain development may lead to strategies to tailor preventive interventions to specific individuals or groups of individuals at greatest risk.

- **Economic analyses.** The challenges of conducting economic analyses and the relative novelty of this type of analysis in the prevention field suggest the need for guidelines for conducting economic analyses (cost-effectiveness and cost-benefit analyses) as well as provision of incentives to encourage their inclusion in study designs. Evidence of the economic benefits of preventive interventions will make them more valuable to communities as they decide about the distribution of limited resources.
- **Competencies.** Competencies related to age-appropriate developmental tasks in the family, school, peer group, and community play an important role in mental health. The etiology and development of competencies need to be better understood. Methods to assess the relative value and effects of different types of competencies on development of and protection from disorders require attention.
- **Use of technology.** The Internet, mass media, and other current technologies (e.g., CD-ROMs) represent potential mechanisms to reach large segments of the population. Research in this area should be conducted to determine whether such media can be used effectively to promote mental health or to prevent disorders.
- **Other research gaps.** Despite dramatic increases in prevention research, significant gaps remain regarding populations and settings to be targeted.

Given the modest effect sizes of some interventions, research funders are encouraged to support research to improve the breadth of the application and effectiveness of current evidence-based interventions and to develop new, more effective interventions. They should also direct researchers to measure outcomes over time, ideally across developmental periods, analyze multiple outcomes (including the effects on multiple disorders), and assess iatrogenic effects. Researchers in turn are encouraged to design interventions and evaluations that respond to these concerns (see Box S-5).

Finally, the gap is substantial between what is known and what is actually being done. The nation is now well positioned to equip young people with the skills, interests, assets, and health habits needed to live healthy, happy, and productive lives in caring relationships that strengthen the social fabric. This can be achieved by refining the science and by developing the infrastructure and large-scale collaborative systems that allow the equitable delivery of population-based preventive approaches. We call on the nation to build on the extensive research now available by implement-

BOX S-5
Recommendations for Researchers

- Research and interventions on the prevention of MEB disorders should focus on interventions that occur before the onset of disorder but should be broadened to include promotion of mental, emotional, and behavioral health. (3-1)
- Prevention researchers should broaden the range of outcomes included in evaluations of prevention programs and policies to include relevant MEB disorders and related problems, as well as common positive outcomes, such as accomplishment of age-appropriate developmental tasks (e.g., school, social, and work outcomes). They should also adequately explore and report on potential iatrogenic effects. (7-1)
- Researchers should include analysis of the costs and cost-effectiveness (and whenever possible cost-benefit) of interventions in evaluations of effectiveness studies (in contrast to efficacy trials). (9-3)
- Researchers and community organizations should form partnerships to develop evaluations of (1) adaptation of existing interventions in response to community-specific cultural characteristics; (2) preventive interventions designed based on research principles in response to community concerns; and (3) preventive interventions that have been developed in the community, have demonstrated feasibility of implementation and acceptability in that community, but lack experimental evidence of effectiveness. (11-4)

ing evidence-based preventive interventions, testing their effectiveness in specific communities, disseminating principles in support of prevention, addressing gaps in the available research, and monitoring progress at the national, state, and local levels.

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Progress and Possibilities

Committee on the Prevention of Mental Disorders and Substance Abuse
Among Children, Youth, and Young Adults:
Research Advances and Promising Interventions

Mary Ellen O'Connell, Thomas Boat, and Kenneth E. Warner, *Editors*

Board on Children, Youth, and Families
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**COMMITTEE ON THE PREVENTION OF MENTAL DISORDERS
AND SUBSTANCE ABUSE AMONG
CHILDREN, YOUTH, AND YOUNG ADULTS:
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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the Report Review Committee of the NRC. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

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Mary Ellen O'Connell, *Study Director*
Committee on the Prevention of Mental
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*Only Appendix A is printed in this volume. The other appendixes are available online. Go to <http://www.nap.edu> and search for *Preventing Mental, Emotional, and Behavioral Disorders Among Young People*.

Preface

This report calls on the nation—its leaders, its mental health research and service provision agencies, its schools, its primary care medical systems, its community-based organizations, its child welfare and criminal justice systems—to make prevention of mental, emotional, and behavioral disorders and the promotion of mental health of young people a very high priority. By all realistic measures, no such priority exists today. The report therefore urges action at the highest levels to ensure that public health decision makers and the public understand the nature and magnitude of this problem; that research to prevent it is carefully coordinated and well funded; and that institutions and communities have the resources and the responsibility to promote the implementation of prevention interventions that can address shortfalls in the public response.

Mental, emotional, and behavioral disorders incur high psychosocial and economic costs for the young people who experience them, for their families, and for the society in which they live, study, and will work. Yet there is a significant imbalance in the nation's efforts to address such disorders. People await their emergence and then attempt to treat them, to cure them if possible, or to limit the damage they cause if not. This happens with any number of expensive interventions, ranging from psychiatric care to incarceration. Myopically, we devote minimal attention to preventing future disorders or the environmental exposures that increase risk.

This report builds on a highly valued predecessor, the 1994 Institute of Medicine (IOM) report entitled *Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research*. That report provided the basis for understanding prevention science, elucidating its then-existing

research base, and contemplating where it should go in the future. This report documents that an increasing number of mental, emotional, and behavioral problems in young people are in fact preventable. The proverbial ounce of prevention will indeed be worth a pound of cure: effectively applying the evidence-based prevention interventions at hand could potentially save billions of dollars in associated costs by avoiding or tempering these disorders in many individuals. Furthermore, devoting significantly greater resources to research on even more effective prevention and promotion efforts, and then reliably implementing the findings of such research, could substantially diminish the human and economic toll. This could be done, but as Hadorn¹ has observed, the basic tendency is to focus on “the rule of rescue . . . the powerful human proclivity to rescue endangered life.” As a society, we suffer from a collective health care myopia: we have not yet figured out how to balance rescue—which is after-the-fact treatment—with the less dramatic but often far more cost-effective and socially desirable prevention of the onset of a problem.

The very definition of prevention is itself a problem. The authors of the 1994 IOM report emphasized the need for clear definitions to guide the field. The authors proposed a new typology of prevention: *universal interventions*, which address the population at large, *selective interventions*, which target groups or individuals with an elevated risk, and *indicated interventions*, which target individuals with early symptoms or behaviors that are precursors for disorder but are not yet diagnosable. In essence, this typology of prevention was proposed as a set of interventions to target individuals and populations that do not currently have a disorder, with variations in exactly who is targeted. Yet ardent proponents of prevention, including members of the 1994 IOM committee, do not wish to exclude the prevention of disease relapse or disability from their conception of prevention.

While acknowledging the legitimacy of this perspective, our committee thinks that the disproportionate emphasis on treatment of existing conditions needs to be corrected. We propose a new emphasis on true prevention, which for the purposes of this report we define as occurring prior to the onset of disorder, as well as mental health promotion, discussed immediately below. We do not disparage society’s emphasis on treatment and indeed think that in the domain of mental health, far more resources should be devoted to the effort. Rather, we want to highlight the critical need for a more proactive, preventive focus on mental health.

The primary charge for this committee is prevention, but we add to our focus the emerging field of mental health promotion, an important

¹Hadorn, D.C. (1991, May 1). Setting health care priorities in Oregon: Cost-effectiveness meets the rule of rescue. *Journal of the American Medical Association*, 265(17), 2218-2225.

and largely ignored approach toward building healthy development in all young people. Prevention emphasizes the avoidance of risk factors; promotion strives to promote supportive family, school, and community environments and to identify and imbue in young people protective factors, which are traits that enhance well-being and provide the tools to avoid adverse emotions and behaviors. While research on promotion is limited, emerging interest and involvement in it and the potential it holds for enhancing health warrant its inclusion in the consideration of how the nation can improve its collective well-being.

The committee's focus on young people and the stigma associated with the term "mental disorder" led us to adopt the term "mental, emotional, and behavioral disorders" to encompass both disorders diagnosable using *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (DSM-IV) criteria and the problem behaviors associated with them, such as violence, aggression, and antisocial behavior. Many mental, emotional, and behavioral disorders of youth exist on a continuum and exert significant costs on the young people themselves, the people affected by them, and society at large. The term "mental, emotional, and behavioral disorders" encompasses mental illness and substance abuse, while including a somewhat broader range of concerns associated with problem behaviors and conditions in youth.

One factor lurks in the background of every discussion of the risks for mental, emotional, and behavioral disorders and antisocial behavior: poverty. Poverty in the United States often entails a range of material hardships, such as overcrowding, frequent moves (which often mean changes of school), poor schools, limited health care, unsafe and stressful environments, and sometimes lack of adequate food. All of these imperil cognitive, emotional, and behavioral development. Although not the focus of this report, there is evidence that changes in social policy that reduce exposure to these risks are at least as important for preventing mental, emotional, and behavioral disorders in young people as other preventive interventions. We are persuaded that the future mental health of the nation depends crucially on how, collectively, the costly legacy of poverty is dealt with.

As chairs of the committee that has produced this report, we have benefited immensely from the commitment, energy, and effort of two groups of people. We are grateful to the committee members, who demonstrated devotion to the subject of this report and to the arduous task of developing it. All committee members contributed to the writing of the report, and the "think tank" nature of our innumerable meetings, conference calls, and e-mail exchanges played enormously important roles in shaping both the structure and content of the report. We are deeply indebted, as well, to the National Academies' staff, who performed at a consistently high level all of the myriad tasks that are essential to compiling a large and complex

report such as this one. One staff member is particularly deserving of mention: Mary Ellen O'Connell, the study director, is the consummate Jill of all trades. From the inception of the study to the crossing of the final *t*, she directed all aspects of the committee's work with insight and across-the-board competence. We admire her incredible work ethic and express our jealousy at her apparent ability to work without sleep.

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Acronyms

ABCD	Assuring Better Child Health and Development
ABFM	American Board of Family Medicine
ACF	Administration for Children and Families of the U.S. Department of Health and Human Services
ACGME	Accreditation Council for Graduate Medical Education
ADAMHA	Alcohol, Drug Abuse, and Mental Health Administration, the predecessor to the Substance Abuse and Mental Health Services Administration
ADHD	attention deficit hyperactivity disorder
AHRQ	Agency for Healthcare Research and Quality of the U.S. Department of Health and Human Services
AILS	American Indian Life Skills Program
AIM	awareness, intervention, and methodology
AMERSA	Association for Medical Education and Research in Substance Abuse
ASPE	Office of the Assistant Secretary for Planning and Evaluation of the U.S. Department of Health and Human Services
ATP	Adolescent Transitions Program
AUD	alcohol use disorder
CAPT	Regional Centers for the Application of Prevention Technologies of the Substance Abuse and Mental Health Services Administration
CBA	cost-benefit analysis
CBPR	community-based participatory research

CBT	cognitive-behavioral therapy
CD	conduct disorder
CDC	Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services
CDISC	Computerized Diagnostic Interview Schedule for Children
CEA	cost-effectiveness analysis
CHAMP	Chicago HIV Adolescent Mental Health Program, renamed the Collaborative HIV Adolescent Mental Health Program when expanded beyond Chicago
CHAMP-SA	Collaborative HIV Adolescent Mental Health Program, South Africa
CMHS	Center for Mental Health Services of the Substance Abuse and Mental Health Services Administration
CMS	Centers for Medicare and Medicaid Services of the U.S. Department of Health and Human Services
CPC	Child-Parent Centers
CRISP	Computer Retrieval of Information on Scientific Projects of the National Institutes of Health
CSAP	Center for Substance Abuse Prevention of the Substance Abuse and Mental Health Services Administration
CTC	Communities That Care
DALY	disability-adjusted life year
DBD	disruptive behavior disorders
DHA	docosahexaenoic acid
DSM-IV	<i>Diagnostic and Statistical Manual of Mental Disorders</i> , 4th Edition
ED	U.S. Department of Education
EIFC	Early Intervention Foster Care
EPA	eicosapentaenoic acid
EPSDT	Early and Periodic Screening, Diagnostic, and Treatment
ESOL	English for Speakers of Other Languages
FY	fiscal year
GBG	Good Behavior Game
GSMS	Great Smoky Mountains Study
HFA	Healthy Families America
HFNY	Healthy Families New York
HHS	U.S. Department of Health and Human Services

HRSA	Health Resources and Services Administration of the U.S. Department of Health and Human Services
ICD-9	<i>International Statistical Classification of Diseases and Related Health Problems, 9th Edition</i>
IDEA	Individuals with Disabilities Education Act
IES	Institute of Education Sciences of the U.S. Department of Education
IOM	Institute of Medicine
LIFT	Linking Interests of Families and Teachers project
LST	Life Skills Training Program
MCHB	Maternal and Child Health Bureau of the U.S. Department of Health and Human Services
MDE	major depressive episode
MEB	mental, emotional, and behavioral
MI	motivational interviewing
MPP	Midwestern Prevention Program
MTF	Monitoring the Future
MTFC	multidimensional treatment foster care
NAMHC	National Advisory Mental Health Council
NASHP	National Academy of State Health Policy
NBP	New Beginnings Program
NCAST	Nursing Child Assessment Satellite Training
NCLB	No Child Left Behind Act of 2001
NCS	National Comorbidity Survey
NCS-R	National Comorbidity Survey-Replication
NECON	New England Coalition for Health Promotion and Disease Prevention
NFP	Nurse-Family Partnership
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Survey
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NICHD	National Institute of Child Health and Human Development
NIDA	National Institute on Drug Abuse
NIH	National Institutes of Health of the U.S. Department of Health and Human Services
NIJ	National Institute of Justice of the U.S. Department of Justice
NIMH	National Institute of Mental Health
NRC	National Research Council

NREPP	National Registry of Evidence-Based Programs and Practices of the Substance Abuse and Mental Health Services Administration
NSDUH	National Survey on Drug Use and Health
ODD	oppositional defiant disorder
OJJDP	Office of Juvenile Justice and Delinquency Prevention of the U.S. Department of Justice
PALS	Positive Attitudes Toward Learning in Schools
PATHS	Promoting Alternative Thinking Strategies
POP	Penn Optimism Program
PPN	Promising Practices Network
PPP	Penn Prevention Program
PROSPER	PROMoting School-community-university Partnerships to Enhance Resilience
PRP	Penn Resiliency Program
PSMG	Prevention Science and Methodology Group
PTC	Parenting Through Change
PTSD	posttraumatic stress disorder
PUP	Prohibition of Youth Possession, Use, or Purchase of Tobacco
QALY	quality-adjusted life year
SAMHSA	Substance Abuse and Mental Health Services Administration of the U.S. Department of Health and Human Services
SBD	sleep-related breathing disorder
SCHIP	State Children's Health Insurance Program
SDB	sleep-disordered breathing
SDFS	Safe and Drug-Free Schools Program of the U.S. Department of Education
SEL	social and emotional learning
SFP	Strengthening Families Program
SPR	Society for Prevention Research
SSDP	Seattle Social Development Program
SS/HS	Safe Schools Healthy Students Program of the U.S. Departments of Health and Human Services, Education, and Justice
TANF	Temporary Assistance for Needy Families
TLFB	Timeline Follow Back Interview
TPRCs	Transdisciplinary Prevention Research Centers of the National Institute on Drug Abuse

ACRONYMS

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Triple P	Positive Parenting Program
USPHS	U.S. Public Health Service
WHO	World Health Organization
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children
WISC-R	Wechsler Intelligence Scale for Children, Revised
YRBSS	Youth Risk Behavior Surveillance System

Glossary

Adaptation: The modification of evidence-based interventions that have been developed for a single ethnic, linguistic, and/or cultural group for use with other groups.

Adoption: The selection and incorporation of a prevention program into a service system.

Alcohol abuse: The consumption of alcohol despite negative consequences.

Alcohol dependence: The persistent consumption of alcohol despite negative consequences, often with a physiological dependence characterized by tolerance and/or symptoms of withdrawal.

Alcohol use disorder: An inclusive term referring to either alcohol abuse or alcohol dependence.

Comorbidity: The presence of one or more disorders in addition to a primary disorder.

Confound: A variable in an experiment or trial that may be related to observed effects and therefore may limit the ability to make inferences about causal effects of the experimental variables.

Cost-benefit analysis: A method of economic analysis in which costs and outcomes of an intervention are both valued in monetary units, permitting a direct comparison of the benefits produced by the intervention with its costs.

Cost-effectiveness analysis: A method of economic analysis in which outcomes of an intervention are measured in nonmonetary terms. The outcomes and costs are compared with both the costs and the same outcome measure for competing interventions or an established standard

to determine if the outcomes are achieved at a reasonable monetary cost.

Cross-sectional study: A study to estimate the relationship between an outcome of interest and specified variables by comparing groups that differ on those variables at a single point in time.

Developmental competence: The ability to accomplish a broad range of appropriate social, emotional, cognitive, and behavioral tasks at various developmental stages, including adaptations to the demands of different social and cultural contexts and attaining a positive sense of identity, efficacy, and well-being.

Developmental competencies: Social, emotional, cognitive, and behavioral tasks that are appropriate at various developmental stages and in various social and cultural contexts.

Developmental neuroscience: The study of the anatomical and functional development of the nervous system in humans and animal models. This encompasses the fields of molecular and behavioral genetics, molecular and cellular neurobiology, biochemistry, physiology, pharmacology, pathology, and systems-level neuroscience and applies methods ranging from molecular biology to imaging to functional studies of cognition and behavior.

Dissemination: The distribution of program information with the aim of encouraging program adoption in real-world service systems or communities.

Dissemination trial: A trial designed to experimentally test approaches and strategies to influence providers, communities, or organizations to adopt evidence-based prevention programs in real-world service settings.

DSM-IV: The current edition of the *Diagnostic and Statistical Manual of Mental Disorders*, a handbook published by the American Psychiatric Association describing different categories of mental disorders and the criteria for diagnosing them.

Effect size: A statistical measure of the strength of the relationship between two variables.

Effectiveness: The impact of a program under conditions that are likely to occur in a real-world implementation.

Effectiveness trial: A trial designed to test whether an intervention can achieve effects when delivered by a natural service delivery system (i.e., similar to the institutions or communities that are ultimately intended to implement the intervention). The emphasis is on demonstrating positive outcomes in a real-world setting using nonresearch staff to deliver the intervention.

Efficacy: The impact of a program under ideal research conditions.

Efficacy trial: A trial designed to test whether a new or significantly modified intervention has effects when it is delivered in a research environment by research staff under optimal conditions. Efficacy trials can take place in research or real-world settings but are typically delivered by trained research staff under the direction and control of the research team, using resources beyond what might be available in the natural course of service delivery. A trial is also considered an efficacy trial if an intervention is being tested by research staff with a new population or in an amended form.

Encouragement designs: Trial designs that randomize individuals to different modalities of recruitment, incentives, or persuasion messages to influence their choice to participate in one or another intervention condition.

Epidemiology: The study of factors that influence the health and illness of populations.

Epigenetics: Alterations in gene expression through mechanisms other than modifications in the genetic sequence.

Etiology: The cause of a disease or condition.

Externalizing: Problems or disorders that are primarily behavioral (e.g., conduct disorder, oppositional defiant disorder).

Fidelity: The degree to which an intervention is delivered as designed.

Genotype: An individual's genetic makeup.

Iatrogenic effect: An adverse effect caused by an intervention.

ICD-9: The current *International Statistical Classification of Diseases and Related Health Problems*, a classification system published by the World Health Organization and used to code disease as well as signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease.

Implementation: The process of introducing and using interventions in real-world service settings, including how interventions or programs are adopted, sustained, and taken to scale.

Implementation trial: A trial designed to experimentally test approaches and strategies for successful utilization of evidence-based prevention programs in real-world service settings.

Incidence: The number, proportion, or rate of occurrence of new cases of a disorder in a population within a specified period of time.

Indicated prevention: Preventive interventions that are targeted to high-risk individuals who are identified as having minimal but detectable signs or symptoms that foreshadow mental, emotional, or behavioral disorder,

as well as biological markers that indicate a predisposition in a person for such a disorder but who does not meet diagnostic criteria at the time of the intervention.

Internalizing: Problems or disorders that are primarily emotional (e.g., anxiety, depression).

Longitudinal study: A study that involves repeated observations of targeted outcomes over a long period of time.

Main effect: The effect of an independent variable averaged over all levels of other variables in an experiment.

Mediator: A variable factor that explains how an effect occurs (i.e., the causal pathway between an intervention and an outcome).

Mental, emotional, and behavioral disorders: A diagnosable mental or substance use disorder.

Mental, emotional, and behavioral problems: Difficulties that may be early signs or symptoms of mental disorders but are not frequent or severe enough to meet the criteria for a diagnosis.

Mental health promotion: Interventions that aim to enhance the ability to achieve developmentally appropriate tasks (developmental competencies) and a positive sense of self-esteem, mastery, well-being, and social inclusion and to strengthen the ability to cope with adversity.

Mental illness: A condition that meets DSM-IV diagnostic criteria.

Meta-analysis: A statistical analysis that combines the results of several studies that address the same research question.

Moderator: A variable factor that influences how an intervention or mediator exerts its effect.

Natural experimental design: A naturally occurring opportunity to observe the effects of defined variables that approximates the properties of a controlled experiment.

Neural systems: Functionally integrated circuits in the nervous system that operate in the context of genetic and environmental influences to produce complex behaviors.

Nonexperimental studies: Observational research designs that do not include an experimental manipulation of variables by the researchers.

Odds ratio: The ratio of the odds of an outcome occurring in an experimental group to the odds of it occurring in a control group, a measure of the size of the effect of an intervention.

Pathogenesis: The mechanisms by which etiological factors cause a disease or disorder.

- Pathophysiology:** The disturbance of normal functions that are the result of a disease or disorder.
- Phenotype:** An individual's observed physical or behavioral characteristics.
- Polymorphism:** A variation in genetic sequence.
- Premorbid:** A sign or symptom that occurs before the development of disease.
- Pre-post studies:** Nonrandomized studies that evaluate an intervention on the basis of the changes that occur in the same subject from a baseline (the "pre" measurement) to after the intervention period (the "post" measurement).
- Prevalence:** The total number of cases of a disorder in a population.
- Prevention:** Interventions that occur prior to the onset of a disorder that are intended to prevent or reduce risk for the disorder.
- Prevention research:** The study of theory and practice related to the prevention of social, physical, and mental health problems, including etiology, methodology, epidemiology, and intervention.
- Prevention science:** A multidisciplinary field devoted to the scientific study of the theory, research, and practice related to the prevention of social, physical, and mental health problems, including etiology, epidemiology, and intervention.
- Preventionist:** A practitioner who delivers prevention interventions.
- Problem behaviors:** Behaviors with negative effects that are often signs or symptoms of mental, emotional, or behavioral disorders that may not be frequent or severe enough to meet the criteria for a diagnosis (e.g., aggressiveness, early alcohol use) but have substantial personal, family, and societal costs.
- Prodrome:** An early, nonspecific set of symptoms that indicate the onset of disease before specific, diagnosable symptoms occur.
- Protective factor:** A characteristic at the biological, psychological, family, or community (including peers and culture) level that is associated with a lower likelihood of problem outcomes or that reduces the negative impact of a risk factor on problem outcomes.
- Psychiatric disorder:** A condition that meets DSM-IV diagnostic criteria.
- Psychopathology:** Behaviors and experiences that are indicative of mental, emotional, or behavioral disorder or impairment.
- Qualitative data:** Research information that is descriptive but not measured or quantified for statistical analysis.
- Qualitative review:** A review of research evidence relevant to a research question that does not include new statistical analysis.
- Quantitative data:** Research information that is measured for statistical analysis.

Quasi-experimental studies: Experimental designs in which subjects are not randomly assigned to experimental and control groups.

Randomized studies: Experimental designs that randomly assign subjects (individuals, families, classrooms, schools, communities) into equivalent groups that are exposed to different interventions in order to compare outcomes with the goal of inferring causal effects.

Replication: The reproduction of a trial or experiment by an independent researcher.

Research funders: For purposes of this report, federal agencies and foundations that fund research on mental health promotion or prevention of mental, emotional, or behavioral disorders.

Resilience: The ability to recover from or adapt to adverse events, life changes, and life stressors.

Retrospective study: A study that looks back at the histories of a group that currently has a disorder or characteristic in comparison to a similar group without that disorder or characteristic to determine what factors may be associated with the disorder or characteristic.

Risk factor: A characteristic at the biological, psychological, family, community, or cultural level that precedes and is associated with a higher likelihood of problem outcomes.

Selective prevention: Preventive interventions that are targeted to individuals or to a subgroup of the population whose risk of developing mental, emotional, or behavioral disorders is significantly higher than average. The risk may be imminent or it may be a lifetime risk. Risk groups may be identified on the basis of biological, psychological, or social risk factors that are known to be associated with the onset of a disorder. Those risk factors may be at the individual level for nonbehavioral characteristics (e.g., biological characteristics such as low birth weight), at the family level (e.g., children with a family history of substance abuse but who do not have any history of use), or at the community/population level (e.g., schools or neighborhoods in high-poverty areas).

Substance abuse: The use of alcohol or drugs despite negative consequences.

Substance dependence: The persistent use of alcohol or drugs despite negative consequences, often with a physiological dependence characterized by tolerance and/or symptoms of withdrawal.

Substance use disorder: An inclusive term referring to either substance abuse or substance dependence.

Systematic review: A literature review that tries to identify, appraise, select, and synthesize all high-quality research evidence relevant to a research question.

Taxonomy: A system of names and classifications.

Translational research (type 1): The transfer of basic science discoveries into clinical research as well as the influence of clinical research findings on basic science research questions.

Translational research (type 2): The study of the real-world effectiveness and implementation of programs for which efficacy has been previously demonstrated.

Treatment: Interventions targeted to individuals who are identified as currently suffering from a diagnosable disorder that are intended to cure the disorder or reduce the symptoms or effects of the disorder, including the prevention of disability, relapse, and/or comorbidity.

Universal prevention: Preventive interventions that are targeted to the general public or a whole population group that has not been identified on the basis of individual risk. The intervention is desirable for everyone in that group.

Wait-list designs: Research designs that provide the new intervention first to the experimental group and later to those who were initially assigned to the control group.

Young people: For purposes of this report, children, youth, and young adults (to age 25).

