

# Committee on the Neurobiological and Socio-behavioral Science of Adolescent Development and its Applications

Released August 2019

“The nation should ensure that all adolescents have a genuine opportunity to flourish, not only as an expression of a collective sense of justice, but as an investment in the nation’s future.”

# THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE

The National Academies are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine.

The National Academies operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln.

# THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE

NASEM aim: To help policy makers and others make informed decisions by providing evidence upon which they can rely.

- Unbiased, authoritative advice
- Evidence-based recommendations
- Committees composed to avoid conflicts of interest
- Neutral venue for open dialogue and discussion

# CONSENSUS COMMITTEES

- Committee of 10-20 members with diverse, balanced range of expertise and perspectives related to the statement of task
- Potential nominees for membership are widely vetted
- Appointments made by President of National Academy of Sciences
- Before membership is finalized:
  - Formal public comment period
  - Committee undergoes balance, conflict of interest, and bias discussion
- Committee members are volunteers who serve without compensation and as individuals, not representatives of organizations or interest groups

# CONSENSUS COMMITTEES

- Scope and focus determined by statement of task
- Confidential deliberations are cornerstone of process: members shielded from political or policy pressures
- Committee writes a consensus study report with its findings, conclusions and recommendations based on comprehensive and objective synthesis of the evidence
- Process modulates diverse viewpoints and blends types of expertise to achieve new insights and interpretations of evidence
- Draft report remains confidential throughout committee process

# CONSENSUS COMMITTEES

- Draft report undergoes independent, confidential review by outside experts
- Focus of review is on whether evidence supports conclusions and recommendations
- Report revised by committee in response
- Institution approves the report after revisions are complete
- Final report transmitted to sponsor just ahead of its public release
- Final report appears on National Academies Press website on the day of release

# CONSENSUS COMMITTEES



Findings

Observations based on facts and research evidence



Conclusions

Committee judgments about the findings taken together



Recommendations

Call for action or change

Based on evidence reviewed in report

What, if anything, should be done?

Who, what and how?

# Study Sponsors

## The Funders for Adolescent Science Translation (FAST)

- Annie E. Casey Foundation
- Bezos Family Foundation
- Chan Zuckerberg Initiative
- Ford Foundation
- Conrad N. Hilton Foundation
- National Public Education Support Fund
- Raikes Foundation
- Robert Wood Johnson Foundation



# Committee Members

**RICHARD J. BONNIE (Chair)**

Institute of Law, Psychiatry and Public Policy, Schools of Law, Medicine and the Frank Batten School of Leadership and Public Policy, University of Virginia

**ANNA AIZER**

Department of Economics, Brown University

**MARGARITA ALEGRÍA**

Departments of Medicine and Psychiatry, Harvard Medical School & Disparities Research Unit, Department of Medicine, Massachusetts General Hospital, Boston, MA

**CLAIRE D. BRINDIS**

Philip R. Lee Institute for Health Policy Studies & The Adolescent and Young Adult Health National Resource Center, University of California, San Francisco.

**ELIZABETH CAUFFMAN**

Department of Psychological Science, University of California, Irvine

**MESMIN DESTIN**

Department of Psychology, School of Education and Social Policy & Institute for Policy Research, Northwestern University

**ANGELA DIAZ**

Department of Pediatrics and Department of Environmental Medicine and Public Health & Mount Sinai Adolescent Health Center, Icahn School of Medicine at Mount Sinai

**NANCY E. HILL**

Graduate School of Education, Harvard University

**MICHELLE JACKSON**

Department of Sociology, Stanford University

**ARLENE F. LEE**

Maryland Governor's Office for Children (retired)

**LESLIE LEVE**

Department of Counseling Psychology and Human Services, College of Education, and Prevention Science Institute, University of Oregon

**JENS LUDWIG**

Harris School of Public Policy, University of Chicago

**SUSAN VIVIAN MANGOLD**

Juvenile Law Center

**BRUCE S. MCEWEN**

Harold and Margaret Milliken Hatch Laboratory of Neuroendocrinology, The Rockefeller University

**STEPHEN T. RUSSELL**

Department of Human Development and Family Sciences, University of Texas at Austin

**JOANNA LEE WILLIAMS**

Curry School of Education and Human Development, University of Virginia

# Study Staff

**EMILY P. BACKES**

Study Director

**ELIZABETH TOWNSEND**

Associate Program Officer

**DARA SHEFSKA**

Research Associate

**MARY GHITELMAN**

Senior Program Assistant

**TAMMY CHANG**

University of Michigan School of Medicine  
James C. Puffer, M.D./American Board of Family Medicine Fellow

**STEPHANIE OH**

Christine Mirzayan Science and Technology Policy Graduate Fellow  
(January through May 2018)

## Statement of Task

The study sponsors asked the National Academies of Sciences, Engineering, and Medicine to provide an evidence-based report that:

- Examines the neurobiological and socio-behavioral science of adolescent development, and
- Explores how this knowledge can be applied to institutions and systems so that adolescent well-being, resilience, and development are promoted and that systems address structural barriers and inequalities in opportunity and access.

## Scientific and Policy Context

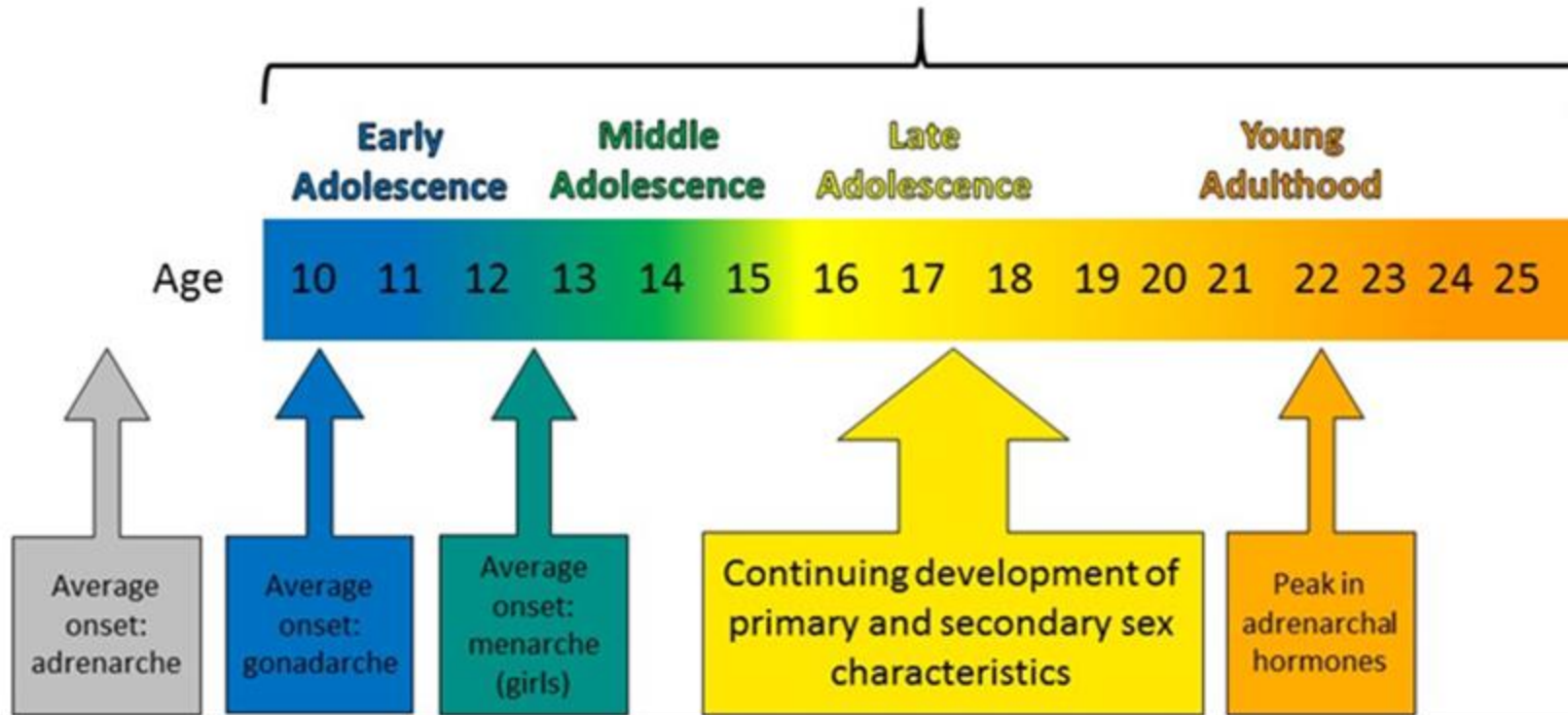
- Over twenty years ago, the National Academies published a landmark study on early childhood development, *From Neurons to Neighborhoods: The Science of Early Childhood Development*.
- Large-scale investments in supports for young children have contributed to broader public awareness of the importance of prenatal and early childhood development.
- “Early intervention is an investment, not an inoculation.”
- The strong infrastructure for young children should be extended throughout adolescence.

# Why Adolescence?

- Advances in neurobiology have demonstrated the dramatic extent of brain maturation during adolescence, and a period of development sensitive to the environment.
- Policies and practices should capitalize on the promise of adolescence and create incentives for discovery and innovation are needed, rather than focus on vulnerability and shielding adolescents from harm.
- Deeply rooted, and growing, structural inequalities curtail the promise of this developmental period.
- The adaptability, plasticity, and heterogeneity of adolescence creates accompanying opportunities—and obligations—for society to help all adolescents flourish.



### Developmental Periods of Adolescence



# The Promise of Adolescence

## **PART I: Adolescence as a Period of Opportunity**

- Adolescent Development
- Interplay between Biology and Environment
- Inequity and Adolescence

## **PART II: Using Developmental Knowledge to Assure Opportunity for All Youth**

- Education
- Health System
- Child Welfare System
- Justice System
- Research Recommendations

# The Promise of Adolescence

## PART I: Adolescence as a Period of Opportunity

- Adolescent Development
- Interplay between Biology and Environment
- **Inequity and Adolescence**

## PART II: Using Developmental Knowledge to Assure Opportunity for All Youth

- Education
- **Health System**
- Child Welfare System
- Justice System
- Research Recommendations

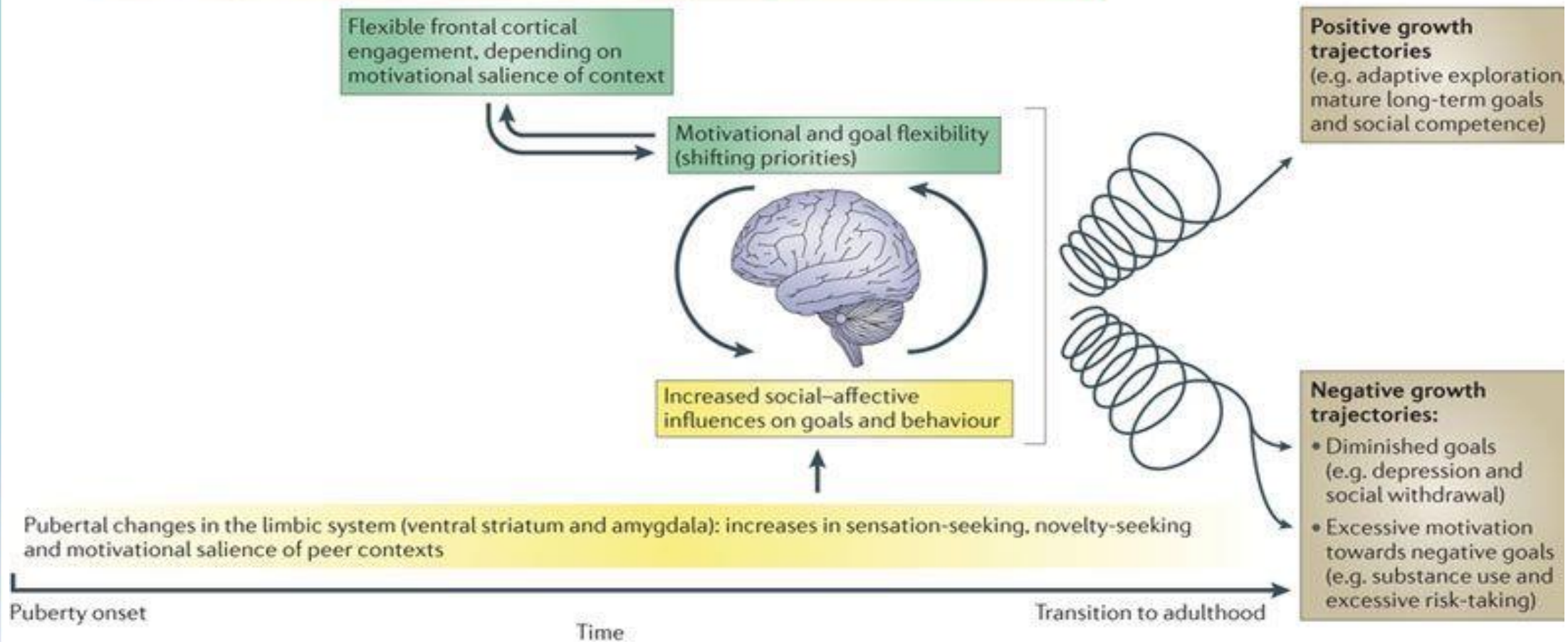


# Understanding Adolescence

- There is a deeply ingrained tendency to view adolescence as mainly a time of vulnerability and risk.
  - Oversimplification of a “mismatch” in the adolescent brain between intensifying desires and emotions and more slowly developing capacity for self-regulation.
  - Preoccupation with risk leads to attribution of risk and vulnerability to young people – while overlooking society’s responsibility to protect and support them in their growth.
- Neuroscience advances have been largely misunderstood:
  - Defining characteristic of the adolescent brain is malleability and plasticity.
  - These developmental opportunities should be leveraged to harness the promise of adolescence – rather than focusing on containing its risks.

Gradual development of the cognitive control system (DLPFC, dorsal ACC and parietal cortex)

Gradual development of social brain network (mPFC, TPJ, subgenual ACC and insula)



# Adolescent Development

- Increasing cognitive abilities provide capacity for developing identity and capacity for self-direction.
- Increasing awareness of social status during adolescence: institutions, policies, and practices may reinforce hierarchies and stereotypes about stigmatized groups.
- Adolescents' heightened sensitivity and responsiveness to environmental influences implies creativity, adaptability, risk, and resilience.
- The malleability and plasticity of the adolescent brain make redirection, recovery, and resilience possible.
- Investments in programs and interventions that capitalize on brain plasticity during adolescence can promote changes in developmental trajectories for youth who may have faced adversity.

# Inequity and Adolescence

- “For many youth in our country, the promise of adolescence is severely curtailed by economic, social, and structural disadvantage and ... by racism, bias, and discrimination.”
- These societal determinants reduce access to opportunities, services, and supports enjoyed by privileged youth – and expose less privileged youth to excess risk, stress, and demands.
- These excess pressures “get under the skin” and adversely affect the brain and body during this critical developmental period.
- Disparities are compounded because they cut across multiple systems in which they interact; disparities grow as youth age and result in disparities in adulthood.

# Inequity and Adolescence

Sources of disparities:

1. Differences in family wealth and income, including neighborhood segregation by income and race
  - Wage stagnation has reduced family resources for investment in children
  - Racial differences in wealth are 3x greater than differences in income
  - Poor neighborhoods lack access to health care, youth organization, and families experience more stress
2. Differences in institutional response to adolescents in education, health, justice, and welfare systems
3. Prejudicial or discriminatory attitudes and behaviors by adults or peers

# Inequity and Adolescence

- Striking differences in opportunity in health, safety, well-being, and educational and occupational attainment—and in trajectories over the life course:
  - LGBTQ youth have much higher rates of alcohol, marijuana, and tobacco use than the general population of adolescents and higher rates of HIV infection.
  - Black youth ages 10 to 24 have mortality rates roughly 50 percent higher than White and Latinx youth, driven mainly by differences in rates of death by homicide.
  - In education, among fourth grade students that qualified for free lunch, 25% are proficient in math, compared with 57% of paid-lunch students.
  - In the juvenile justice system, Black youth are detained at a rate six times higher than White youth and three times higher than Latinx youth.

# Inequity and Adolescence

- Disparities in adolescent outcomes are not immutable. They are responsive to changes in underlying conditions, and adolescents show resilience and demonstrate strengths and assets that may be utilized to overcome inequities.
- Sustained, systemic change: Some promising policies and programs that attempt to tackle these disparities in opportunity, include:
  - Policies and programs to reduce disparities in income, wealth, and neighborhood resources
  - Trauma-informed approaches preparing adults serving youth to address differential exposure to violence and trauma
  - Emerging tools to erase or counteract bias in decision making

## PART II

# Guiding Principles for Policy and Practice

- Developmental changes of adolescence make young people uniquely responsive to their environment.
- Goal of the report is to highlight changes for systems (education, health, child welfare, and justice) to be better designed to support positive youth development.





# Health System

- Access to appropriate health care services is critical: adolescents develop habits that will affect their long-term health.
- Financial barriers limit access to health care, but there are additional challenges:
  - Adolescents are generally inexperienced in navigating the health care system
  - Concerned that their health needs remain confidential, and
  - More likely than adults to engage in risk-taking behaviors that could have both short- and long-term effects on their health.
- Developmentally appropriate changes to provider practices and care delivery can help adolescents become more engaged with their care and achieve better outcomes. Health systems should offer integrated, comprehensive health services that prepare youth for the distinct physical, cognitive, and social changes that take place during adolescence, prepare them to navigate the health system independently, and provide services that are culturally informed and attentive to the needs of all youth.

# Recommendations

## Recommendations for the Health System

**Recommendation 7-1:** Strengthen the financing of health care services for adolescents, including insurance coverage for uninsured or under-insured populations.

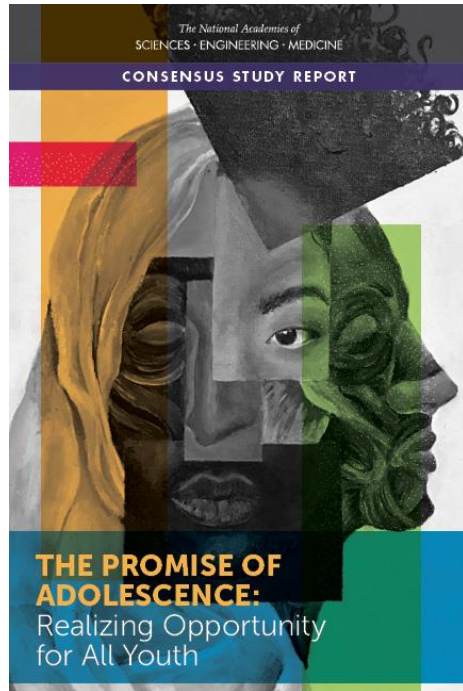
**Recommendation 7-2:** Improve access to comprehensive, integrated, coordinated health services for adolescents.

**Recommendation 7-3:** Increase access to behavioral health care and treatment services.

**Recommendation 7-4:** Improve the training and distribution and increase the number of adolescent health care providers.

**Recommendation 7-5:** Improve federal and state data collection on adolescent health and well-being, and conduct adolescent-specific health services research and disseminate the findings.

Thank you!



To read or download a copy of the report, please visit:

[www.nationalacademies.org/adolescentdevelopment](http://www.nationalacademies.org/adolescentdevelopment)

For more information about the study or dissemination activities, please contact:

Emily Backes, Study Director, [ebackes@nas.edu](mailto:ebackes@nas.edu)

Dara Shefska, Research Associate, [dshefska@nas.edu](mailto:dshefska@nas.edu)

Elizabeth Townsend, Associate Program Officer [etownsend@nas.edu](mailto:etownsend@nas.edu)