

The Adolescent Brain: Learning, Reasoning, and Decision Making

By Valerie F. Reyna

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The period from adolescence through young adulthood is one of great promise and vulnerability. As teenagers approach maturity, they must develop and apply the skills and habits necessary to navigate adulthood and compete in an ever more technological and globalized world. But as parents and researchers have long known, there is a crucial dichotomy between adolescents' cognitive competence and their frequent inability to utilize that competence in everyday decision-making.

This volume brings together an interdisciplinary group of leading scientists to examine how the adolescent brain develops, and how this development impacts various aspects of reasoning and decision-making, from the use and function of memory and representation, to judgment, mathematical problem-solving, and the construction of meaning.

The contributors ask questions that seek to uncover the basic mechanisms underlying brain development in adolescence, such as:

- How do the concepts of proof and reasoning emerge?
- What is the relationship between cognitive and procedural understanding in problem-solving?
- How can researchers build assessments to capture and describe learning over time?

The Adolescent Brain raises questions relevant to young people's educational and health outcomes, as well as to neuroscience research.

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
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Editorial Review

Review

The Adolescent Brain opens up new vistas of thinking about human behavior that are not limited to adolescence. The linkage between cognitive science and neuroscience, maturation of the cognitive psychology of thought and decision making, and the emergence of new ideas about brain plasticity are likely to dominate American psychology as a new frontier and paradigm for the foreseeable future. In this situation, a cognitive neuroscience foundation for American psychology energizes psychology with great power in studying, assessing, and changing human nature. --PsyncCRITIQUES

International in scope, this collection includes essays by a variety of authors. The topics they take up are current and pertinent. The book's brilliant blend of applied and foundational focus works extremely well. For example, the book includes discussion of the fact that adolescents do not retain arbitrary associations well, which has implications for education. --CHOICE

In a modern world that demands increasing amounts of education, skills, and expertise in its emerging workforce, the scientific explorations of how young people develop cognitively in *The Adolescent Brain* take on a stringently urgent, immediately practical value. Highly recommended especially for college library Psychology shelves.

-- *Midwest Book Review*

An excellent contribution to the neuroscience literature, addressing a gap in the neurodevelopmental literature in an intriguing and thoughtful manner. --*Doody's Review Service*

About the Author

Valerie F. Reyna, Co-Director, Center for Behavioral Economics and Decision Research, Professor of Human Development, Psychology, Cognitive Science, and Neuroscience (IMAGINE Program), Cornell University

Her recent work has focused on neuroeconomics; aging, neurocognitive impairment, and genetic risk factors (e.g., in Alzheimer's disease); rationality and risky decision making, particularly risk taking in adolescence; and neuroimaging models of framing and decision making. She has also extended fuzzy-trace theory to risk perception, numeracy, and medical decision making by both physicians and patients.

She is the Past President of the Society for Judgment and Decision Making, and currently serves on scientific panels of the National Academy of Sciences, National Institutes of Health, and National Science Foundation. Dr. Reyna is an elected Fellow of the American Association for the Advancement of Science, the Association for Psychological Science, and four divisions of APA.

Sandra Bond Chapman, Founder and Chief Director, Center for BrainHealth, Behavioral and Brain Sciences, Dee Wyly Distinguished Professor, The University of Texas at Dallas

Dr. Chapman coined the term Brainomics[®] to represent the economics of brain power our greatest

economic asset and cost burden developed at school and in the workplace, for better or worse. With more than 125 publications and 30 funded research grants, her research spans the age spectrum from studies that establish ways to advance teen reasoning to protocols that enhance cognitive brain function into late life.

Michael R. Dougherty, Psychology, Program in Neuroscience and Cognitive Science, University of Maryland

His recent work applies neuroimaging techniques to understanding cognitive adaptation and retraining, collaborating with members of the Neuroscience and Cognitive Science Program (NACS). Dr. Dougherty also collaborates with researchers at the University of Maryland Center for Advanced Study of Language on projects related to improving language comprehension and cognitive ability.

Dr. Dougherty has received numerous scientific awards, including the Hillel Einhorn New Investigator Award from the Society for Judgment and Decision Making, and the early investigator CAREER award from the National Science Foundation.

Jere Confrey is the Joseph D. Moore Distinguished Professor of Mathematics Education at North Carolina State University and a senior scholar at the William and Ida Friday Institute for Educational Innovation.

Dr. Confrey is building diagnostic assessments of rational number reasoning using a learning trajectories approach. She is a member of the Validation Committee for the Common Core State Standards, and was Vice Chairman of the Mathematics Sciences Education Board, National Academy of Sciences (1998-2004).

She chaired the National Research Council (NRC) Committee which produced *On Evaluating Curricular Effectiveness*, and was a coauthor of the NRC's *Scientific Research in Education*. She was also a co-founder of the UTEACH Program at the University of Texas in Austin, the largest secondary teacher education program for mathematics and science teachers at a research university. She was the founder of the SummerMath program for young women at Mount Holyoke College and co-founder of SummerMath for Teachers Program.

She has served as vice-president of the International Group for the Psychology of Mathematics Education, chair of the Special Interest Group (SIG)-Research in Mathematics Education, and on the editorial boards of the *Journal for Research in Mathematics Education*, *International Journal for Computers in Mathematics Learning*, and *Cognition and Instruction* and was on the Research Committee of the National Council of Teach

Users Review

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