

How Much of Your Behavior Is Due to Something in Your Genes?

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The Genetics of Cognitive Neuroscience. Terry E. Goldberg and Daniel R. Weinberger (Eds.). (2009). Cambridge, MA: The MIT Press, 297 pp., \$55.00 (HB).

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The opening chapter of this book begins as follows: “*There is a beautiful diversity and depth to human thoughts and behaviors. Poets, philosophers, and children alike wonder at the mysteries of why we cry with sorrow, laugh with joy, learn to read, or ride a bicycle.*”

My thinking about the role of genetics in human behavior usually starts the same way. It seems so unlikely that meaningful variations in behavior can be effectively mapped on to a genetic substrate, given the complexities of human behavior, the myriad of potential influences on specific behaviors, and the crude methodologies that we currently use to measure behavior. Consider IQ, for example. We don’t even effectively know how to define this construct, and the component subtests for various “intelligence” batteries are constantly evolving. Educational and cultural influences upon performance are clearly evident, and performance is strongly dependent upon motivation and to some extent examiner skill and training. Yet, we continue to think of “IQ” as some type of unitary construct that can be explained biologically.

The challenges associated with exploring the genetic underpinnings of most neuropsychiatric diseases are perhaps even more daunting. There has been a vigorous effort to explore genetic contributions to Alzheimer’s disease over the past couple of decades, with some modest successes. Yet, apart from rare familial forms of the disease, these efforts have not yielded information that has led to improved diagnosis or treatment. We still do not have a firm understanding of the role of amyloid or tau in the pathogenesis or clinical expression of dementia in Alzheimer’s disease, and it is clear that a variety of unrelated factors play a substantial role in the evolution of cognitive decline/dementia (e.g., cerebral reserve, cerebrovascular disease, concomitant Lewy body disease or other pathologies). In addition, the diagnostic

criteria for probable Alzheimer’s disease are operationally quite vague.

The Genetics of Cognitive Neuroscience does not shy from these challenges in associating phenotypic behaviors with genetic mechanisms, nor does the volume try to overstate the relationships between genetic variation and behavior that have been identified to date. The stated aim of the volume is to give the reader a working understanding of specific genetic variants on cognition, affective regulation, personality, and central nervous system disorders, with an emphasis on basic methodological issues. The first section of the book serves as a primer on methodologies for genetic association studies, with chapters on molecular genetics, statistical approaches, and animal models of genetic influences on cognition. The second section covers genetic approaches to individual differences in cognition and affect, with a focus primarily on normal variations in IQ, attentional functions, emotional reactivity, and aging. The final section focuses upon neuropsychiatric disorders, including the genetic underpinnings in schizophrenia, dyslexia, and Alzheimer’s disease, with a final chapter on pharmacogenetic approaches to understanding and treating neurocognitive impairments in schizophrenia.

I found this volume to be a useful resource in providing a nice overview of the methodological approaches (and challenges) in exploring the associations between various behavioral phenotypes and related genetic mechanisms. It also provides a very comprehensive and up-to-date review of candidate genes that appear to be playing a role in neurocognitive and neurobehavioral functions that have relevance for understanding (and perhaps more effectively treating) various neuropsychiatric disease states. To be candid, most neuropsychologists will probably not find this volume an easy or absorbing read; it is, however, a valuable reference tool for a rapidly evolving field.

A Readable Reference and Introduction to Neuropsychology of Epilepsy

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Neuropsychology of Epilepsy and Epilepsy Surgery. Gregory P. Lee. (2010). New York: Oxford University Press, 348 pp., \$45.00 (PB).

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Gregory P. Lee from Medical College of Georgia has written a slim volume aimed at clinicians who see epilepsy patients, including neuropsychologists and clinical psychologists. This is the seventh volume in the Oxford Workshop Series,

published in collaboration with the American Academy of Clinical Neuropsychology. Consistent with the publisher’s intent, to provide “focused content,” it is written as a hybrid between a comprehensive textbook to be read in a single