
Changes in the Brain

Nancy D. Chiaravalloti • Yael Goverover
Editors

Changes in the Brain

Impact on Daily Life

 Springer

Editors

Nancy D. Chiaravalloti
Kessler Foundation
East Hanover, NJ, USA

Yael Goverover
Department of Occupational Therapy
Steinhardt School of Culture, Education,
and Human Development
New York University
New York, NY, USA

ISBN 978-0-387-98187-1

ISBN 978-0-387-98188-8 (eBook)

DOI 10.1007/978-0-387-98188-8

Library of Congress Control Number: 2016957393

© Springer-Verlag New York 2017

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer Science+Business Media LLC

The registered company address is: 233 Spring Street, New York, NY 10013, U.S.A.

Preface: Laying the Framework

Often, we meet clients in our practice who have had a brain injury or another type of neurological illness. When trying to explain the importance of the brain, we tell them that our brain directs everything our body does. Without the brain, or to be more realistic, without its functions, we would not be able to do most of the things we do on a daily basis, from the mundane to the rare. Our brain is a central processing unit that translates our thoughts, feelings, memories, and opinions into a complicated nerve cell firing process and chemical release. These processes are responsible for our behaviors, and these connections are complicated and difficult to explain. Recently, there has been a growing awareness of the functional implications caused by the injured brain. Traditionally, professionals have used neuropsychological batteries or impairment-based assessments to document the patients' symptoms. These traditional assessments, however, do not focus on learning how the symptoms interfere with daily activities, or why.

We were inspired to compile this book because in the past 20 years we have seen numerous clients through clinical practice and research that share the common characteristic of a central nervous system that functions less than optimally, accompanied with diminished engagement in activities of daily living and social activities. This could be due to injury, illness, or just advancing age. When practitioners and researchers discuss the symptoms experienced, they discuss the impairments that were caused by the damaged brain. These impairments could be cognitive or motor in nature, among others. Our clients, however, speak about how these impairments have impacted their life. They often mention the fact that they cannot go to work anymore, and that they no longer receive social invitations, or drive their car. However, for some patients this link is not linear, which makes this connection between the brain and the behaviors even more complicated. For example, one may see two people with memory impairment, one diagnosed with a preclinical dementia and the other having sustained a TBI. The person with the dementia does not leave his house anymore and does not attend any social events. The person with the TBI went back to work and manages an active life. Why the difference in behavior? The observation of differences in such behaviors across various patient populations, coupled with the challenges affected individuals and their families have in understanding these differences, triggered the writing of this book.

This book includes 13 chapters, all with a common theme—the link between diagnosis, brain, and behavior as it plays out in everyday activities. We also sought to explore different causes of distinct behaviors. Is the diagnosis the essential element, or is it the course of illness, or perhaps cultural factors? Or, is it a combination of such factors that leads to distinct difficulties in daily life activities? In each chapter that follows the diagnosis and its characteristics are described, followed by the relationship between the symptoms and disability. In addition, factors such as culture and society are discussed. In most chapters we sought to illustrate the dynamic link between impacted brain structures, impairment, and participation in everyday life performance. We hope that the reader of this book will be aware of both the complexity in the functioning of the brain and, more importantly, how brain function/dysfunction affects the performance of everyday life activities. The purpose of the book is to educate the reader in regard to the changes in everyday life that are encountered with various mechanisms of brain insult/brain changes. A discussion of the impact of such changes from the perspective of the patient is also included. The book was designed to be useful to the professional, but also of interest to those directly affected by brain injury, brain illness, or brain changes that come with normal aging.

In order to present the most accurate information about the different types of changes in brain function resulting from the different etiologies, each chapter was written by experts in the topic areas. Thus, one can read the entire book or just the chapter of particular interest. While each chapter is a standalone chapter, some chapters such as Chaps. 1 and 11 are general and relate to all types of disability. We are very grateful to the authors who took their time to contribute to our understanding of their area of expertise. We are also grateful to the patients who contributed their portrayal of how the injury or disease affected their life.

East Hanover, NJ, USA
New York, NY, USA

Nancy D. Chiaravalloti
Yael Goverover

Contents

1	Neuroanatomy: The Brain–Behavior Relationship	1
	Glenn Wylie, Erica Weber, Daniela Sacchetti, Silvana Acosta, and Helen Genova	
2	The Aging Brain and Changes in Daily Function	23
	Steven M. Albert	
3	Alzheimer’s Disease and Other Dementia Disorders	37
	Sarah Seligman Rycroft and Tania Giovannetti	
4	Parkinson’s Disease: Changes in Daily Life	65
	Jacob I. Sage	
5	Stroke: Impact on Life and Daily Function	87
	Cristin McKenna, Peii Chen, and A.M. Barrett	
6	Traumatic Brain Injury (TBI) and the Impact on Daily Life	117
	Joan Toglia and Kathleen Golisz	
7	Impact of Multiple Sclerosis on Daily Life	145
	Yael Goverover, Helen M. Genova, John DeLuca, and Nancy D. Chiaravalloti	
8	The Impact of Epilepsy on Quality of Life	167
	Linnea Vaurio, Stella Karantzoulis, and William B. Barr	
9	Cancer Survivorship	189
	Lisa M. Ruppert, Gabrielle Miskovitz, and Michael D. Stubblefield	
10	Real-World Impact of HIV-Associated Neurocognitive Impairment	211
	Kaitlin Blackstone Casaletto, Erica Weber, Jennifer E. Iudicello, and Steven Paul Woods	

11 Disability and Public Policy in America.....	247
Senator Robert Menendez	
12 Living after Brain Changes: From the Patient’s Perspective	265
Nancy D. Chiaravalloti, Meg Balter, and Bob McGee	
Epilogue: Where Do We Go from Here?	273
Index.....	275

Contributors

Silvana Acosta, Ph.D. Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School,
Rutgers University, Newark, NJ, USA

Steven M. Albert, Ph.D. Department of Behavior and Community Health
Sciences, Pitt Public Health, University of Pittsburgh, Pittsburgh, PA, USA

Meg Balter, East Hanover, NJ, USA

William B. Barr, Ph.D., ABPP Department of Neurology, NYU Comprehensive
Epilepsy Center, NYU School of Medicine, New York, NY, USA

A.M. Barrett, M.D. Kessler Institute for Rehabilitation, East Hanover, NJ, USA

Department of Psychiatry, University of California, San Francisco, CA, USA

Kessler Foundation, East Hanover, NJ, USA

Kaitlin Blackstone Casaletto, Ph.D. Joint Doctoral Program in Clinical Psychology,
San Diego State University/University of California, San Diego, CA, USA

Department of Psychiatry, University of California, San Francisco, CA, USA

Peii Chen, Ph.D. Department of Physical Medicine and Rehabilitation, Rutgers-
New Jersey Medical School, Newark, NJ, USA

Kessler Foundation, East Hanover, NJ, USA

Nancy D. Chiaravalloti, Ph.D. Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School,
Rutgers University, Newark, NJ, USA

John DeLuca, Ph.D. Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School,
Rutgers University, Newark, NJ, USA

Department of the Neurosciences, New Jersey Medical School, Rutgers University,
Newark, NJ, USA

Helen Genova, Ph.D. Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School, Rutgers University, Newark, NJ, USA

Tania Giovannetti Department of Psychology, Temple University, Philadelphia, PA, USA

Kathleen Golisz, OTD, OTR School of Health and Natural Sciences, Mercy College, Dobbs Ferry, NY, USA

Yael Goverover, Ph.D., OT Department of Occupational Therapy, Steinhart School of Culture, Education, and Human Development, New York University, New York, NY, USA

Kessler Foundation, East Hanover, NJ, USA

Jennifer E. Iudicello, Ph.D. Department of Psychiatry, HIV Neurobehavioral Research Program, University of California, San Diego, CA, USA

Stella Karantzoulis, Ph.D., ABPP Department of Neurology, NYU Comprehensive Epilepsy Center, NYU School of Medicine, New York, NY, USA

Clinical Neuropsychologist, The Center for Cognitive Neurology, New York, NY, USA

Bob McGee, East Hanover, NJ, USA

Cristin McKenna, M.D. Kessler Institute for Rehabilitation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, Rutgers-New Jersey Medical School, Newark, NJ, USA

Senator Robert Menendez United States Senator, New Jersey, USA

Gabrielle Miskovitz, OTR/L Memorial Sloan Kettering Cancer Center, New York, NY, USA

Lisa M. Ruppert, M.D. Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Sarah Seligman Rycroft Department of Psychology, Temple University, Philadelphia, PA, USA

Daniela Sacchetti, M.A. Kessler Foundation, East Hanover, NJ, USA

Jacob I. Sage, M.D. Department of Neurology, Robert Wood Medical School, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

Clinical Academic Building, New Brunswick, NJ, USA

Michael D. Stubblefield, M.D. Kessler Institute for Rehabilitation, East Hanover, NJ, USA

Joan Togli, Ph.D., OTR, FAOTA School of Health and Natural Sciences, Mercy College, Dobbs Ferry, NY, USA

Linnea Vaurio, Ph.D. Department of Neurology, NYU Comprehensive Epilepsy Center, NYU School of Medicine, New York, NY, USA

The Steven and Alexandra Cohen Military Family Clinic, NYU Langone Medical Center, New York, NY, USA

Erica Weber, Ph.D. Joint Doctoral Program in Clinical Psychology, San Diego State University/University of California, San Diego, CA, USA

Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School, Rutgers University, Newark, NJ, USA

Steven Paul Woods, PsyD Department of Psychiatry, HIV Neurobehavioral Research Program, University of California, San Diego, CA, USA

Department of Psychology, University of Houston, Houston, TX, USA

Glenn Wylie, D.Phil. Kessler Foundation, East Hanover, NJ, USA

Department of Physical Medicine and Rehabilitation, New Jersey Medical School, Rutgers University, Newark, NJ, USA

Department of Veterans Affairs, East Orange, NJ, USA