Nutrition for Brain Health and Cognitive Performance

Edited by
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Dedicated to my dad, Robert Dye, who died before I could show it to him and who I miss everyday

Louise Dye

Dedicated to my family who inspire me with their commitment to share their lives with others

Talitha Best
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Preface

This book critically reviews the evidence surrounding the impact of dietary patterns and nutrition on brain function and cognitive performance and the mechanisms which underpin this. The increase in public awareness of the role diet can play in brain function has been accompanied by a significant development of products, dietary supplements, functional foods, nutraceuticals, food programs and submissions of dossiers for health claims and public health recommendations for maintaining brain function. The area of nutrition–cognition research is an emerging interdisciplinary field of work that examines the impact of food, nutrients and diet on everyday aspects of cognitive performance and brain function. It is our hope that this book serves its purpose: to make available a detailed and innovative scientific summary of nutrition–cognition research to provide valuable information regarding nutritional and lifestyle choices for cognitive health.

We have purposefully sought to balance rigorous scientific information and analysis, with information for readers who are ‘non-experts’. We have sought out contributions from internationally recognised scholars alongside the next generation of researchers to provide accessible, up-to-date reviews that consider the impact of dietary patterns, nutritional components, methods of assessment and technology and the underpinning physiological processes to support brain health and performance. This book is appropriate for health professionals, researchers, teachers, educators, health service providers, food and nutraceutical industry personnel, nutritionists, dietitians, psychologists and psychiatrists, public health workers and the general public. We trust it will serve as a valuable resource for your research, teaching and client support.

We offer our appreciation and thanks to the authors of each chapter for their thoughtful and skillful contributions. Their time, expertise and willingness to support this project to equip others with up-to-date information in this broad, multi-disciplinary field of cognition and nutrition is greatly valued.

Look out for the recommendations and summary boxes throughout the book that provide a summary of the key points to take away from the chapters that we hope support you in your life-long learning.

May your food choice promote a cognitively healthy life.

Talitha Best
Louise Dye
Editors

Talitha Best is a researcher, practicing psychologist and lecturer with a passion for solution-oriented thinking and process innovation. Dr. Best addresses critical innovation related to translation of research into workable solutions for researchers, practitioners and industry in the areas of nutrition, food systems and products, brain function and cognitive performance.

Dr. Best received her PhD in clinical psychology and nutrition–cognition research from Flinders University, Adelaide, South Australia, and completed a joint post-doctoral position at the Nutritional Physiology Research Centre at University of South Australia (UniSA), Adelaide, and the Centre for Human Psychopharmacology, Swinburne University, Melbourne. Her research and clinical interests focus on the effects of nutrition to improve mood and neurocognitive function. Her research has explored the role of non-starch polysaccharides in everyday cognitive abilities and the well-being of middle-aged adults in order to understand the potential mechanisms by which dietary polysaccharides may have beneficial effects across the lifespan. In addition, Dr. Best’s research focuses on processes of knowledge transfer between the research and industry sectors to promote innovation in food and nutrition research and development.

She has taught advanced statistics and research methods and psychological assessment at the undergraduate, master’s and postgraduate levels, and currently teaches ‘psychological assessment methods’ at the honours level. With experience in clinical and research supervision, Dr. Best supervises undergraduate and postgraduate students across multidisciplinary settings within the food, nutrition, health and agriculture nexus at Central Queensland University, Bundaberg, Australia.

Talitha frequently speaks, writes, reviews, edits and lectures across multidisciplinary settings and contributes to national and international not-for-profit organisations committed to supporting health through community development in food, agriculture and education.

Louise Dye is professor of nutrition and behaviour in the Human Appetite Research Unit at the Institute of Psychological Sciences, University of Leeds, Leeds, United Kingdom. She received her BSc in human psychology from the University of Aston in Birmingham and her PhD in psychopharmacology from the University of Leeds. She has held Medical Research Council and Royal Society post-doctoral fellowships in the United Kingdom and Europe, including a Marie Curie professorial fellowship in Jena, Germany. Professor Dye is a chartered health psychologist and member of the British Psychological Society. She is associate editor of *Nutritional Neuroscience* and the *European Journal of Nutrition* and a member of the editorial board of *Human Psychopharmacology*. Currently, Professor Dye sits on four expert groups for the International Life Sciences Institute (ILSI). These are Postprandial Carbohydrate Metabolism, Benefits of Satiety, Measuring Subjective Mental Performance and Mood and BioMarkers for Cognitive Function. She has supervised
more than 20 doctoral students and currently has seven doctoral students under her supervision, many in collaboration with industry or National Health Service partners.

For more than 20 years, her research has examined functional foods for cognitive performance and well-being across the lifespan. She has conducted numerous studies of the effects of foods and food components on glycaemic response, cognitive function and appetite control. In the last decade, she examined stress, obesity and cognitive function and the effects of breakfast interventions on cognitive performance and appetite control in children, adolescents and younger and older adults. Her research has been funded by ESRC, TSB, MRC, BBSRC and many food companies with whom she has formed strategic partnerships and led Knowledge Transfer Partnerships. Her recent research involves the effects of food components on digestive function and the impact of metabolic diseases such as cystic fibrosis and phenylketonuria on cognitive function. Louise has taught biological psychology and advanced statistics and research methods at the undergraduate, master’s and postgraduate levels. Currently, Louise teaches a course called “Food and Health” on the MSc Psychological Approaches to Health at the University of Leeds and contributes to the Health Food Innovation Management Masters at Maastricht University, Maastricht, the Netherlands, and to an undergraduate module on “Nutrition and Behaviour” on the BSc psychology programme at the University of Leeds, alongside supervising undergraduate and postgraduate research in these areas.
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