

Title: **Cognition, Brain and Consciousness. Introduction to Cognitive Neuroscience. Second edition.**

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Book information:

Publisher: Churchill Livingstone Elsevier
Date of Publication: 2010
ISBN number: 978- 0- 12- 375070-9
Hardcover
Number of pages: 653 pages
Price: \$89, 95

The book *Cognition, Brain and Consciousness: An Introduction to Cognitive Neurosciences* looks like an intimidating book based on its size and weight! However, it is actually an accessible introductory text for those interested in Neurosciences. The authors state the purpose of the book is to enable the reader to keep up to date with this ever- changing field. The up to date research included is particularly excellent. There are information boxes in each chapter titled "Frontiers in Cognitive Neurosciences" that are fascinating as they showcase scientists in the field who are doing different and ground breaking research. Throughout the book there are references to the anatomical structures and physiology involved in the processes. Most chapters also give some history on the particular topic and give clinical examples of how dysfunction in a particular area would present. Each chapter ends with study questions or a chapter review making it a text that students could use in their study of the particular subject.

The first two chapters are introductions to this enormously complex topic. Chapter two specifically focuses on a framework for organising cognitive neurosciences. This framework is an excellent scaffold for understanding the information in the book and even other aspects of cognition and perception not covered in detail. Throughout the rest of the book this framework is referred to.

Chapters three, four and five focus specifically on the anatomy and physiology of cognition and neuroscience. Anatomy is discussed on both a macro and microscopic level, including recapping concepts such as tracts, mapping and imaging of the brain. Physiological concepts such as neuronal connections, measuring signals and functional roles of the brain are also covered. All of these three chapters have clear colour diagrams to explain the concepts.

Chapters six and seven cover Vision and Hearing and Speech. Both chapters start with an introduction to the particular sense followed by an depth look at the anatomy of the system. The chapter on vision highlights some of the dysfunction that may occur within this system and introduces some aspects of perception. The Hearing and Speech chapter does not only look at speech but also at music perception and how learning and plasticity occur within this system.

The next three chapters are Consciousness and Attention, Learning and Memory and Thinking and Problem solving. Chapter eight (Consciousness and Attention) starts by exploring sleep and waking and then explains the importance of attention for other functions such as perception, cognition and learning. This chapter ends with a section on putting it all together which looks at some popular notions about consciousness and attention. The Learning and Memory chapter (Chapter nine) focuses mainly on memory, including how memory happens, types of memory and the anatomy of memory and amnesia. More information on learning would have been useful in this section. Thinking and problem solving (Chapter ten) looks at implicit and explicit problem solving

and also explains how one uses pre-existing knowledge.

Chapter 11 on Language and chapter 12 on Goals, Executive control and Action continue the customary layout of the chapters by giving comprehensive details on the anatomy of these functions. The language chapter also qualifies the difference between speech and language and looks extensively at words and their meanings. Chapter 12 extensively examines the different aspects of the executive brain and relates this to the anatomy of the brain. This chapter also concentrates on the implications of dysfunction of the frontal lobes which is particularly relevant to us as Occupational Therapists (OTs).

The following two chapters are on Emotion and Social cognition. The chapter on Emotion (Chapter 13) uses Panksepp's definition of an emotional brain to describe how emotions motivate us and how emotions interact with cognition, the executive brain and consciousness. This chapter also describes in more detail the fear and the reward system. Chapter 14 on Social Cognition explains how we perceive the mental states of others. The chapter explains a framework for this complex area and gives examples of how we use different mechanisms to interact meaningfully with others.

The penultimate chapter, Chapter 15, is on development. This chapter focuses mainly on the early stages of life, including prenatal development, due to the massive growth seen during this period. There is also a section on early brain damage and plasticity which is relevant to OT practitioners. The final chapter on genes and molecules of cognition is a new addition in this second edition of the book. It introduces enzymes, neuromodulators and genes and their role in cognition, as well as recapping the neuron and synapses and how these operate. The final section of this chapter looks at learning, on a molecular level which will be of particular interest to those practitioners involved in learning disorders.

Lastly there is an appendix which describes the different ways we can observe the living brain through neuroimaging. This appendix looks at different methods such as Positron emission tomography (PET) and functional Magnetic resonance imaging (fMRI) and how the tests are done as well as what they can be used for.

The colour pictures in all sections and interesting quotes at the beginning of each chapter contribute to making this an engrossing book to read. The inclusive glossary included at the end of the book is a quick, easy to use reference. Although none of the clinical examples are within a South African context they can easily be applied to our context due to their universality. The book is not specifically aimed at OTs and some of the detailed anatomical and physiological descriptions may not be relevant but as background reading to this multifaceted subject, it is an excellent book.

Cognition, Brain and Consciousness would be a useful book for postgraduate students specialising in this field. The excellent framework, clinical examples and continual reference to the anatomy of physiology of the different processes also make this an outstanding day to day reference for clinicians in the fields of neurology, learning disabilities and mental health.

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