BOOK REVIEWS

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The neurobiology of orthodontics: treatment of malocclusion through

neuroplasticity (2009) Author: Margaritis Z. Pimenidis Publisher: Springer-Verlag, Berlin, Germany Price: £139.95 ISBN: 978-3-642-00395-0

The author has written this book with the hope that it will provide the background for future research into the relationship between oral experience and brain development. The book is a slim volume of 138 pages consisting of 10 main chapters and concludes with a short summary. However, the font size is very small and the pages are completely filled with text with only one page of illustrations.

The first four chapters concentrate on explaining the current concepts relating to central nervous function; the relationship between sensory input, memory, consciousness, and changes in structure, together with the effects that sensory overload and, especially, sensory deprivation can have on the brain is detailed. These chapters require the reader to have an excellent working knowledge of neuroanatomy and neurophysiology, without which they will be difficult to understand. There are relevant and thought-provoking facts on neurophysiology dispersed throughout these chapters for the interested reader. However, the text is rather repetitive, with a lack of structure to the content, despite the use of sub-headings.

Chapters 5 covers speech and language development and chapters 6 and 7 discuss the relationship between mastication, occlusion (malocclusion), and nervous function. Chapters 8 and 10 relate specifically to orthodontics, but again, more in relation to sensory input and neural control in structures associated with malocclusion and tooth movement. Chapter 9 is a very brief and discusses 'Clinical brain function'. This chapter would be better located in the first half of this book, if it is included at all.

I was very intrigued by the title, but having read the book, I am left with a sense of mild disappointment. The sub-title, 'Treatment of malocclusion through neuroplasticity', is misleading as the treatment of malocclusion is barely mentioned. What is discussed, to a limited degree, is the ability of the nervous system to adapt and develop new pathways to alter oral behaviour once conventional orthodontic treatment has corrected the malocclusion. However, for the interested reader, this book is an introduction to a number of interesting concepts in relation to neural adaptability.

If this book is printed as a second edition, then it would certainly benefit from rigorous editorial input to eliminate the repetition and bring a better structure to the book. The reader would benefit from an initial chapter revising neuroanatomy and physiology, assuming that the majority of readers will be dental clinicians. The book would also be greatly improved by the addition of diagrams to enable the reader to visualize the neural pathways being discussed in the text. I am concerned that many of the references used are textbooks, a large number of which are 30-40 years old, or are even older. The subject area with which I am most up-to-date, masticatory muscle fibre types, is included at the most basic and out-dated level that heightens my concern for the current accuracy of some of the other information that has been taken from older texts and articles. In a second edition, the reference list would need to be significantly updated. The index is so short as to be virtually useless.

Overall, this book serves to highlight the importance of continuing to teach the basic sciences to dental undergraduates and the importance of the scientific basis for the treatment of our patients. As was the author's aim, I would see it used as background reading for those beginning research in the area of oral adaptation to malocclusion and its treatment.

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