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### Book Review

#### *Working memory and second language learning. Towards an integrated approach*

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A new book by Z. E. Wen on working memory (WM) was written with a view to presenting an up-to-date and comprehensive review of our knowledge of this cognitive factor which has been gaining popularity but still remains poorly examined. The book includes an introduction, preceded by a foreword written by Peter Skehan, three theoretical parts and concluding remarks. The author's goal was to integrate WM research into cognitive science and second language acquisition (SLA) research in applied linguistics, the two in which he specializes. The book consists of three parts. Part 1 contains two chapters which present the theoretical and methodological foundations of the discussed domain. In Chapter 2, the author focuses on the origins and evolution of the concept of WM in cognitive science and in SLA. The current theoretical models of WM are presented as well as the discussion of the controversies surrounding the construct. In the final sections of this chapter, the author attempts to integrate the existing models into a unified theory, taking as a point of reference six themes which can

serve as indicators to nomothetic theories of WM. In Chapter 3, Wen discusses the measures and assessment procedures of WM currently applied in cognitive psychology, specifically the simple and complex memory span tasks used to measure the phonological loop and the central executive. The methodological problems of WM measurement are one of the most difficult research challenges in this area; this discussion is therefore very timely.

Part 2, "Research Syntheses of Working Memory in L1 and L2 Learning," outlines the most important issues in first and second language learning connected with WM functioning. Chapter 4 presents a synthesis of research findings concerning the links between WM and first language acquisition in two main research traditions, namely the European one, associated with Alan Baddeley's classical model, and the North American one led by Nelson Cowan. The author analyzes the roles of the two acquisition-relevant components of WM, the *phonological loop* (PWM) and the *central executive* (EWM), in L1 subdomains and activities. Chapter 5, in turn, provides a state-of-the-art overview of the relationships between WM and L2 acquisition and processing. The major asset of this part is a comprehensive reassessment of research studies, presented in a table and accompanied by a summary of findings and the author's critical evaluation. I find the revision of shortcomings, caveats and inconsistencies in the field, which, as Wen correctly underlines, come mainly from the lack of a standardized assessment procedure, particularly useful for a researcher.

Part 3 presents an integrated perspective on WM in SLA research. The author's intention was to reconceptualize and reframe specific areas of the WM-SLA connection and propose a more principled approach to this issue. Consequently, in Chapters 6 and 7, the author reconceptualizes and redefines the two main constructs, that is PWM and EWM, in the WM-SLA nexus. The main tenet of the integrated framework of WM for SLA, according to Wen, is "the postulation that the construct of WM consists of multiple components that are associated with multiple mechanisms/functions distinctively implicated in complex L2 cognitive tasks" (pp. 89-90). His proposed P/E model (Chapter 7, see also Wen, 2015) has solid theoretical foundations as well as a strong empirical support from cognitive psychology and SLA. In Chapter 8, the author discusses the possible effects of PWM and EWM on different dimensions of L2 speech production and performance within the CAFL (complexity, accuracy, fluency and lexis) framework (Skehan, 2009). The last issue the book touches upon is the relationship between WM and foreign language aptitude. The author has long been a supporter of the incorporation of WM construct into the modern theory of foreign language aptitude (Wen & Skehan, 2011) and, therefore, Chapter 9 is a logical consequence of this line of reasoning. The author postulates that this relationship should be reconfigured within the SLA developmental stages.

Finally, Chapter 10 includes conclusions and implications for further research. Apart from a revision of the main aspects of his P/E model, Wen calls for a more interdisciplinary approach including psychology, linguistics, computer science, biology, neuroscience, anthropology and philosophy. He also suggests the most important directions for further research, including a more systematic approach and practical application of WM framework in informing L2 instruction.

Summing up, the volume presents a comprehensive, thorough and updated review of both the theory and research in WM-SLA relationship. Evidently, Wen is highly influenced by Skehan's (2009) theories, which should by no means be seen as a reason for criticism. He not only presents a relevant analysis of the literature, but also explains his own conceptual framework, referred to as the P/E model, which relates the distinctive roles of PWM and EWM to L2 fields, processes and skills. A great advantage of the book is the way the author provides information in the form of tables, which is of great assistance to the reader. Another asset is the critical perspective on the research methodology employed and the attempt to pinpoint the gaps and inconsistencies in empirical studies. Therefore, this book will be extremely useful for SLA undergraduate and postgraduate students and researchers interested in investigating cognitive differences.

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