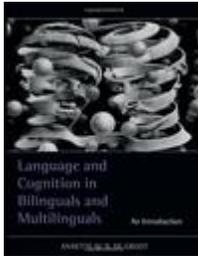


New Insights Into Multiple Language Mastery and Cognitive Development

A review of



**Language and Cognition in Bilinguals and Multilinguals: An
Introduction**

by Annette M. B. de Groot

New York, NY: Psychology Press, 2011. 514 pp. ISBN 978-1-84872-901-8.

\$55.00



Reviewed by

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Language and Cognition in Bilinguals and Multilinguals: An Introduction is an important volume that provides a theoretically sophisticated, lucid, exceptionally well-written overview of the complex, interdisciplinary field of psycholinguistics, which author Annette de Groot defines in the preface as “the field of science that examines the mental processes and knowledge structures involved in acquiring, understanding, and producing language” (p. xi). Pioneering neurobehavioral theorists have written from diverse perspectives about the central role of language in the development of cognition for many decades. They have included the neurophysiologist Ivan P. Pavlov (for review, see Ivanov-Smolensky, 1954, pp. 210–211), the behaviorist John B. Watson (1925, pp. 202–215), cognitive theorists Lev Vygotsky (1986) and A. R. Luria (1973, 1980), and the developmental psychologist Jean Piaget (1926; for review, see Flavell, 1963).

The current volume initially presents an extended, detailed, experimentally rigorous, parametric analysis of language-learning processes in infants and children who are learning to comprehend and speak one language only or two languages during the same or different developmental periods. The expositions of linguistic learning processes are based on a continuous interplay of experimental methodology, empirical findings, and linguistic output examples that highlight theoretical understanding as well as clinical application of the ideas and experimental findings. Expositions also include language learning by deaf children; language learning in midchildhood or early adolescence after a period of extreme, socially isolated silence that lasted for years; and second language mastery among immigrant children at different developmental stages.

These conditions are analyzed to inform the discussion about the role of the amount of verbal stimulation on language learning and its interaction with age-related “critical periods” that appear to potentiate first and second language acquisition. The discussion of these effects is presented at many levels that are integrated into a flexible working model that integrates linguistic, cognitive, and neurophysiological lines of evidence. Alternative explanations and theories are discussed and critically reviewed in a balanced manner that models and encourages creative and critical thinking as well as deep understanding of problems and findings in the field.

This method of teaching brings students from a variety of disciplines to a deeper level of understanding of the contribution of their own specialty area to the interactive study of language and cognition. It also provides an excellent model of interdisciplinary collaboration and cross-specialty scholarship that is necessary to reach a deeper understanding of linguistic and cognitive development processes.

There is an extended analysis of so-called late or sequential learning of a foreign language after mastery of a native language that provides an opportunity to analyze experimentally the means by which words are encoded, retrieved, expressed, and related in two lexical systems. Methods of foreign language vocabulary acquisition are overviewed and are contrasted with multiple well-validated experimental verbal learning and memory models that follow conceptual versus word association principles.

The discussion is focused on empirical evidence, and theoretical models are presented and discussed as tools to understand and organize those experimental results. Alternative hypotheses and explanations are offered throughout the text, and one is encouraged to ponder and hypothesize about deep questions that are at the cutting edge of current knowledge.

Understanding and production of spoken and written language among bilingual individuals provide an opportunity to analyze different encoding schemas based on phonemic as well as alphabetic similarities and differences. De Groot analyzes these topics in a series of related chapters.

Theories of multichannel cognitive and linguistic processing of verbal information in multiple languages are advanced, and experimental evidence that supports or challenges

them is discussed thoroughly and critically. The range of evidence that is analyzed and integrated seamlessly across basic neurophysiological, cognitive, lexical, and semantic levels of discourse is striking. Diagrams are utilized effectively to demonstrate the interplay of different levels of the language-processing system's theoretical modular components. The discussions are segmented into self-contained modular units, each of which is introduced with a lucid, detailed rationale and concluded with a well-integrated synopsis.

An extension of these discussions leads to analysis of alternate language access by bilingual individuals and theories of "language control" that make simultaneous translation possible. Clinical syndrome analysis of bilingual individuals who become aphasic as a result of an acquired focal brain lesion provides a basis for complementary analysis of the breakdown and compensation within the modular language system. Thus, both linguistically gifted and linguistically impaired bilingual individuals are studied to provide complementary insights into language organization.

A chapter on the effects of multiple language mastery on cognitive organization will be of central interest to cognitive psychologists, speech and language specialists, neuropsychologists, and neurologists with basic as well as applied interests. There are closely reasoned, detailed analyses of decline in second language proficiency as a consequence of years of disuse, decline of native language ability after cross-national adoption, and the centrally important influence on cognition from the Whorf-Sapir hypothesis that these two features are related. That conjecture is also reminiscent of some of the theoretical components of Vygotsky's work (for review, see Wertsch, 1985).

In the final chapter of the volume, de Groot considers results from a variety of structural and functional neuroimaging techniques and their relevance to the study of the neural basis of bilingual function. Several of the classical aphasic syndromes are presented and briefly overviewed to highlight the physical correlates of modular language functions.

Evidence for different cortical maps that may be associated with expression and comprehension in different languages is addressed from clinical and neurophysiological brain-imaging studies of normal bilingual individuals and of bilingual patients who have acquired brain lesions that affect specific language functions. As with the other analyses of language parameters, de Groot provides a rigorous, parametric, experimental analysis of modular language functions that is relevant and informative for those who are interested in theoretical aspects of the subject as well as clinical diagnosis and rational planning of modular skill-learning rehabilitation strategies.

Language and Cognition in Bilinguals and Multilinguals: An Introduction provides far more than its title would lead one to expect. It provides a beautifully clear blend of cutting-edge theory, a thorough and well integrated overview of important trends in the current literature, an exemplary model of critical thinking, and a sound basis for experimental analysis of thought and language. Introductions and summaries of important ideas throughout the volume enhance understanding, and there is an extensive glossary of key terms in an appendix so that the technical vocabulary of the text is clearly explained

within the volume. The author has produced a work of lasting value that should become a standard text in this important emerging specialty field.

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