

A proposal for correcting serious flaws in current theories of intelligence.
Review by Michael Lamport Commons and Patrice Marie Miller of:
A Theory of Conceptual Intelligence: Thinking, Learning, Creativity and Giftedness
Rex Li, 1996, Praeger Publishing

This book makes a major contribution to the study of intelligence. It does so in two ways. First, it is extremely lucid in its discussion of the relationships between various theories of intelligence. This allows the reader to better understand both the relationships between older theories and current theories, and some of the problems in the theories that need to be addressed. Second, Li proposes his own theory of intelligence which combines thinking and learning. He discussed how these major two components develop, how they relate to each other and why both are necessary in a theory of intelligence. Each of these aspects of the book will be discussed in turn.

The History of Research on Intelligence

Li discusses others' theories throughout the book, but he devotes Chapters One and Two specifically to discussing the history of theories of intelligence and contemporary theories of intelligence, respectively. The history provided in Chapter One is clear, extremely up to date, and comprehensive. In this chapter Li also argues that theories of intelligence serve in most cases as posthoc justifications for what is already believed. Because such theorizing has profound social and political implications it is important to examine the underlying assumptions of theories. Chapter Two, in its review of contemporary theories of intelligence, addresses all the major notions of intelligence including Piaget, Fodor, Glaser, Ziegler, Gardner, Sternberg, Butterfield, Brown and Campione, Snow, Shank, Perkins, Jensen, Eysenck, Horn, Ackerman. The fact that he is able to discuss so many notions in one chapter shows the breadth of the book.

Li's Proposal for a Theory of Conceptual Intelligence

In building an argument for a theory of conceptual intelligence, Li begins by discussing language and the emergence of thought. The main issue has to do with the nature of the basic symbol systems that underlie intelligence. Li states: "I believe that intelligence has a strong link with symbolic systems, and the conjecture is that intelligence is the unintended consequence of using symbol systems that facilitate thinking and learning....The commonest symbolic systems are language, music, gesture, mathematics, and pictures (Gardner 1983, p. 25)." (p. 77) This seems to be an unnecessarily limiting view of symbol systems. For example, Piaget's notion that sequences of actions also form symbols and can be named by other actions and internalized also generates symbol systems. Hence, sequencing of actions necessary to form complex systems does not have to be based on syntax. Sternberg's view of symbol systems, as discussed here, is also more general and would allow for intelligence in nonhuman animals.

Li's discussion of symbol systems is followed by a discussion of language and human evolution. Even in excellent books one may find fault. He takes the point of view that only Homo Sapiens have language because only humans use syntax. Evaluating chimpanzee intelligence on the basis of their nonuse of syntax in thinking is misguided. For example, analyses of chimpanzee political and moral behavior (as shown in Ristau, 1991; Wrangham, McGrew, de Waal, & Heltne, 1994; de Waal, F. B. M. de, 1996) indicates that they reach the concrete-operational stage because they make deals with one another that involve taking the perspective of the other and integrating it with their own. Yet it is true that in language they are at the nominal state rather than at the sentential, because they do not show grammar. This presents a problem that is not sufficiently addressed in this book. How does conceptual intelligence advance without language? Language is useful even if one does not buy the idea that all thought requires language. Other aspects of animal competence are not mentioned, for example, relatively recent work in concept formation (Kendrick, Wright & Cook, 1990; Pepperberg, 1990; Zentall, 1993) and stimulus equivalence classes (Fields & Nevin, 1993). The whole discussion about the difference between the functional use of language (demonstrated in stimulus equivalence and other similar paradigms) and the syntactical notion (a discussion stemming originally from the Chomsky-Skinner debate) are entirely missing. The work on neural networks is also absent.

In Chapter Four, Li discusses the growth of conceptual thought in terms of problem solving, concept formation, creative thinking and reasoning. A good part of this is a review of notions of human conceptual thought. While in general this discussion is very thorough, claims about the animal work are outdated (as above) and fail to review the modern work on equivalence classes and concept acquisition.

In Chapter Five he attempts to integrate major learning theories with notions about the growth of conceptual thought. This chapter reviews major learning theories as part of explaining what Li thinks. The major problem here is that there seems to be a failure to understand that the operant is a

concept, and can, therefore, form the basis for much conceptual learning. He fails to understand the similarities between the recent work of animal researchers and those of cognitive psychologists. Therefore, his comments about Chomsky and Skinner or Piaget and Skinner appear old and out of date. In his own theory, and in a manner very similar to Skinner, he postulates that a great deal of learning is unconscious.

Toward the end of the book there is an interesting chapter reviewing the work of Michael Anderson and David Perkins on connections between giftedness and cognitive development. This work includes only the traditional view that development ends with Formal Operations. Work on reasoning beyond formal operations (as exemplified by Alexander & Langer, 1990; Arlin, 1975; 1984 Funk, 1989; Storfer, 1990) has much to add to discussions about giftedness.

Conclusions

Despite some lacks in terms of breadth, what is so nice about this book is that Li not only presents material, but discusses its strength and weaknesses from his perspective. He draws from a number of traditions in formulating his own theory. He always has extremely lucid and informative diagrams of what he is presenting. His own theory is largely schematic now. It combines some of the best elements from other theories and offers a diagrammatic explanation of how they fit together.

The book is highly readable and, because of his formatting of it (his use of tables for example), memorable. In the end the strongest part of the book is his comparisons of the various approaches and their elucidation. When I compare this book to other books on intelligence in the field this one is extremely readable, cogent and clear. This is a must read.

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Dr. Commons did his undergraduate work at the University of California at Berkeley, and then at Los Angeles, where in 1965 he obtained a B.A. in mathematics and in psychology. In 1967 he earned his M.A., and M.Phil. and in 1973 his Ph.D., in psychology from Columbia University.

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He is cofounder of Society for Quantitative Analyses of Behavior, and of The Society for Research in Adult Development, and the Special Interest Group, Development and Behavior Analysis in the Association for Behavior Analysis and is Founder of the Journal of Adult Development. He was senior editor of Quantitative Analyses of Behavior, Volumes 1-11 and senior editor of four volumes on Adult Development including Beyond Formal Operations: Late Adolescent and Adult Cognitive Development and Clinical approaches to adult development. Most recently Dr. Commons has been the associate editor for a Special Issue of Journal of Experimental Analysis of Behavior on the Nature of Reinforcement. He is Consulting Editor, Moral Development Series.

He is the junior co-author with J. Stevens-Long (1991) of Adult life: Developmental processes. Mountain View, CA: Mayfield Publishing Company. Recently, he has contributed chapters, with Juan LaLlave (1995) Comparing psychodynamic, cognitive-developmental and behavior-developmental views of psychological boundaries to M. L. Commons, J. Demick, C. Goldberg (Eds.), Clinical approaches to adult development. Norwood, NJ: Ablex; A comparison and synthesis of Kohlberg's cognitive-developmental and Gewirtz's learning-developmental attachment theories in J. L. Gewirtz & W. M. Kurtines (Eds.), Intersections with attachment; with S. R. Krause, G. Fayer, and M. Meaney, M. on Atmosphere and stage development in the workplace to J. Demick & P. M. Miller (Eds.), Development in the workplace. Hillsdale, NJ: Lawrence Erlbaum Associates; Hillsdale, New Jersey: Erlbaum; and with G. Sonnert, T. G. Gutheil, and H. J. Bursztajn, H. J. on Ethics and decisions about suicide in Gutheil, T. G., Bursztajn, H. J., Alexander, V., & Brodsky, A. (Eds.), Decision making in psychiatry and the law. Baltimore: Williams & Wilkins.

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Dr. Commons is a Licensed Psychologist and Health Care Provider in Massachusetts and a Certified Teacher. He is a consultant for medical, legal, business and educational settings on organizational atmosphere, productivity, ethics, and professional-client relationships.

Patrice Marie Miller Biography

PATRICE MARIE MILLER attended Swarthmore College (1968-1970) and obtained her B.A. in Psychology, cum laude, from New York University in 1972. She obtained her Ed.M in 1979 and her Ed.D. in 1988 from Human Development and Psychology at the Harvard Graduate School of Education. Since 1993, she has been an Assistant Professor, Department of Psychology, Salem State College and since 1994, a Research Associate, Department of Psychiatry, Harvard Medical School, Massachusetts Mental Health Center. Dr. Miller is interested in the social and emotional development of children, and the influence of early experiences, parenting, socioeconomic background and culture on development. Dr. Miller is a co-author of a recently published chapter entitled Influences of culture and schooling on mothers' models of infant care (In S. Harkness & C. M. Super (Eds), Parents' cultural belief systems: their origins, expressions, and consequences. New York: Guilford), and a co-editor of two books: Demick, J. & Miller, P. M. (1993). Development in the workplace. Hillsdale, N.J.: Erlbaum. & LeVine, R. A., Miller, P. M. & West, M. M. (1988). Parental behavior in diverse societies. New Directions in Child Development, 40. San Francisco: Jossey-Bass.