

Cognition and the Symbolic Processes: Applied and Ecological Perspectives. Edited by Robert R. Hoffman and David S. Palermo. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1991. 545 pp. \$79.95 (hard cover), \$39.95 (paper)

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This volume is largely the outcome of a conference held in honor of James J. Jenkins at the University of South Florida, Tampa, in January of 1987, with the original title of *Speaking, Reading, Thinking, and Development: The Accomplishments and Goals of Modern Research*. Some of the chapters were solicited independently, however, and all contributions seem to have been updated shortly before publication. The book is also a sequel to two previous edited volumes entitled *Cognition and the Symbolic Processes* (Weimer and Palermo, 1974, 1982).

The unity of this Festschrift lies in the diversity of ideas and the wide-ranging influence of its dedicatee, James J. Jenkins. Jenkins is one of the more remarkable psychologists of this century, and certainly one of the most beloved ones. Unlike many of his famous contemporaries, he did not earn his reputation through the religious pursuit of a favorite theory, nor primarily through his empirical research or theoretical writings, though he has done much excellent work along these lines. His special distinction derives from his broadmindedness and flexibility, and from the enormous influence he has had on his contemporaries as teacher, colleague, and intellectual stimulator. Rather than drawing attention to himself, his lifelong goal has been to point out problems that need to be solved, as well as ideas and methods (frequently those of others) that may be best suited to accomplishing concrete goals. Jenkins' achievements thus go far beyond the publications that have his name on them; they pervade a large section of cognitive psychology, especially that concerned with language.

It is clear from the contributions to this volume that his colleagues and former students regard him not only with respect and admiration, but with gratitude and affection. As Donald J. Foss writes in a postscript to his chapter with Shari R. Speer, "There can be few in the annals of the profession who took such pains to nurture people, both in the service of helping them develop as individuals and in helping develop the ideas they might have" (p. 137). This Festschrift, therefore, was not a professional obligation but a joyful occasion: By expressing their own ideas and reporting on their own accomplishments, the contributors celebrate the Jenkins spirit in themselves.

Of course, love alone does not guarantee a volume of high quality. What does is the caliber of the contributors, together with their obvious desire to live up to the standards set by their friend and mentor. Nearly all the authors are distinguished researchers in their fields, and nearly all are putting their best foot forward. As already

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indicated, the diversity of topics is unusual, and, as is natural in a Festschrift, many of the offerings at the shrine of friendship are not entirely original but summaries of work that can be found described in more detail elsewhere. With few exceptions, however, they are thoughtful and stimulating, and surely must have pleased Jenkins.

There are 27 chapters which are grouped into eight sections. To readers of this journal, sections 2-4, comprising 10 chapters, may be of greatest interest. They are entitled *Speech Perception* (three chapters), *Language Comprehension* (four chapters), and *Cognition and Motivation* (three chapters). Preceding them is a *Perspectives* section containing a brief introduction by the editors, an unremarkable retrospective on memory research by David L. Horton, and an intriguing chapter on "Direct Perception and Other Forms of Knowing" by another great stimulator of cognitive psychology, Ulric Neisser. He summarizes some principles of direct perception of movement-produced information (of which speech is undoubtedly an instance), and then proceeds to discuss briefly several other important aspects of perception that are less direct, including object recognition, the perception of other persons' gestures and actions, the acquisition of referential function and of categories. Neisser evidently is attempting to defuse the artificial conflict between staunch defenders of direct perception theories and their opponents by pointing out that different kinds of perception have different degrees of directness.

The section on speech perception opens with a rather brief contribution by Alvin M. Liberman and Ignatius G. Mattingly on "Modularity and the Effects of Experience". Sound localization is first presented as an example of a perceptual function that is almost certainly accomplished by a specialized neural mechanism. By analogy, the authors then argue that speech perception likewise takes place in a dedicated "module". The opposite, "conventional view", is described as holding that speech perception is a learned, cognitive achievement. The authors do not take the conciliatory attitude exemplified by Neisser in his chapter, for example by considering the possibility that there are degrees of modularity, that speech perception may rest on the interaction of modular and nonmodular processes, or that modular and nonmodular processes ultimately may have to be described in the same theoretical vocabulary. In support of the modular view, a single classic experiment on the effect of language experience is cited in which Jenkins happened to collaborate with Liberman (and others). This chapter, then, is somewhat narrow and dogmatic in terms of the argument and the evidence considered.

It contrasts in this respect with the superb "Note on Linguistic Nativism" by Michael Studdert-Kennedy. Studdert-Kennedy develops a forceful argument against Chomsky's theory of innate language competence and its derivatives (presumably including the modularity view espoused in the preceding chapter) by citing evidence from genetics, embryology, neurophysiology, ethology, anthropology, and the study of early language development. The argument elaborates the Darwinian principle that "form grows from function, not function from form" (p. 40). The main points are, in Studdert-Kennedy's magisterial formulation:

- (1) Development of the neural substrate supporting any complex behavior is induced, in part, by the behavior itself;
- (2) The invariant course of development observed in complex, species-specific behaviors is determined, in part, by invariants in the environment to which all members of a species are exposed;
- (3) The proper study of language development is a

description and, where possible, functional analysis of its sequence – a postnatal “embryology” that makes no appeal to supposed genetic determinants. (p. 40)

The breadth of the discussion is most impressive. Studdert-Kennedy concludes by noting that “appeals to ‘innate’ determinants of language development are little more than verbal devices to cover our ignorance” (p. 53) and, in fact, inimical to research. This article should be required reading for any student of language and speech.

The third paper in the *Speech Perception* section, by Randy Diehl and his colleagues, summarizes some results of their research on auditory interactions among phonetic cues. Their main hypothesis is that speech has evolved to be maximally distinctive perceptually, and that acoustic properties that are mutually reinforcing at an auditory level were “selected” by speakers to signal the same phonetic distinction. Using the time-honored technique of comparing the perception of speech stimuli with that of “nonspeech analogs”, Diehl *et al.* have been successful in demonstrating auditory non-independence among some acoustic cues that cooperate in signalling phonetic distinctions. They argue, therefore, that phonetic “trading relations” (which they define as one cue affecting the perception of another, rather than both affecting the perception of the phonetic distinction) may have at least a partial basis in auditory perception. One possibility not considered by Diehl *et al.* is that auditory perception may have been corrupted by the perception of speech, so that nonspeech stimuli sharing some properties with speech are perceived somewhat like speech, even if they are not sufficient to evoke a linguistic percept. The empirical results are interesting, however, and provide useful food for discussion in a research area that has been brought almost to a standstill by excessive theoretical polarization.

The section on *Language Comprehension* opens with a chapter on “Holistic Models of Word Recognition” by Neal Johnson. It is essentially a tribute to Edmund Burke Huey, whose classic book on reading appeared in 1908 (republished in 1968). Johnson argues for the essential correctness of Huey’s argument that words are perceived as integral units, and that their component letters are analyzed as individual units only when holistic perception fails (as in printed nonwords) or when special attention is drawn to them. He cites supporting evidence from his own research and that of others. Although he does not establish a connection to speech perception, the discussion seems equally relevant to that area (see, for example, Foss and Blank, 1980; Warren, 1983).

The following contribution by Charles Clifton, Jr., on “Syntactic Modularity in Sentence Comprehension”, summarizes some of the research on the on-line parsing of (read) sentences which suggests that certain kinds of syntactic ambiguities are processed initially in a context-insensitive manner. He concludes that the syntactic module is one of those “relatively simple, special-purpose, computational devices, precisely tuned to the details of one relevant and limited part of the environment” (p. 111).

The following contribution, by Donald J. Foss and Shari R. Speer, is relatively long and dense, more difficult to read than most in this volume. It is also exceptional in that it contains (apparently) original experimental data. The problem under investigation is very specific: the modulation of semantic priming effects between words in a (heard) sentence by the semantic context. Foss and Speer report data in support of such context

effects, which argue against a theory of automatically spreading semantic activation and suggest that the semantic interpretation of lexical items takes place within the larger context of a discourse model.

The final chapter in this section, entitled "The Complexity of Reading", by Philip B. Gough, actually pursues a very simple hypothesis. It is that reading ability consists of two major components, decoding and comprehension, that combine in a multiplicative (rather than additive) fashion. Gough adduces several kinds of evidence in favor of his multiplication hypothesis, which I did not find very convincing. A critical evaluation, however, must be left to reading experts.

The fourth section of the book moves on to topics more peripheral to language and speech. Only the first chapter, by William N. Dember, is actually about cognition and motivation (the title of the section). It is a personal plea to include motivation and emotion as important topics in contemporary cognitive psychology. The following valuable contribution, "Metaphor and Context in the Language of Emotion" by Robert R. Hoffman, John E. Waggoner, and David S. Palermo, presents a thorough and scholarly review of research on emotion metaphors. The last chapter in the section, on a rather unexpected topic, is one of the real gems in this book: In it, Háj Ross provides a brilliant analysis of Carl Sandburg's short poem, *Fog*. The chapter is masterfully written and constitutes a happy wedding of detailed phonetic analysis and poetic insight. The author's relation to Jenkins is not made clear, but there could hardly be a more fitting tribute than this delightful essay which celebrates the joys of exploration and discovery.

The remainder of the volume contains chapters on topics not directly relevant to language and speech, but there is much to reward the inquisitive reader. I enjoyed especially John B. Pittenger's fine discussion of cognitive and event perception approaches to assessing people's knowledge of physical principles, Robert N. Kraft's report on his pioneering research on the psychological impact of visual techniques employed in film making, James J. Jenkins' own wise words (a reprint of an earlier conference talk) on the importance of educating students for real-life applications of their knowledge, and Rik Warren's affirmation of his teacher's remarks in the form of his personal impressions as a researcher in applied psychophysics (airplane control skills). Other contributions deal with children's understanding of scientific principles (Brewer and Samarapungavan), mathematical cognition (Greeno), memory access (Franks *et al.*), the aesthetic basis of pedagogy (Premack), pragmatic linguistic skills (Becker), baseball "illusions" (Carello and Turvey), the development of mobility (Pick and Rosengren), mental retardation (Brooks and Van Haneghan), and ergonomic research (Mark *et al.*). Finally, for intellectual mountaineers there is an incredibly rich and sophisticated discussion of the self-organization of intentional systems by Peter Kugler *et al.*, the longest chapter in the volume.

In summary, this is a stimulating and rewarding book to enjoy and learn from. It is carefully edited (though I did find a few typos) and uniformly of high quality. The paperback version is affordable, I suppose. For those who have not had the good fortune to benefit directly from Jim Jenkins' enthusiasm and encouragement, this volume will convey some of the master's intellectual spirit.

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