

and child rearing are in the interests of the state. In the United States, we tend to think of children as the private responsibility of their parents; government support is given only in cases where parents fail in those responsibilities.

Child-care leave can have two different goals: to enable the mother to recover from the physical consequences of pregnancy and childbirth and to permit parents to provide care to their infants. Policies in the United States have addressed only the former, but the authors of this volume argue cogently that the latter is at least as important. If leave is designed to permit child care, then it should be available to both parents and to parents adopting a child. Most of the psychological literature discussed emphasizes the importance of time for early child care. That is why the authors' proposal is called *infant care leave*, not *maternity leave*.

Although fathers can and often do take an active role in caring for young children, the conflicts between employment and childbearing are experienced principally by women. Several chapters discuss the implications of parenting for women's equality and career opportunities. Historically, "protective" legislation on the basis of women's supposed frailty was used to restrict women's job opportunities. Legislation or policies that are based on a protective philosophy (i.e., pregnancy or child-care responsibilities require special protections for women) risk a discriminatory outcome. Policies that are based on "equity," or fairness, are preferred by most of the book's authors; the 1978 act requiring pregnancy to be treated like other physical disabilities is an example of such a policy. To the extent that leave is for infant care, it can be extended equally to women and men. However, the biological fact that women carry, bear, and nurse children raises continual questions about how to provide for the needs arising from these facts without treating women as a class apart from other employees.

This book is valuable for anyone interested in the topic of parental leave and for psychologists who would like to learn more about how to address policy issues effectively. It is readable, clear, and informative. The principal message is summarized succinctly in the introduction and the conclusion. However, it seems incomplete in one important sense: There is almost no discussion of the many parents who work in part-time, temporary, or minimum wage jobs with no benefits. The policies proposed here would probably not cover those workers, yet they

are the very ones who need help because they are disproportionately young and poor. This reviewer would like to have seen more concern about policies that would meet their needs as well as the needs of more stable, affluent workers.

The proposal in *The Parental Leave Crisis* is certainly a valuable one that most psychologists would support, but it would not solve all of the problems faced by parents trying to earn a living and raise children. ■

The Cutting Edge of Language Acquisition

Brian MacWhinney (Ed.)
Mechanisms of Language Acquisition
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Review by
Patricia Marks Greenfield

Brian MacWhinney, professor of psychology at Carnegie Mellon University (Pittsburgh, Pennsylvania), is coauthor, with J. Anderson, of the chapter "The Acquisition of Grammar" in M. Gopnik and I. Gopnik (Eds.) From Models to Modules: Studies in Cognitive Science. ■ Patricia Marks Greenfield, professor of psychology at the University of California, Los Angeles, is coauthor, with J. Smith, of The Structure of Communication in Early Language Development.

Mechanisms of Language Acquisition constitutes the proceedings of the 20th Carnegie Mellon Symposium on Cognition. In both the symposium and the book, editor Brian MacWhinney successfully gathered together a stellar group of language acquisition researchers on the cutting edge of the field. The mix is multidisciplinary, with approaches including linguistic analysis, empirical research, computer modeling, and interdisciplinary hybrids. The book is difficult to read because so many of the chapters involve highly formal analyses; it can be read with ease only by those conversant with artificial intelligence, the latest version of Chomskyan linguistic theory, and the history of child language research. I found the struggle worthwhile, however, for the reward was familiarity with the latest trends and problems, particularly in formal approaches to grammatical development.

The very richness of the individual papers makes the problems in accounting for the development of child language and the disagreements in the field all the more apparent. For example, in the preface, MacWhinney states that there are three points of agreement among the authors: (a) *Mechanism* is an important ingredient of accounts of language acquisition. (Could anyone disagree with this?) (b) A theory of language acquisition must

attribute just the right amount of generalization to the language learner, with innate constraints being the favored solution. (c) Language is learned without using correction or negative instances from adults in the environment, a situation that creates problems for an account of its acquisition. Contrary to what one might expect, these three conclusions do not provide common points of departure for future work in the field. Instead, they are, on the one hand, foci for basic theoretical incompatibilities and, on the other, lightning rods for contradictory data.

Let me address these same three points, but not in the same order:

1. As regards the issue of mechanism, MacWhinney asserts that "all of the mechanisms are proposed as parts of what will some day be a fuller and more explanatory account of the whole of language learning" (p. xii). On the contrary, there are some notable incompatibilities between mechanisms posited by different chapter authors. For example, Fodor and Crain, Roeper, Macken, and Pinker are most explicit in assuming that what is acquired by the language-learning child are *rules* and *principles*. Yet Rumelhart and McClelland, in a revolutionary new conceptual approach to language development, *parallel distributed processing*, present a computer model of the devel-

opment of English past-tense forms that is based entirely on learning a complex network of connections—actually nothing more than old-fashioned, behavioristic associations. Pinker points out the incompatibility between the connectionist architecture of Rumelhart and McClelland's simulation and the symbol-manipulating architecture of his own model, whose output is rules rather than networks of associations.

Because Rumelhart and McClelland demonstrate that their model replicates detailed features of well-accepted empirical data concerning the acquisition of English past-tense forms (e.g., Bybee & Slobin, 1982), theirs is a very real alternative to rule- or principle-based positions. For the first time since Chomsky's (1959) critique of Skinner's (1957) *Verbal Behavior*, a behavioristic process (reinforced associations) offers a visible and influential account of language's central component—grammar or syntax.

In historical perspective, Palermo and Eberhart (1968) published a behavioristic study of artificial language learning by adults in which they demonstrated that grammatical development progresses through the same three stages in human adults as it does in the Rumelhart and McClelland computer simulation. Because of the Chomskyan zeitgeist, however, the study was ignored. Although not cited by Rumelhart and McClelland, the Palermo and Eberhart study provides the most direct empirical confirmation of their approach.

On the other hand, an experiment reported in Braine's chapter shows us that a network of associations—such as Palermo and Eberhart or Rumelhart and McClelland have posited—is learned more effectively when a core of the associations have a common semantic basis. It appears that the rote associations of parallel distributed processing will not be sufficient to account for actual syntactic learning; meaning must also come into play. This interdependence between syntax and semantics (or world knowledge) is fundamental to Pinker's chapter "The Bootstrapping Problem in Language Acquisition," and even manifests itself in the Chomskyan approach of Roper, where syntax has become less autonomous from semantics or conceptual knowledge over time.

2. Rumelhart and McClelland's model (not to mention those of Langley and Carbonell and of Macken) also constitutes a counterexample to MacWhinney's third point of agreement—that no negative evidence is available to language learn-

ers—because Rumelhart and McClelland's computer model "learns" through a constant process of corrective feedback. The negative feedback mechanism in Rumelhart and McClelland's simulation, although counter to the assumption of chapter authors such as Fodor and Crain and Roper, has been validated by recent empirical evidence that is summarized in MacWhinney's chapter: When adults expand and recast children's early and imperfect linguistic productions, they frequently provide a contrast between the child's nonstandard form and the model form in the adult language. Under these conditions, "positive evidence for other forms expressing the same meanings" (Bowerman, p. 450) becomes negative evidence or corrective feedback for the child's own form. Indeed, E. Clark implicitly posits just such a mechanism of negative evidence in the chapter "The Principle of Contrast."

In the concluding commentary, Bowerman points out some differences between Clark's version of negative evidence and that of connectionist theories. Bowerman is also critical of the idea that adult recasting of child sentences serves as an important source of negative evidence. However, her critique ignores the fact that, insofar as adult and child forms do not contrast, adult responses to child speech can also serve as positive evidence, confirming, rather than correcting, the child's linguistic knowledge.

3. Concerning the point that innate constraints are the preferred way for the child to "steer a course between the Scylla of overgeneralization and the Charybdis of undergeneralization" (MacWhinney, p. xii), my reaction is that this "solution" simply creates a new problem. Because a constraint is negative by definition—it specifies what cannot happen rather than guiding what can happen—the positing of innate constraints has simply moved negative information from the environment into the brain. At this time, it seems that there is more evidence that the environment provides negative evidence than that the brain does.

In a short review of an edited book, the reviewer must make a fundamental choice between summarizing individual chapters and providing integrative but selective theoretical analysis. The fact that *Mechanisms of Language Acquisition* was coherent and stimulating enough to make this latter path feasible is a high compliment to the book and its editor. However, the cost of this approach is that one is not able to do justice to the integ-

ity of individual contributions, all of which are excellent in this case.

In contrast, the production of *Mechanisms of Language Acquisition* is uneven. The Langley and Carbonell chapter has several pages with greatly reduced legibility because of a "shadow" or "double-printing" problem. Chapters by Bates and MacWhinney, by Maratsos, Gudeman, Gerard-Ngo, and DeHart, and by MacWhinney each have one or more typographical errors that render complex meanings unclear. The reference list for the chapter by Bates and MacWhinney has several entries missing. There is always a trade-off between speed and accuracy in publishing a book; speed appears to have won out in the present case.

Finally, I would recommend this book to any and all researchers who need to know where the field of language acquisition stands today (although, as MacWhinney himself points out, readers will have to look elsewhere for information on speech development in infancy and on the effects of social interaction on language learning, two areas that could not be included). The book is equally vital for instructors in developmental psycholinguistics, who will probably find the chapters too difficult to assign to their students but indispensable for preparing and updating their own lecture material.

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