

Copyright © 1994 by Lawrence Erlbaum Associates, Inc.

All rights reserved. No part of the book may be reproduced in any form, by photostat, microform, retrieval system, or any other means, without the prior written permission of the publisher.

Lawrence Erlbaum Associates, Inc., Publishers
365 Broadway
Hillsdale, New Jersey 07642

Library of Congress Cataloging-in-Publication Data

Early child development in the French tradition : contributions from current research / edited by André Vyt, Henriette Bloch, Marc H. Bornstein.

p. cm.

Includes bibliographical references and indexes.

ISBN 0-8058-1193-1

1. Perception in children—France.
2. Perceptual-motor processes.
3. Social interaction in children.
4. Language acquisition.

I. Vyt, André. II. Bloch, Henriette. III. Bornstein, Marc H.

BF723.P36E17 1994

155.4'0944—dc20

93-43363

CIP

Books published by Lawrence Erlbaum Associates are printed on acid-free paper, and their bindings are chosen for strength and durability.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

EARLY CHILD DEVELOPMENT IN THE FRENCH TRADITION

Contributions From Current Research

Edited by

André Vyt

*University of Ghent—NFSR
Belgium*

Henriette Bloch

*École des Hautes Études—CNRS
Paris*

Marc H. Bornstein

*National Institute of Child Health and Human Development
Bethesda, Maryland*



1994

LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS
Hillsdale, New Jersey Hove, UK

7 Developing Knowledge: Diverse Perspectives and Common Themes

Elizabeth S. Spelke
Cornell University

The chapters in this section demonstrate, I believe, that research on early development from French-language countries is as rich and diverse as the field as a whole. The first two chapters exemplify one source of diversity. De Schonen and Deruelle view the human infant primarily as a neural system growing in interaction with its immediate environment: Their research illustrates how the study of developing perceptual and cognitive capacities and the study of the developing human brain illuminate one another. Rochat and Bullinger, in contrast, view the human infant as an organism that acts adaptively at every point in development and grows in harmony with its environment: Their research illustrates how an ecologically oriented study of development can shed light on the origins and nature of complex actions. Within biology, mechanistic and ecological approaches are complementary, and the same is likely to be true in psychology. This diversity of perspectives stands to enrich our understanding of the growing child's capacities to perceive, act, and reason.

The remaining two chapters exemplify two contrasting approaches to the development of knowledge. Whereas Lécuyer and Streri focus on early-developing perceptual capacities as a foundation for knowledge, Malcuit and Pomerleau focus on early-developing capacities to attend and to learn. Both approaches take controversial stands concerning such issues as the relation between knowledge and perception, the role of action in the development of knowledge, and the nature of the learning processes by which knowledge grows. Psychologists from all theoretical perspectives may agree, however, that the studies described in these chapters increase considerably our understanding of perception, attention, and learning. The study of knowledge is sure to benefit from this increased understanding.

Do any common themes emerge from these chapters? Perhaps revealing my own perspective and predilections, I see three.

1. *Structure and interaction.* The mind of a human newborn is not undifferentiated and equipotential but consists of distinct structures with distinct functions. Human behavior, at any age, results from the interaction of these structures. The difficult tasks for developmental psychology are to discover the initial structures that constitute the infant's core capacities, to analyze the interactions among these structures that result in the infant's overt actions on his or her environment, and to probe the events by which these structures and interactions emerge and change.

Because neither the elementary structures of the mind nor the interaction of such structures is known in advance, the task of developmental psychology is extremely difficult. Nevertheless, the research described in these chapters provides instructive examples of how progress can be made. Consider, for example, de Schonen and Deruelle's (1991) use of laterality tasks, Streri's (1991) use of intermodal transfer tasks, and Lécuyer's (1991) use of categorization tasks to shed light on the representations and processes underlying object recognition. Consider, also, the ingenious studies reviewed by Rochat and Bullinger, teasing apart basic action capacities through the study of interactions between action and posture. As a final example, Malcuit and Pomerleau show how careful task manipulations can begin to dissect the complex component processes that underlie an apparently simple act of looking. Psychologists have developed a repertoire of tools for probing the structures and processes underlying infants' functioning.

2. *Early competence and developmental continuity.* Until recently, most students of early development stressed the differences between infants and adults and the radical changes that occur over the course of postnatal growth. Human action was thought to progress from rigid reflexes to coordinated, intentional acts; human perception was thought to change from meaningless sensation to meaningful apprehension; human knowledge was thought to progress from an initial void to an array of concepts and beliefs. In different ways, all the authors in this section appear to reject this view. Rochat and Bullinger argue for a new view of action development, in which human action is seen as flexible and intentional from its beginnings. The remaining authors exemplify a different approach to perception, in which the infant is seen as a perceiver from birth. This theme also has emerged, in part, because of the astute observations and inventive research of these investigators and their colleagues. Consider, in particular, Rochat and Goubet's (1992), and Amiel-Tison and Grenier's (1986) studies, which demonstrate how coordinated actions can emerge when postural constraints are minimized; de Schonen and Bry's (1987) studies of initial abilities to categorize a visual display as a face; and Lécuyer's (1992) studies of early categorization of number. Although these investigators do not deny the existence or importance of developmental change, they stress the invariance of certain psychological capacities over the course of development. From the beginning of

life, humans appear to perceive, to act, and to reason; these invariant capacities serve as foundations for growth and change.

3. *Developmental psychology and cognitive science.* The third theme was stressed by Piaget, and before him by Rousseau and Descartes. By studying the development of children, one sheds light not only on development and on children, but on human nature itself. For example, the student of face perception in infancy may illuminate the processes and representations by which humans perceive faces as adults; the student of neonatal reaching may learn about mature, skilled action; the student of infant numerical concepts may shed light on mature mathematical concepts and mathematical reasoning and even on the nature and history of formal mathematics (Piaget, 1980). The study of early development serves as a valuable tool for increasing knowledge in psychology and cognitive science.

Studies of infants may provide an especially useful tool for understanding human action, perception, and reasoning, for two reasons that relate to the preceding themes. First, if human psychological capacities depend on essentially modular mechanisms, those mechanisms may be easier to discern at an early point in development, before they are organized into complex routines and mimicked by overlearned skills. Second, if human development is underpinned by invariant capacities to act, to perceive, and to reason, then those capacities may be revealed more clearly in infants than in older children or adults, for whom they are overlaid by a vast array of acquired abilities. In the mind of the infant, we may see a reflection of the adult mind: a reflection that is distorted and impoverished, but that may reveal the outlines of human intelligence.

REFERENCES

- Amiel-Tison, C., & Grenier, A. (1986). *Neurological assessment during the first year of life*. New York: Oxford University Press.
- de Schonen, S., & Bry, I. (1987). Interhemispheric communication of visual learning: A developmental study of 3-6-month-old infants. *Neuropsychologia*, 25, 601-612.
- de Schonen, S., & Deruelle, C. (1991). Spécialisation hémisphérique et reconnaissance des formes et des visages chez le nourrisson. *L'Année Psychologique*, 91, 15-46.
- Lécuyer, R. (1991). La catégorisation de figures géométriques chez des bébés de 5 mois [The categorization of geometric figures by 5-month-old babies]. *Archives de Psychologie*, 59, 143-155.
- Lécuyer, R. (1992, July). *About categorization of geometric figures in the 5- and 3-month-old infant*. Paper presented at the International Congress of Psychology, Brussels, Belgium.
- Piaget, J. (1980). Comments on the impossibility of acquiring more powerful cognitive structures. In M. Piatelli-Palmarini (Ed.), *Language and learning: The debate between Piaget and Chomsky*. Cambridge, MA: Harvard University Press.
- Rochat, P., & Goubet, N. (1992). *Postural development and reaching*. Manuscript submitted for publication.
- Streri, A. (1991). *Voir, atteindre, toucher: Les relations entre la vision et le toucher chez le bébé*. Paris: Presses Universitaires de France.