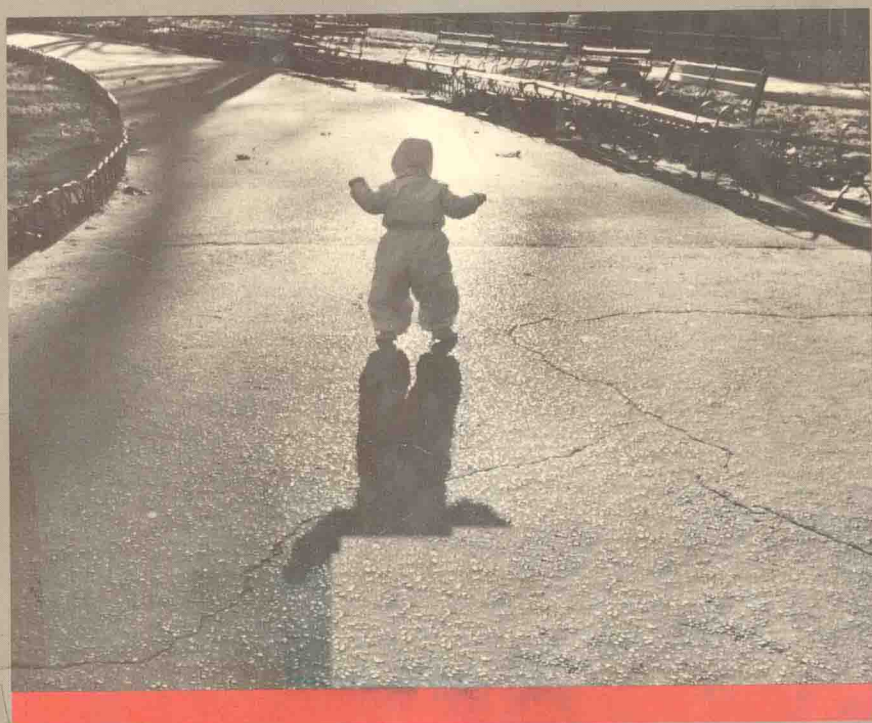


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DEVELOPMENT *in* INFANCY

An Introduction
second edition



Michael E. Lamb ♦ Marc H. Bornstein

DEVELOPMENT IN INFANCY

An Introduction

Second Edition

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RANDOM HOUSE



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Second Edition

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DEVELOPMENT IN INFANCY

Second Edition

*For Damon and Darryn
and
For Lea*



Sarcophagus of an infant: This scene shows a father teaching an infant to walk as the mother looks on. Hellenistic, second century B.C. (Museo Nazionale Archeologico, Sicily)

PREFACE

Although Darwin introduced the study of infancy in the nineteenth century and Freud speculated about the importance of infancy early in the twentieth century, the scientific study of infants achieved widespread attention only during the 1960s. Since then, infancy has achieved the status of one of the most exciting areas of study in the behavioral sciences. Researchers have come to see that basic developmental processes can be explored most effectively by studying infants, and that the role of early experiences in shaping individual development can only be explicated in studying infants. Scientific interest in infant development has also developed during this time, in part because of the emergence of some remarkably influential theories and in part because technological advances simplified empirical research with infants. As a consequence, intensive research and theoretical work have dramatically advanced our understanding of infancy in the last three decades. Surprisingly, however, no broad integration of the field was attempted before the first edition of this book was published in 1982. We hoped that *Development in Infancy* would fill an important gap, providing students with an accessible and readable account of development in the first years of life that addresses all the major conceptual and empirical issues without assuming more than an introductory acquaintance with psychology.

The appearance of our new edition attests to the success of *Development in Infancy*, and to the enormous changes still taking place in our understanding of infants. We have completely rewritten this book in an effort to update and to expand the coverage. We have added six new chapters (on the social context of infancy, methodology, neuropsychological development, non-Piagetian approaches to the study of cognition, language development, and temperament) and as a result the new edition is considerably more comprehensive than the first, paying thorough attention to all major aspects of infant development—contextual, methodological, neurological, physical, perceptual, cognitive, linguistic, social, and emotional. Older citations have been replaced by references to more recent studies that subsume and extend earlier reports. Because research in infancy has been so extensive, our bibliography has increased fivefold, and nearly half of the studies we cite were published after 1981. In this new edition, we have endeavored to maintain the readability that made *Development in Infancy* so popular initially. Our new edition is designed for use as a text in classes at all levels—undergraduate and graduate—as well as in various disciplinary contexts—psychology, education, child development, nursing, and social work, for example.

Our goal has been to provide a coherent overview of infant development. We have been selective rather than encyclopedic in our discussion of the literature, citing studies only where they help to elucidate critical issues in this complex and exciting field. Throughout, our strategy has been to integrate research and theory in such a way as to give readers an idea of what we consider to be conceptually

important and what the empirical data tell us about infants and about developmental processes early in life. After reading this book, readers should have a clear understanding of infant development and of the key issues and problems likely to be the focus of significant research in the years ahead.

Although we planned three authors for the new edition of *Development in Infancy*, Joseph Campos regrettably had to withdraw. Nevertheless, Joe's imprint remains on our final product. In addition to Joe, many of the researchers and theorists discussed in this book have shaped our understanding and have contributed to our fascination with infancy. We are indebted to all of them, hopeful that our integrative efforts will serve them as well as their students. In addition, we are grateful to Nan Knuth, who typed and repeatedly retyped successive drafts of the book; to Patti Cohen, who worked diligently on all facets of production; to our editors at Random House, Mary Falcon, Cele Gardner, and Sheila Friedling; and to Professor Elizabeth Sears for artistic consultation.

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Chapter 1

Introduction

By definition, infancy is the period of life between birth and the emergence of language, one-and-a-half to two years later. Despite its brevity, this phase of development has long attracted a disproportionate amount of attention and interest. Parents, of course, are naturally curious about their newborn babies, but only the last 30 years have witnessed the convergence of scientific, medical, social, and political trends that created the formal study of infancy. First, physicians' ability to intervene medically during perinatal and neonatal development improved dramatically when advances in the design of incubators and respirators made it possible to keep alive premature babies who would formerly have died at birth. Unfortunately, however, many medical triumphs produced unexpected psychological tragedies. For instance, premature infants who were given oxygen to prevent brain damage sometimes had suffered damage to their retinas (a condition known as retrolental fibroplasia) when the oxygen concentration was too high, and impaired visual development was the result. The use of anesthetics and analgesics to help mothers through labor was found to depress the physiological, perceptual, and learning functions of newborn infants for days and even weeks (Brackbill, 1979). Further, the medically expedient separation of mothers from premature infants seemed to increase family stress and divorce, although these consequences

A note about the chapter-opening illustrations: Artists everywhere and throughout the ages have represented infants in their art. Infants symbolize origins and beginnings, they represent innocence and charity, and they are angels—our very souls in heaven. Infancy achieved recognition as an independent and significant stage in the life cycle in Classical times, when the Romans depicted periods in the career of a typical man on “biographical” sarcophagi. Historically, artists have divided the life cycle into at least three but usually no more than twelve ages, infancy typically being the first. Often the ages of life are rendered as the steps of life, rising from birth to maturity and then descending to old age and death; as the tree of life, showing growth to full stature before withering; or as the wheel of life, reflecting the view that human beings are allotted a single revolution of time and inevitably arrive back at their beginnings. In the opening illustrations for the chapters in Development in Infancy, we acknowledge the status of infancy among the ages of life by showing examples of infancy represented as a stage in the life cycle in Eastern and Western art from Classical to modern times.

Hrabanus Maurus, *De nauturis rerum. The Six Ages of Man*. Italian, 1022–1023. (Monastery Library, Montecassino, Italy.)

could be ameliorated by allowing parents to interact with their infants while the babies remained in intensive care nurseries (Leiderman and Seashore, 1975). Because of experiences such as these, obstetricians, pediatricians, and psychologists became allies in the tasks of identifying and preventing potentially harmful psychological consequences of medical interventions. As a result, parents are now able to choose gentler and more humane forms of childbearing, can deliver in more homelike birthing rooms rather than sterile delivery rooms, and are able to gaze into their newborn's eyes before instillation of the mandatory eye medication (silver nitrate) that irritated the baby's eyes at the very time when parents most wanted to be seen.

There are also political, social, and economic reasons for the increased interest in infancy during the last three decades. The 1960s saw the beginning of the "war on poverty" in the United States, and thus the introduction of interventions designed to provide children from deprived and underprivileged backgrounds with a "Head Start" during the preschool years so as to prevent later school failure (Consortium for Longitudinal Studies, 1983; Zigler and Finn, 1984). By 1968, it was widely believed that these programs had failed (Jensen, 1969), and in response to this apparent failure, attempts were made to initiate educational interventions at earlier ages. The result was a proliferation of books and pamphlets designed to help parents enrich their infants' cognitive and social development. Where young infants would formerly have played contentedly with rattles, mirrors, or even pieces of paper, their parents now showered them with "creative playthings"—mobiles, busy boxes, even crib bumpers filled with goldfish—in hopes of accelerating development.

The 1960s also saw the emergence of the women's liberation movement. Many popular writers encouraged women to actualize their full intellectual, social, and economic potential, and these admonishments led to a reevaluation of the former equation of femininity with motherhood. In prior decades, many people believed that only full-time mothers could provide young children with the care they needed in order to thrive, and these beliefs were fostered by extensive literature on the adverse effects of maternal deprivation (Bowlby, 1951). Since the 1960s, however, social critics have argued that high quality day-care centers can provide good out-of-home care and thus relieve employed mothers of full-time child-care responsibilities (Scarr, 1985). Moreover, an important early study by Rudolph Schaffer and Peggy Emerson (1964) suggested that children's emotional attachments depended not on the absolute amount of time that parents spent with their infants but on the quality of the parents' interactions with them (see also Easterbrooks and Goldberg, 1984). Similar findings were obtained in studies of children reared in Israeli kibbutzim (Spiro, 1958) and Soviet nurseries (Bronfenbrenner, 1970). These developments in turn raised several questions: *What constitutes quality interaction between parents and children?* *What are the effects of day care?* *How much time should parents and infants spend together?* *What difference would it make if fathers rather than mothers took primary responsibility for child care?* The political and social climate for research in infancy thus became highly supportive.

Within psychology, a number of intellectual trends likewise shifted interest to children in general and to infants in particular. One of the most important involved the growing realization that one hallowed psychological principle—the

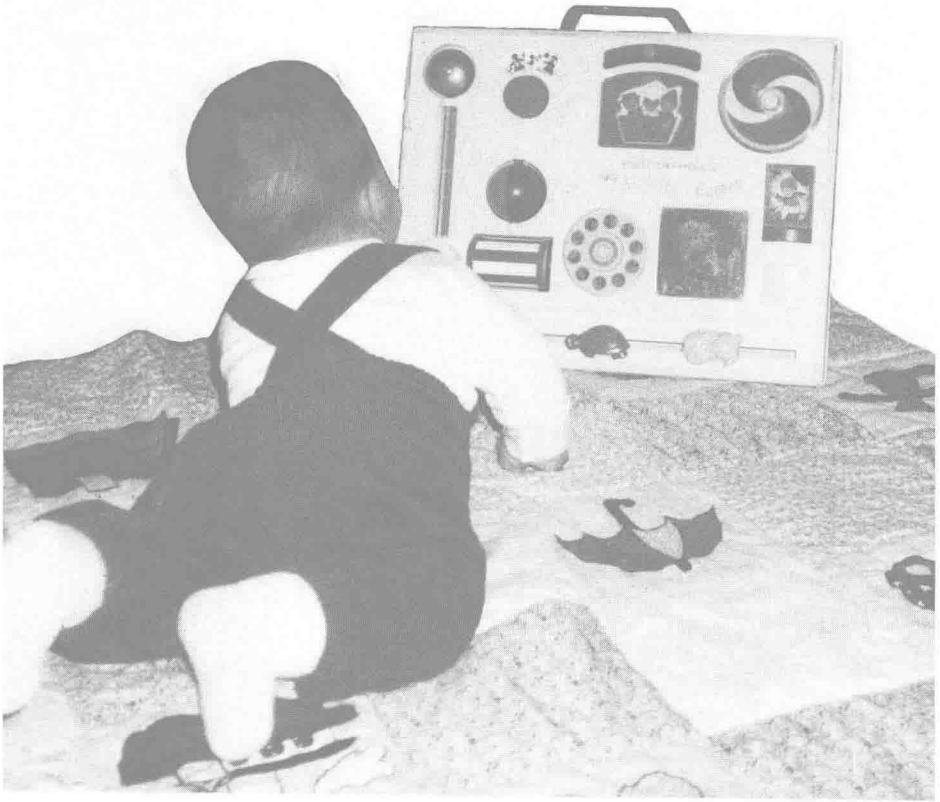


Figure 1.1 A baby fascinated with a “busy box.”

“law of phylogenetic continuity”—was seriously flawed. Ever since the time of John B. Watson and the beginning of classical behaviorism (1912–1936), most psychologists believed that the best way to understand complex human behavior was to study the simpler behavior of lower species, hence the popularity of the laboratory rat. Behaviorists argued that the principles of behavior learned from such study would apply to all species higher on the phylogenetic scale (hence the term “phylogenetic continuity”), although specific corollaries would have to be added to account for the greater behavioral complexity of each higher species. Behaviorists thus agreed, for example, that they could understand the elements of complex psychological phenomena, such as language acquisition, by first understanding the basic principles of learning by studying simple tasks such as maze running in rats. By 1960, this view had been indicted as overly simplistic (Bitterman, 1960). Scientists learned that they could not confidently generalize from goldfish to rats, let alone from rats to monkeys or from monkeys to humans because principles of behavior that were species-specific proved to be at least as important as principles that generalized across animals adapted to different environmental niches. Developmental psychologists, always eager to understand the

origins of behavior, could thus no longer turn to simple animal models for answers. Promptly, they directed their attention to the young of their own species.

A second conceptual shift within psychology reinforced this trend. The psychology of the 1940s and 1950s emphasized environmental influences and saw human beings as infinitely malleable. This belief was well reflected in another of Watson's famous dicta:

Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in, and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant-chief and yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, race of his ancestors (1925/1959, p. 104).

Such views did not fare well in the 1960s, however. Insights gained from studies of behavior genetics, behavioral biology, ethology, and neurophysiology pointed consistently toward the conclusion that there are powerful unlearned determinants of human behavior. Human infants were studied in order to describe the biological bases of behavior before those origins were confounded by the effects of early experience. Research on infants promised to answer questions about which human capacities and traits were biologically determined or constrained and which were environmentally founded, and how genetic and environmental influences might work together.

These shifts in conceptual orientation were supplemented by the implementation of more sophisticated new techniques to study human infants psychologically. During the behaviorist era, psychologists developed a variety of procedures for studying sensory, perceptual, cognitive, and emotional processes in nonverbal animals using simple conditioning techniques. In the 1950s, Yvonne Brackbill at Stanford University and Harriet Rheingold at the University of Chicago showed that learning procedures could be used to study the emotional behavior of human infants. At about the same time, Robert Fantz and his associates at Case Western Reserve University showed that it was possible to use observational techniques to study the attentional and perceptual capacities of human infants. These pioneering efforts encouraged a new generation of psychologists to use learning methods to demonstrate unsuspected behavioral capacities in very young humans. Almost simultaneously, the Czech pediatrician Hanuš Papoušek used classic learning methods to show that maturational (neurological) constraints prevented learning until infants were biologically ready.

In sum, a number of scientific, medical, social, and political trends, beginning in the 1960s, converged to create a new climate of interest in infancy. In the nearly three decades of intensive theorizing and research that have followed, a number of core issues have emerged. These issues constitute the central concerns of this book. Among the most important of these issues is the following: *How do "innate" and "experiential" factors influence infant behavior and development?*

THE NATURE–NURTURE DEBATE

Historically, the study of development—especially perceptual and cognitive development—was driven by the nature–nurture debate. This debate pitted against

one another two groups of philosophers who were interested in *epistemology*, understanding where knowledge comes from and how it develops. Extreme views were put forward by the *nativists* on the one hand and by the *empiricists* on the other; these two positions define the classic debate between proponents of nature and nurture.

The empiricists asserted that there is no endowed knowledge at birth, that all knowledge comes through the senses, and that perceptual development reflects learned associations. They argued that external stimuli naturally provoke bodily “sensations” and that through association separate raw sensations can fuse into meaningful perceptions. The empiricists’ view of the mind early in life was fostered by two separate but coordinated schools of thought. One derived from John Locke (1632–1704), who is reputed to have described the infant mind as a *tabula rasa*, or “blank slate.” A slightly different empiricist view is attributed to William James (1842–1910), who wrote that the world of the infant is a “blooming, buzzing confusion” out of which, presumably, infants’ experiences help them to organize and to create order and knowledge. Empiricism is an inherently developmental point of view because it emphasizes the naiveté of childhood against the perceptual and cognitive sophistication of adulthood.

The belief that humans begin life “empty-headed” was considered both philosophically intolerable and logically indefensible by nativists, who in the beginning argued simply that God would not create mindless creatures in His image and that knowledge of good is inherent and could not be achieved by learning alone in so short a span of time as childhood. As a consequence, nativist philosophers like René Descartes (1596–1650) and Immanuel Kant (1724–1804) proposed that humans were endowed at birth with ideas or “categories of knowledge” that assist early perceptual functioning. They postulated that human beings possess innate perceptual abilities to tell size, form, position, or motion, for example, as well as more abstract conceptions, such as knowledge of space and time. Against the empiricists, nativists argued that the mind naturally, and from the beginning of life, imposes order on sensory input, transforming raw sensations into meaningful perceptions automatically. According to nativists, infants and adults share the same perceptual capacities and therefore perceive the world in much the same way. Because nativist theory postulates that many abilities are present at birth, it is not particularly developmental, although it does acknowledge that certain abilities take time to mature.

Although the nature–nurture debate is now centuries old, its central issues are still basic to the study of infancy. First, many psychologists became interested in infancy because they saw a promise of resolving the nature–nurture debate: Only by studying behavior and performance early in life, they reasoned, could one determine the relative importance of heredity and environment. Second, the developmental changes observed in infancy are so dramatically extensive and rapid that observers are forced to ask what drives these changes; their attempts to address this question inevitably lead to speculation about heredity and environment, nature and nurture. Thus these issues remain central to the theme and content of this book.