

Human Evolution and the Helpless Infant

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We know from literature, films, and our own personal experience that human newborns are very adept at demanding and occupying the attention of others. They are helpless, dependent creatures who need our care, and they have evolved attractive characteristics and a range of captivating behaviors that are very effective at soliciting and obtaining that attention. This topic has long been of interest to evolutionary biologists and anthropologists. In his influential book *Mankind Evolving*, Dobzhansky was unequivocal in stating that it was humans' helplessness at birth and utter dependence on parents and other caretakers that favored learning and socialization "on which the transmission of culture wholly depends" (1962:196). We agree but argue here that it is more than the transmission of culture that derives from this helplessness. Many of the distinctive characteristics that make us human can trace their origins (or at least their significance) to the fact that we give birth to infants who are highly dependent on others; babies are afforded the opportunity to learn how to be human while their brains are experiencing growth unlike that seen in other mammals, including the nonhuman primates.

In the 1960s and earlier, most models of human evolution featured "man the hunter" (Lee and DeVore 1968) as the key player; in the 1970s (in the context of the women's movement), it became obvious that such an approach examined only a limited part of the human adaptation, and many anthropologists turned their attention to the other half of the species, namely "woman the gatherer" (Dahlberg 1981). The pivotal books that carried those names sought to explain and contextualize a number of distinguishing characteristics of humanness: bipedalism; language; increased reliance on tools and meat eating; expanded kin and other social networks; large, complex, and metabolically expensive brains; prolonged lifespan after menopause for women; sharing of food,

childcare, and other resources; art; symbols; rituals; and social and emotional intelligence. While we recognize that single-cause explanations of the human adaptation are simplistic, we propose that an equally important player in the story of human evolution, and one who can account for most of the characteristics listed above, is the helpless, attractive human infant. In a parallel phrase to the previous models, Dean Falk refers to this model as “baby the trendsetter” (chapter 6, this volume).

As anyone who has cared for them will attest, human newborns are truly dependent creatures that arrive in the extrauterine world in an undeveloped, helpless state and that mature even more slowly and over a longer period than any other primate. In spite of these challenges, our ancestors were able to find ways for their infants to survive while maintaining mothers’ health *and* reducing the spacing of births relative to apes so that human parents (and alloparents) are able to care for not just one, but several needy offspring at a time (see Lovejoy 1981). This costly developmental pattern is unprecedented among primates and is surely related to other aspects of our biology and behavior and to our adaptation as a cultural species. The chapters in this book examine both the costs and benefits of giving birth to such immature offspring, and the contributors propose that infant helplessness and social and cultural adaptation evolved hand in hand in many significant ways.

We came to our interest in the developmental status of human infants at birth from our work on the evolution of human childbirth. In previous publications (Trevathan 1987, 1988; Rosenberg and Trevathan 2002), we have argued that the evolution of the complex and constrained way in which human babies are born was made possible because of human birth assistance, a behavioral adaptation that may have characterized bipedal hominins even before encephalization. In our early thinking, we saw the timing of birth as one of the variables that can be altered (because of humans’ ability to culturally buffer our infants from the extrauterine environment) to mitigate the constraints of the obstetrical dilemma. As a result of a number of developments in the field (reviewed by Dunsworth in chapter 2), our attention has shifted from birth to the developmental status of the newborn. The timing of birth relative to infant development is not only a way to mitigate obstetrical constraints (by being born sooner when head size is smaller and passage through the birth canal easier) but also creates challenges that confer advantages in a species in which the chances of survival and future reproduction are enhanced by attracting the attention (and protection and provisioning) of alloparents. This book

investigates the proposition that helpless human infants are costly but that their attractiveness (“cuteness”) helps to mitigate those costs and that great benefits balance those high costs. In order to investigate the potential costs and benefits of being born early relative to developmental status, we brought together a group of scholars who we thought could bring fresh perspectives to this issue.

In 2014, the average cost to raise a middle-income American child to age eighteen approached a quarter of a million dollars. This seems expensive to most of us, but costs like these, while not necessarily stated in monetary terms, have been part of the human heritage for millions of years. Infancy is an especially expensive time in the life course, largely due to the extreme dependence and helplessness of the infant. An enduring question is why we have evolved to have such highly dependent infants. Given the costs of pregnancy, childbirth, breastfeeding, and other aspects of caring for these dependent infants, what has our species gained? What have been the trade-offs of this reproductive strategy that have made it worth it? We demonstrate in this book that infant helplessness is central to the human adaptation, and we argue that the only way humans could have adopted such a costly reproductive strategy is with extensive care from others, cooperative caretaking in addition to and beyond that provided by the parents. (Following Hrdy in her chapter in this volume, we define “cooperative breeding” as a characteristic of “any species with alloparental as well as parental care and provisioning of offspring.”) Bogin and colleagues (2014) have called this set of behaviors “biocultural reproduction” in recognition of the fact that, unlike most other cooperatively breeding species, human allomothers are not necessarily genetic relatives of the young they care for. Kramer and Otárola-Castillo (2015) have pointed to cooperative breeding as central to the distinctive aspects of human life history.

Human infants are like other primate babies in many ways, but they appear to reach extremes in two significant characteristics: (1) exhibiting a higher degree of helplessness and dependence at birth and therefore (2) needing an inordinate amount, duration, and intensity of parenting and caretaking. The two are obviously related, as has been discussed for centuries. The relationship between the helpless infant and strong family bonds was recognized by Alexander Pope in his *Essay on Man* (1733, noted by Gould 1977), when he observed that most mammals and birds leave their young after a relatively short time to take care of themselves, whereas “A longer care man’s helpless kind demands / That longer care contracts more lasting bonds.” Bolk, Gould,

Portmann, and Montagu were among the early influential writers who argued that slow development (Bolk's "retarded life course" or "fetalization theory of anthropogeny") was "what is the essential in Man as an organism" (Bolk 1926:469–470). Cohen (1947, cited in Gould 1977) argued that the long period of human infancy is more important than any anatomical differences in distinguishing us from other animals.

Many scholars have written about the significance of extended childhood (delayed maturation or adulthood) for the learning and socialization that are part of our adaptation as cultural animals (e.g., Bogin 1997; Mann 1972; Portmann 1990), but a focus on infant helplessness at the time of birth is less common, and rarely has it served as the focus of an entire book. In this volume we concentrate on late pregnancy and weaning, considering this time period in the human life cycle as a developmental continuum. In this view, birth is neither a beginning nor an end of a developmental stage; rather, it is a point when the neonate leaves the relative isolation of the biological womb of the uterus and enters the larger, more stimulating cultural womb of the mother and her social group.