

Multiple Perspectives on the Evolution of Childhood

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Human life history differs from that of our great ape counterparts in that we have a comparatively long stage of dependence, yet begin to reproduce earlier. Explanations for this protracted period of dependency are associated with our ability to both wean our offspring and resume ovulation earlier when compared to other apes (Bogin 1999b; Bogin and Smith 1996). In addition, extended dependency is considered a necessary developmental stage allowing young to learn key skills necessary for adulthood (i.e., the “embodied capital” of skills and knowledge necessary for reproduction) (Kaplan et al. 2000, but see Bogin 1999b for a history of the notion that childhood is a period of learning). Alternative proposals suggest that slow growth is an adaptive response to ecological risk (Janson and Van Schaik 1993), or argue that a lengthened period of juvenility maps onto a longer life span in general (Charnov 1993). Regardless of which theoretical paradigm one adheres to, the significance of integrating childhood into models of human life history and evolution cannot be overstated. Furthering our understanding of the evolution of dependency has significant implications for interpreting the evolutionary underpinnings of family formation (Crittenden and Marlowe 2013; Lancaster and Lancaster 1983b), social organization (Hrdy 2009), cultural transmission (Hewlett et al. 2011), cognition (Bjorklund, Causey, and Periss 2010; Leigh 2004), ontogeny (Bogin 1999b), and the physical and socioemotional needs of children (Meehan, Helfrecht, and Quinlan 2014; Narváez et al. 2012). Moreover, the significance of studying the evolution of childhood has begun to extend beyond academic theoretical modeling into real world applications for maternal-child health and well-being in contemporary populations around the world (Sellen 2007, chapter 10, this volume).

Within anthropology there has been a relatively recent trend toward

incorporating children into evolutionary models of human behavior (see Konner 2010), and, as Hrdy (chapter 2, this volume) notes, evolutionary anthropologists are increasingly focusing on the child as integral to reconstructions of the family life of early hominins. Despite this gradual shift, much of the discussion of the evolution of childhood remains tethered to anthropology subfields, with strikingly little overlap. Thus, the scope of inquiry into the evolution of childhood has historically remained limited due to a lack of discourse between the fields. In order to address this lacuna, we brought together a group of scholars from various anthropological subdisciplines to answer critical questions related to the evolution of human childhood. This book is the outcome of that gathering, a week of fruitful discussion at a School for Advanced Research (SAR) advanced seminar held in Santa Fe, New Mexico. It is the first edited volume specifically aimed at our current understanding of the evolutionary underpinnings of human childhood and, as such, is timely for academic discourse in anthropology, psychology, cognitive science, and multiple domains of public health.

The Seminar

The School for Advanced Research (SAR) sponsored an advanced seminar, co-organized by the editors, entitled “Multiple Perspectives on the Evolution of Childhood,” held November 4–8, 2012. In attendance were Robin Bernstein, Barry Bogin, Alyssa Crittenden, Sarah Hrdy, Melvin Konner, David Lancy, Courtney Meehan, Sanae Okamoto-Barth, Daniel Sellen, and Jennifer Thompson. This group is composed of international scholars whose research spans ontogenetic, life-history, developmental, behavioral, psychological, paleoarchaeological, cross-cultural, and applied public health perspectives on childhood. We organized the seminar around the following broad goals: (1) defining “childhood” across subdisciplines; (2) integrating cross-species data and the paleoarchaeological record with current developmental, biological, and ethnographic approaches to studying childhood(s); (3) evaluating how the emergence of cooperation and social cognition are linked to the evolution of human childhood; and (4) identifying the ways in which anthropological research can meaningfully contribute to the burgeoning discourse on contemporary infant and childcare practices.

A Note on Terminology

As evidenced by our first goal, remarkable as it may be, there is little consensus regarding the definitions of the terms *infant*, *child* (including children and childhood), *juvenile*, or *adolescent*. In biological and evolutionary anthropology these terms represent broadly agreed upon stages of human development—stages that are marked by both physical and behavioral attributes. But even within these subdisciplines, as is evident in the volume, there is some variation in the use of these terms regarding the relative importance of specific biological and/or behavioral markers used to delineate stages (e.g., the use of weaning to mark the end of infancy). Additionally, there are considerable conceptual differences in how anthropological subfields, other academic disciplines, and even the lay public conceive of and use these terms. For instance, following Bogin (1999b), the median age range is birth to approximately 30–36 months for *infancy*, 3–6/7 years for *childhood*, 6/7 years to puberty for *juvenility*, and 5–8 years following puberty for *adolescence* (see also Bogin, Bragg, Kuzawa, chapter 3, this volume; Thompson and Nelson, chapter 4, this volume). Cultural anthropologists, alternatively, often note that there is variation in the roles, responsibilities, and behaviors of youth cross-culturally that blur the behavioral markers of these life stages (Lancy 2008) and tend to use the terms more broadly or take a relativistic position (see Bogin, Bragg, and Kuzawa, chapter 3, this volume for a discussion on the antibiological stance taken by some cultural anthropologists). Moreover, colloquial uses of the terms further obscure clarity of meaning. The period of *infancy* is often casually used to refer to the first year of life and the terms *child* and *juvenile* are broadened to encompass all non-adult individuals. The situation is further complicated by the fact that there are few other succinct and accessible options to describe the entirety of the period between birth to adulthood besides the term *childhood*.

The title of the volume is a case in point. Although the term “childhood” is used in the title, the chapters herein focus on multiple stages of human immaturity. Commencing with Sarah Hrdy’s chapter focused primarily on infancy, it becomes evident that each stage of human immaturity is intimately linked with the previous one. It is neither possible to discuss human childhood (the 3–6/7-year-old developmental span) without examining infancy, nor is it possible to understand the implications of the developmental life span of childhood without discussing the juvenile and adolescent stages. With clarity in mind, however, contributors note when they refer to the general period

of “childhood” (immaturity) and when they refer to a specific developmental stage, clearly defining the lower and upper markers of the stages in question.

Volume Organization

The volume is broadly based on the main themes of the seminar and is organized into four sections: (1) Social and Cognitive Correlates of Childhood and Human Life History; (2) Growth and Development: Defining Childhood; (3) Ethnographic Approaches to Studying Childhood and Social Learning; and (4) Childhood in Context: Contemporary Implications of Evolutionary Approaches. In the first section, contributors introduce the ways in which key differences in reproduction and life history between humans and other primates lead to differences in altriciality, cognition, and social structure. In chapter 2 Sarah Hrdy lays the theoretical groundwork for the volume by introducing the Cooperative Breeding Hypothesis and arguing that apes with life-history characteristics of *Homo sapiens* would only have evolved in a system where parents *and* alloparents invested in the provisioning and care of young. She explores the psychological implications of this type of multiple caregiver social system for developing infants and suggests that selection pressure would favor *Homo* infants who were better at monitoring the intentions and mental states of others. These cooperative and “other regarding” infants, although still highly altricial, would not only read emotional cues more proficiently than their earlier counterparts, but would therefore also be better equipped to solicit care from multiple caregivers. With the conclusion that “emotionally modern” infants were “preadapted for subsequent evolution of coordinated social enterprises,” Hrdy introduces the next chapter of the first section.

In chapter 3, Barry Bogin, Jared Bragg, and Christopher Kuzawa outline the four biologically defined stages of human life history between birth and maturity and offer a biocultural definition of childhood that takes into account intergenerational effects and the “material, organic, physiological, social, technological, and ideological interactions” that influence this particular life-history stage. Offering an alternative to Hrdy’s use of “cooperative breeding,” the authors introduce the term “biocultural reproduction” to refer to the human specific pattern of cooperation in the production, provisioning, and care of young. They posit that this term represents a more accurate categorization of the human system due to “novel cultural traits such as marriage,

nongenetic kinship, and symbolic language.” This chapter concludes that biocultural reproduction, which results in a reduction of lifetime reproductive effort (LRE), allowed for higher quality offspring, increased rates of reproduction, and improved survival, and that the evolution of childhood contributed to the life-history trade-offs that help to characterize our species.

In section 2, “Growth and Development: Defining Childhood,” the contributors explore the biomarkers for the biologically defined period of development that we typically refer to as childhood. In chapter 4 Jennifer Thompson and Andrew Nelson compare the human pattern of growth and development with that of nonhuman primates and fossil hominins. Building upon Bogin’s (1997, 1999b; Bogin and Smith 1996) stages, they argue that other extant primates pass through infancy, juvenility, and adolescence, while humans pass through all of these stages and add an additional stage of “childhood.” They then turn to comparisons with fossil evidence from *Homo erectus*, *Homo neanderthalensis*, and *Homo sapiens* in an attempt to determine when the “modern” human pattern of growth and development evolved. Thompson and Nelson suggest that childhood begins when all deciduous teeth have erupted and children are able to provision themselves to a certain degree, while still relying upon transitional supplemental foods from adult provisioning. This phase of childhood ends when children have obtained enough ecological knowledge and physical maturity to actively participate in adult activities. Using these boundaries, the authors conclude that the distinct modern human pattern of growth, when compared to other hominins, is characterized by notable differences in the stages of infancy, childhood, and adolescence.

Chapter 5, by Robin Bernstein, extends the discussion of growth and development and assesses whether human childhood is a novel stage of growth using comparative hormone concentrations and gene expression across development. She focuses on the evolution of adrenarche and suggests that while aspects of development such as dental eruption, brain growth, and body mass growth might differ, the overall patterns among humans and nonhuman primates are similar. These growth periods are somewhat flexible, and thus, subject to changes in timing of adrenal gland zonation and maturation—allowing them to either be extended or compressed. She concludes that the human stage of childhood, although maintaining unique cognitive and behavioral traits, is not a *novel* stage of development. Bernstein argues that while human development varies from nonhuman primates, the difference is one of degree, rather than kind.

In section 3, “Ethnographic Approaches to Studying Childhood and Social Learning,” the contributors explore the ethnographic record to address the anthropology of childhood(s) in contemporary, small-scale societies and how these data might inform our understanding of the evolution of this human life-history stage. In chapter 6 Melvin Konner revisits his Hunter-Gatherer Childhood (HGC) model (Konner 2005, 2010) and presents key features of hunter-gatherer childhoods that are often assumed to be characteristics of the ancestral condition. Using ethnographic data from the !Kung and other hunting and gathering populations, he expands his discussion of the HGC model to address challenges proposed by, what he calls, the Childhood as Facultative Adaptation (CFA) model, which is based largely on the notion that childhood follows a flexible pattern that fluctuates and adapts to changes in ecological conditions. Konner summarizes features of !Kung infancy and childhood and then explores the data available for other foraging groups, outlining the traits of the HGC model of childhood, including close physical contact with infants, frequent (or on-demand) breastfeeding, maternal/infant co-sleeping, comparatively late age at weaning and long interbirth intervals (when compared with the general catarrhine pattern), complex social networks, participation in mixed age and mixed sex playgroups, emphasis on play throughout stages of development, and relatively low levels of assigned work. After in-depth cross-cultural examination and a discussion of the comparison between the HGC model and the catarrhine pattern, Konner concludes that the HGC model is supported. Additionally, he argues that our understanding of the evolution of human childhood is enhanced using the framework of hunter-gatherer infant and childcare patterns.

Building upon the framework provided by Konner, Alyssa Crittenden explores juvenile foraging and play among the Hadza hunter-gatherers of Tanzania in chapter 7. She argues that play is typically discussed as critical to psychosocial development or economic productivity, with little emphasis on the dual nature of play among foraging populations. She tests the embodied capital hypothesis and argues that, via foraging, children are simultaneously providing for themselves and their family as well as engaging in developmentally significant play. She concludes that juvenile self-provisioning may have been a “key component of the derived *Homo* complex” and argues that understanding “work play” allows us to better integrate children’s foraging into models of the evolution of human childhood.

In chapter 8 David Lancy uses case studies in the ethnographic record to

explore the role of children as active “self-starting” learners of culture. The anthropological literature currently juxtaposes the concept of learning as a component of pedagogy or teaching (Csibra and Gergely 2011; Hewlett et al. 2011) or as largely self-initiated (Lancy 2010). Lancy’s position emphasizes the latter and highlights the drive that children have to acquire culture on their own, focusing on the myriad of examples of such child-initiated learning in the ethnographic record. Providing a thorough cross-cultural review, he outlines the ways in which children acquire knowledge of their culture and are active learners in play, social interaction, family dynamics, and the “chore curriculum,” which is the interaction between the household economy and the developing child’s acquisition of motor, cognitive, and social skills. Lancy concludes by summarizing recent trends in the research on infant cognition to argue that children begin to acquire their culture largely on their own initiative and early in development.

In section 4, “Childhood in Context: Contemporary Implications of Evolutionary Approaches,” the contributors examine the consequences of our evolved childhood and its associated traits in the contemporary world. In chapter 9 Courtney Meehan, Courtney Helfrecht, and Courtney Malcom build upon contributions by Hrdy (chapter 2) and Bogin, Bragg, and Kuzawa (chapter 3). They examine the implications of the social nature of infant, child, and juvenile development on physical and socioemotional development in contemporary populations. Using available data on the role of allomothers, peers, and the broader social network, the authors review the cross-cultural role of caregivers and their effects on child nutritional status, survivorship, and socioemotional development. Additionally, they highlight that dependency on others is not limited to childhood, as mothers remain dependent upon the solicitude of others to support them throughout their reproductive life spans. The authors explore how the roles of others affect maternal nutritional status, psychosocial health, and investment patterns. They argue that the social worlds of both children and mothers should be brought to the foreground of investigations, as doing so will enable us to tease apart the multiplicity of influences that contribute to supporting our lengthy dependency and fast pace of reproduction.

In chapter 10 Daniel Sellen argues that understanding childhood in evolutionary perspective enables us to identify a suite of needs of infants and young children. This evolved human care package includes “ancient caregiving behaviors” (such as exclusive breastfeeding for the first six months) that should be retained as “core tools for child survival and well-being in contemporary

and future communities.” Sellen concludes that this care package, already significantly enhanced by powerful biomedical interventions, can also be bolstered using everyday techno-social innovations, such as mobile health, to deliver much-needed interpersonal support to current and future caregivers that effectively enhances health outcomes during infancy and early childhood.

Combined, the chapters contained in this volume highlight that the life-history stage of childhood is culturally variable, yet biologically based, and was critical to the evolutionary success of our species. While the anthropology of childhood is presently a growing and dynamic subfield, academic discourse that integrates multiple research domains is still in its infancy. Thus, it is our hope that this volume spurs further interest in the field and underscores the significance of incorporating multiple perspectives in such an inherently interdisciplinary investigation.