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Children, childhood, and development in evolutionary perspective

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ABSTRACT

We examine children, childhood, and development from an evolutionary perspective. We begin by reviewing major assumptions of evolutionary–developmental psychology, including the integration of "soft" developmental systems theory with ideas from mainstream evolutionary psychology. We then discuss the concept of adaptive developmental plasticity and describe the core evolutionary concept of developmental programming and some of its applications to human development, as instantiated in life history theory and the theory of differential susceptibility to environmental influence. We then discuss the concept of adaptation from an evolutionary–developmental perspective, including ontogenetic and deferred adaptations, and examine the development of some adaptations of infancy and childhood from the domains of folk psychology and folk physics. We conclude that evolutionary theory can serve as a metatheory for developmental science.

Introduction

The scope of developmental psychology has traditionally, and quite logically, been limited to the lifetime of the individual, from conception to death. Such a focus, however, ignores an important

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contributor to human development: its phylogenetic history. From this perspective, we agree with Konner (2010) that nothing in childhood makes sense except in the light of evolution.

The focus of this article is children, childhood, and development from an evolutionary perspective. Evolutionary thinking is not new in developmental psychology. The theories of many of the founding fathers of the field, including Wilhem Preyer, James Mark Baldwin, G. Stanley Hall, Sigmund Freud, Jean Piaget, Lev Vygotsky, and Heinz Werner, were influenced by Darwin's (and sometimes Lamarck's) ideas (see Morss, 1990). Some of these ideas were based on subsequently discredited conceptions (e.g., Haeckel's recapitulation theory), and evolutionary thinking fell out of favor among prominent child developmental theorists in the middle of the 20th century (John Bowlby and Jerome Bruner being notable exceptions), largely for two reasons. One was the "gene's eye view" of mainstream evolutionary psychology, with its apparent adoption of a form of genetic determinism – anathema to most developmental psychologists; the other was the initial focus of evolutionary psychology on adults, the individuals who do the reproducing.

Perspectives in both biology and developmental psychology have changed over recent decades, prompted by, among other things, the advent in biology of evo-devo (e.g., West-Eberhard, 2003), the formulation of epigenetic theories of inheritance and evolution (e.g., Dias & Ressler, 2013; Jablonka & Lamb, 2005; Meaney, 2010), and the explicit application of developmental–contextual models in an evolutionary framework in which development can best be described as a dynamic system, with structures (and behaviors) emerging over time as a result of the continuous and reciprocal bidirectional interactions between the child and all levels of life, from genes and brains through parents, peers, and the larger culture (see, e.g., Bjorklund, Hernández Blasi, & Ellis, in press; Bjorklund & Pellegrini, 2002; Geary & Bjorklund, 2000).

We propose that an evolutionary perspective can serve as a *metatheory* for developmental psychology – an overarching perspective that examines the distal and functional causes of behavior – which must be integrated with other more proximal causal explanations. As a metatheory, an evolutionary perspective organizes known facts parsimoniously, provides guidance to important domains, leads to new predictions, and unifies psychology with the life sciences (see Ketelaar & Ellis, 2000). Natural selection may have shaped the genomes of our ancestors, but genes are always expressed in a context, and such contexts serve as the proximal causes of development. Although an evolutionary explanation may capture the likely course of development and help predict which environments are most likely to result in what type of developmental trajectory, such a "plan" is not preformed but is implemented in real time by the actions of both micro- and macroenvironments on inherited genes (and other cellular machinery passed on through the generations).

In this paper we first look at some of the major assumptions of evolutionary–developmental psychology, including a rejection of the idea that evolutionary accounts of development necessarily reflect a form of genetic determinism; rather, we argue that evolutionary accounts of development involve bidirectional Gene × Environment interactions emerging dynamically over time. The role of plasticity in evolutionary explication is emphasized, and infants' and children's abilities to adjust their developmental trajectories based on environmental conditions are examined with respect to life history theory and related evolutionary–developmental perspectives. We then examine the concept of adaptation from an evolutionary–developmental perspective, proposing that some adaptations serve to benefit the organism immediately but disappear when they are no longer needed (ontogenetic adaptations), whereas others serve to prepare infants and children for life an adult (in addition to life as children – deferred adaptations). We then provide examples of developmental adaptations from the domains of folk psychology and folk physics and conclude by arguing that evolutionary theory can serve as a metatheory for developmental psychology.

All evolved characteristics develop via continuous and reciprocal bidirectional gene–environment interactions that emerge dynamically over time

One reason why developmental psychologists did not embrace evolutionary approaches was the taint of genetic determinism. Mainstream evolutionary psychologists proposed, essentially, that genes underlie domain-specific information processing mechanisms, which generate behavior (e.g., Tooby & Cosmides, 1992). Although mainstream evolutionary psychologists reject the label "genetic