Editorial

Family Experience and Pubertal Development in Evolutionary Perspective

In 2008, the journal *Pediatrics* published two major analyses of current knowledge regarding environmental factors and pubertal timing, including research needs, as judged by an “expert panel” [1,2]. Rather astonishingly, absolutely no mention was made of the current substantial body of developmental data concerning family influences on pubertal development [3]. One can only hope, perhaps naively, that the pediatric community will take note of the paper appearing in this issue of the *Journal of Adolescent Health* by Deardorff et al, showing that father absence proved associated with earlier pubertal development, just as earlier theory and research—entirely ignored by those writing in *Pediatrics*—suggested would be the case [4].

The study reported here in the *Journal of Adolescent Health* has its origins in Belsky et al’s evolutionary theory of socialization, which itself was derived from Draper and Harpending’s evolutionary analysis of the effects of father absence on the sexual behavior and relationship orientation of children who grow up without fathers [5,6]. Draper and Harpending offered a novel interpretation of the effects of father absence on, among other things, female sexual promiscuity based on life-history theory, whereas Belsky et al broadened the focus of their thinking by highlighting the possibility that a multiplicity of family stressors and supports could regulate the development of reproductive strategy, while proposing possible developmental pathways linking early family experience with later social functioning [7]. Most critically, these scholars advanced a novel prediction that could neither be derived from, nor (should it be substantiated empirically) accommodated by, any prevailing theory of human development. This prediction was that the family experiences, including but not restricted to father absence, would influence the timing of puberty in a way that would serve the ultimate biological goal of all living things, namely, reproductive fitness, the dispersion of genes in future generations—or at least would have in the environment of evolutionary adaptation. Belsky et al theorized that the stressors like father absence, insensitive and/or harsh parenting, and marital conflict would lead to a faster rate of development (i.e., earlier sexual maturation), thereby fostering more promiscuous sexual behavior, less stable pair bonds, and in consequence, lower investment parenting. More supportive family environments would engender exactly the opposite. The psychological, social, and biological consequences of family experiences in the first 5–7 years of life were not regarded as reflecting better and worse or more and less healthy development, but were different ways of getting the same fitness-enhancing job done. As a result, developmental mechanisms that are selected to serve them should still be found operating in the modern world, even if not their end-result of enhanced reproductive fitness.

In his masterful and comprehensive life history analysis of determinants of female pubertal development, Ellis concluded that “empirical research has provided reasonable, though incomplete” support for in Belsky et al’s theory [3]. While noting that “there is converging evidence…that greater parent-child warmth and cohesion is associated with later pubertal development,” he further observed that “the proposed accelerating effect of parent-child conflict and coercion on pubertal development is yet to be clearly established.” Following the publication of his review, Ellis himself reported that additional evidence consistent with the theory of Belsky et al, observing that a composite index of family supportiveness during the preschool years—which included measures of authoritarian parenting and negative family relationships—was associated with advanced adrenarche status at 7 years of age and more mature secondary sex characteristics in the fifth grade (−10 years) [8]. Relatedly, Pesonen et al discovered that traumatic parent-child separation during childhood predicted earlier age of menarche, whereas Costello et al observed that maltreated girls reached pubertal maturity 8 months earlier than nonmaltreated girls [9,10]. Also noteworthy are the data collected as part of the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development which indicate that (a) harsh control by mother before enrollment in school predicts earlier age of menarche and, thereby, (b) greater sexual risk taking at 15 years of age [11–13]. And now adding to this still growing body of evidence is the even more recent work showing that insecure attachment in infancy, derived as it is from insensitive parenting, forecasts earlier pubertal development, as does the absence of father, as revealed in Deardorff et al’s investigation reported in this issue—although apparently somewhat differently depending on girl’s race and/or socioeconomic status, and not as a result of any mediating effect of body mass index [1,11,12,14].
Importantly, other research indicates that even if some of the apparent effects of early family experiences on pubertal development are genetically mediated, this is by no means entirely the case [15,16]. Similarly, the recently published research is also noteworthy, inspired by evolutionary reasoning, showing that children appear to be differentially susceptible to effects of rearing on puberty because of their genetic make-up and physiological reactivity to stress [17–21]. Such data raise the prospect that many existing studies both over- and underestimate environmental effects on pubertal timing by failing to distinguish those least and most susceptible to such influences, respectively.

That any and all such effects of the rearing environment should be of interest beyond their theoretical significance vis-à-vis life-history theory is attested to by the fact that earlier pubertal onset is related not only to fecundity, but also to elevated risk for a variety of negative physical and mental health outcomes, including unhealthy weight gain, early initiation of substance use, early pregnancy, and mortality from cardiovascular disease and breast cancer [3]. One can only hope, therefore, that all those concerned with health—across the life span—will become cognizant not only of the research on the family antecedents of pubertal timing, ignored so far by the pediatric community, but also of what should now be the self-evident benefits of thinking in evolutionary terms about human development, including pubertal development.

Jay Belsky, Ph.D.
Department of Human and Community Development
University of California, Davis, California
and Department of Psychological Sciences
Birkbeck University of London, London, UK

References