

Book Review

The Evolving Science of the Developable

A review of Ellis, B. J. and Bjorklund, D. F. (Eds.). (2005). *Origins of the social mind: Evolutionary psychology and child development*. New York: The Guilford Press.

and

Burgess, R. L. and MacDonald, K. (Eds.). (2005). *Evolutionary perspectives on human development*. 2nd ed. Thousand Oaks, CA: Sage Publications.

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Beginnings

Obviously, a reproduction-focused discipline will find itself staring at the presumed endpoint – the reproductively mature organism. But that is a limited period of the human mind's life, no matter how important and enjoyable it may be. Also, mainstream evolutionary psychology has, in seeking the human universal, not given enough consideration to universal differences. A cheater detection mechanism, for example, will probably be present from an early age, but hardly from the start. It has to have a developmental history. But due to sibling conflict and parent-offspring conflict there is reason to believe it may be present very early, making a developmental approach less relevant, but far from irrelevant (see Kennair, 2003).

My own interest in evolutionary psychopathology and personality psychology has made me interested in behavioural genetics, but also in developmental psychology. I find the “human universals are adaptations” perspective most rewarding, but find that it is too limited if it cannot address the other important reality of human nature, as Scarr (1995) pointed out in comment to Buss's (1995) influential introduction to evolutionary psychology. In particular, a developmental perspective shows how there are different human minds: the mind of a two-year-old, a four-year-old, an eight-year-old, a sixteen-year-old, a thirty-two-year-old, and a sixty-four-year-old must be designed to be different. These minds have different main tasks: survival or reproduction, dyadic attachment versus peer bonding or romantic partnerships, to elicit care or give care etc. To be fair, mainstream evolutionary psychology has long

been aware of the importance of considering developmental processes, although development has not been given enough attention.

Then again we have the conceptually odd debate between developmentalists and evolutionists, mostly fuelled by the fear of genetic determinism (whatever that may be!). One obvious example would be the debate between Lickliter and Honeycutt (2003) and mainstream evolutionary psychologists such as Buss and Reeve (2003), Crawford (2003) and Tooby, Cosmides and Barrett (2003). But one may make claim after claim that an evolutionary perspective does not entail genetic determinism of the simplistic kind, but nobody who fears such listens, out of fear that it is a lie and that they will be corrupted if they do not staunchly oppose “genetic determinism.” In general, they do not listen when Dawkins speaks.

Richard Dawkins (1983, p. 234) claimed “evolution is the art of the developable.” It is that simple. One must consider how adaptations develop; that is a part of the analysis of adaptation. Mary West-Eberhard (1998, p. 8419, italics in original) put it even more clearly – though it might not work on the front of a t-shirt:

The unification of flexible mechanisms with a genetic theory of evolution helps to eliminate the old tendency to oppose development and selection as mutually exclusive architects of form. Selection cannot generate form, and development cannot cause a fitness-enhancing form to increase in frequency within a population. Development, with its built-in flexible responsiveness to both gene products and environment, is responsible for the *origin* of viable, selectable phenotypic variation [...] whereas selection explains which variants then spread and are maintained. So evolution is always a two-step process, involving first developmentally mediated variation and then selection resulting in gene frequency change.

In other words we probably need a scientific evolutionary developmental psychology, a research programme informed both by the accumulated empirical knowledge within academic developmental psychology as well as having a foundation in the integrative meta-theory of evolution. Contributions to such a field have been available for a while (e.g. Belsky, Steinberg and Draper, 1991; Draper and Harpending, 1982; Ellis et al., 2003; Low, 1998; MacDonald, 1998; Surbey, 1998) – but now the field has matured, it would seem.

The Books

A relatively new field¹ needs a good book – a Bible. That is, it needs a collection of the current beginnings of theoretical and empirical science within the field, which highlights both common interests but also diversity and creativity. You know what I mean... an “Adapted Mind”... or something similar. It becomes The Book. It attempts to define and collect the field, more or less, but also becomes an

influential guide for further development of the field.

It does seem odd then, when reading these two books, that two such parallel works have been published within such a limited field. And although there are a few authors that were included in both works (how could one have left them out?), there are also clear examples of authors included in one and not in the other (why would one do that?) – mostly resulting in the sensation of a part missing. I cannot see any clear theoretical reasons for this, merely considering the theoretical differences between the editors and contributors within each collection. That is the nature of early collections within new fields: diversity is the nature of the beast. This must be accepted and it is therefore too early to censor or exclude. Remember, despite caveats and objections to the scientific value of Freudian theory from the editors in the introduction to the chapter, “Adapted Mind” included Nesse and Lloyd’s (1992) chapter on “The Evolution of Psychodynamic Mechanisms.” Speculating about reasons for the decision to publish two competing books will hardly contribute anything constructive. My conclusion is quite simple (simplistic even): There should not have been two books – there should have been one!

Flinn, Geary, Segal and Weisfeld are included in both collections, with rather similar contributions. There are not that many researchers working in the field of evolutionary developmental psychology, but these obviously are among the foremost contributors to the field. There are other names, however, that leave holes in each collection by not being present.

Ellis, Baron-Cohen, Belsky, Bjorklund, Harris and Pellegrini might have been candidates for Burgess and MacDonald, whereas Hrdy, MacDonald and Mealy might have been interesting additions to Ellis and Bjorklund. Missing from both are Low and Surbey. The result is that neither collection seems to be complete. As such they both fail at becoming the new bible, founding collection or “Adapted Mind” of developmental evolutionary psychology.

But enough lamentation about the two-book situation... What *are* the current contributions? What is this new field about, as presented in the included chapters?

Evolutionary Perspectives on Human Development

Burgess and MacDonald’s collection consists of 14 chapters. The volume is respectfully dedicated to the late Linda Mealy, who wrote the last chapter, “Evolutionary Psychopathology and Abnormal Development.” The other thirteen chapters cover most aspects of developmental psychology, starting off with a general introduction to the book and field by Burgess. This is followed by a thought-provoking chapter by MacDonald and Hershberger titled “Theoretical Issues in the Study of Evolution and Development” – by far the largest chapter, and probably the most important specific contribution of this collection. The major thesis of modularity versus domain general seems to be a major part of current discussions within our field, and MacDonald is clearly in the domain general camp. In my opinion: a) Evo-Devo in general is a modular field. b) Research is generally

reductionistic/atomistic/modular when successful. c) What parts of the mind are general or modular is an empirical question that we have not answered properly yet, although the modular approach seems to describe the world as I read the general research within psychology and cognitive neuroscience. The position that development mainly is the story of the development of the human brain is rather more acceptable to me – a position argued clearly by Flinn in both books.

The rest of the chapters of “Evolutionary Perspectives on Human Development” include evolutionary developmental perspectives on childhood (Flinn), adolescence (Weisfeld and Coleman), cognitive development and learning (Geary), evolutionary behavioural genetics (Segal), language (Oller and Griebel), morality (Krebs), fear (LaFreniere), group socialisation (Charlesworth), child maltreatment (Burgess and Drais-Parrillo), and personality (MacDonald).

Hrdy is also included, with a chapter on humans as “cooperative breeders,” which probably is the most atypical child developmental psychology contribution. This chapter presents the fear that due to increasing numbers of humans developing to reproductive age without having expressed their adaptations for compassion that humans in time will evolve into unfeeling organisms, unable to show compassion. The most obvious problem here is that there is little data that I am aware of that the general compassion in the world is falling, either at phenotype or genotype level. And poor day-care is poor day-care, and ought to be improved, despite what might happen hundreds of thousands of years into the future – for the sake of the child’s happiness here and now (and actually despite what adult pathology might, or just as well might not, result).

Origins of the Social Mind

Ellis and Bjorklund’s collection uses the words “evolutionary psychology” more often and more noticeably than does Burgess and MacDonald’s. I do not find that the contributors are typically mainstream evolutionary psychology - which might be fine; who wants a theory that does not evolve? - although a few are more associated with this tradition, such as Baron-Cohen, Barrett and of course Ellis (who calls it “canonical evolutionary psychology”).

“Origins of the social mind” is divided into three parts: Conceptual Foundations and Core Issues, Personality and Social Development and Cognitive Development. From an evolutionary psychology perspective, differentiating between these fields is traditional but not necessarily biopsychologically meaningful. This is highlighted especially by Baron-Cohen’s contribution on the “Empathizing System” and autism, which integrates typical cognitive, emotional, social and personality factors.

Part one consists of five chapters: The “Emerging Synthesis” of Developmental Systems and Evolutionary Psychology (Bjorklund and Ellis) (though it would seem that both theses need “correcting” before they may be synthesised), development and evolution of the “Social Child” (Flinn and Ward), a comparative

analysis of human cognitive plasticity (Bjorklund and Rosenberg), “Early Stress” (Chisholm et al), and developmental evolutionary behavioural genetics (Segal and Hill).

Part two includes seven contributions: differential susceptibility to rearing influence (Belsky), determinants of pubertal timing (Ellis), adolescence (Weisfeld and Janisse), sex differences in competitive and aggressive behaviour (Pellegrini and Archer), peers and personality (Harris), play (Smith) and incest avoidance (Silverman and Bevc).

Part three consists of early learning, perception and cognition (Rakison), memory (Nelson), language (MacWhinney), autism (Baron-Cohen), academic learning (Geary).

The two last parts largely have a typical developmental psychology focus (maybe with the exception of incest avoidance). But there are a few evolutionary surprises, showing how an evolutionary perspective generates original thinking and perspectives within the established areas of research.

The two most surprising additions of this sort, for an imagined developmental psychologist who accidentally comes across this collection, might be Barrett’s chapter on “Cognitive Development and the Understanding of Animal Behaviour” and Bering’s “The Evolutionary History of an Illusion: Religious Causal Beliefs in Children and Adults.” These might not be what the run-of-the-mill child psychologist would expect to find in a general textbook on development (not counting, of course, the persistent focus on evolution and natural or sexual selection, which would probably seem even stranger!). I like these chapters especially for their imaginative approach to developmental psychology, as well as their creative use of evolutionary analysis.

General assessment

I find that the theoretical differences within the two books is a lot greater than between them – although maybe, e.g., Ellis’ position compared to, e.g., MacDonald’s may contribute to some slight difference. These might both have been books on sociobiology, rather than on evolutionary psychology. Although, for example, Burgess and especially Bjorklund and Ellis provide attempts at presenting theoretical frameworks or integrative guidelines for their chapters, there does not seem to be any single theoretical line of thought or dominating approach in current evolutionary approaches to development, apart, that is, from the application of evolutionary theory itself.

There is, as would be expected, some thematic overlap: general introductions to child development, which include topics that are essential to the field. I find it interesting, though, that there is no sense of being forced to present the classic format of a developmental psychology textbook; rather, one senses freedom to let evolutionarily relevant topics dominate.

In general, all chapters are worth reading, of good quality and presenting

interesting points of view, data or themes that most researchers of development in general and many researchers of human mental and behavioural evolution ought to read. Although no clearly discernible patterns of theory seem to be present, there is a clear choice of what part of development to study. There is, for example a lack of research on post-reproductive development. Yet again, this is probably expected by the reproduction bias of evolutionary perspectives, sexy science that it is. Maybe the next stage will consider the later years of human development, as both the science and the investigators mature.

Common ground

Perhaps the four overlapping contributions/contributors provide the best insight into an emerging field of evolutionary developmental psychology. A closer look at them might therefore be interesting; these are ideas and examples of research generally found to be indispensable by the editors of both collections (I agree with their choices, except that my list would be longer).

Flinn: The Evolution of Childhood

What is the point of a prolonged childhood? Does childhood have a function? Yes, concludes Flinn in “Culture and Developmental Plasticity: Evolution of the Social Brain” and “Ontogeny and Evolution of the Social Child” (with Ward). Starting off with Alexander’s axiom that the extended human childhood is not a by-product of other evolutionary selection processes or constraints, Flinn suggests that one needs a functional evolutionary explanation of childhood and the child’s socially apt mind. This is Flinn’s conclusion: Childhood is necessary and useful for building a socially intelligent adult.

This social brain is necessary because of the cultural and social arms races that define adult behaviour. Flinn repeats in both chapters that: “Humans are unique in the extraordinary levels of novelty that are generated by the processing of abstract mental representations.” Being able to generate, compete with and consume culture and complex social systems demands high levels of intelligence.

A culturally plastic organism therefore needs high intelligence and a prolonged period of training before entering the reproductive competition. These interconnected practices demand a social child with a social mind. And this is one possible explanation of why our species are children for so long.

Weisfeld: The Evolution of Adolescence

I recently discussed the concept of adolescence with the distinguished developmental psychiatrist Philip Graham. He took a social constructionist approach to the concept, as one may do with concepts. On the other hand, if something has evolved, then it is real. Weisfeld therefore takes a possibly different approach in his

two chapters – “Further Observations on Adolescence” (with Coleman) in Burgess and MacDonald and “Some Functional Aspects of Human Adolescence” (with Janisse) in Ellis and Bjorklund. Not only may adolescence be real he argues; there may be functions. So what are they?

All in all Weisfeld’s approach may be called social constructionist, too, the aim being to educate American adolescents and developmentalists. According to Weisfeld, adolescence is both culture dependent and consists of evolutionary universals. Some of these are typical for all human ages, but become more apparent in the years of late childhood and early adulthood in which one goes from a situation in which status is both less relevant and lower to greater relevance (reproductive opportunity) and greater variance (from high to lowest).

Other factors such as the pathology approach to adolescent sex and premarital pregnancy seems to be driven by specific cultural institutions such as marriage and a highly nutritious diet that makes females enter puberty earlier, as well as poverty among large groups of females with few eligible bachelors. This specific interaction in America would maybe not be typical of a hunter-gatherer culture in which puberty, due to lower calorie diet, has a later onset and where the parents have less to gain from bartering with their child’s reproductive resources.

Research into human development will benefit from integrative, multidisciplinary and evolutionary functional analysis. This is Weisfeld’s conclusion regarding research on adolescence, and it probably is true of life span development research more generally.

Although adolescence is not the final state, one must be able to navigate this especially turbulent period of life successfully in order to partake in the great competition of reproduction. As such, these chapters follow up Flinn’s offerings on childhood. Although Flinn’s and Weisfeld’s contributions cover the early years of human development, for a broader perspective I would have enjoyed similar chapters on early adulthood, reproductive adulthood, and late adulthood. Also, I believe there are differences between the sexes in many of the developmental periods; a life history perspective would suggest this; for example, early male adulthood is dangerous for sex-specific reasons (violence, risk taking, etc.), just as young females are at risk of loosing their lives in childbirth.

Geary: Evolutionary Cognitive Learning Psychology

When recently writing on learning and development from an evolutionary perspective (Kennair, 2004), I attempted to say something similar – Geary probably makes the point a lot clearer. In his two chapters “Folk Knowledge and Academic Learning” (focusing more on learning) and “Evolution and Cognitive Development” (focusing more on cognitive development) he describes two levels of cognitive learning: a) Primary domains (or primary abilities) typical of folk physics, folk biology and folk psychology and common to all humans (relatively universal), and b) Secondary abilities (those learnt in schools) acquired by putting conscious effort and

co-opted mental resources into making adaptations for acquiring evolutionarily novel abilities or information.

Geary thus addresses the important issue of why we go to school to learn some things (algebra, reading, spelling, and if one really is unlucky: physics) while other rather impressive acquisitions of knowledge and behaviour (making babies, language, walking, interacting with other social and intelligent primates) happens all on its own.

In Texas, I am told, the ex-governor (I forget his name), decided to cut sexual education (in other words teaching teenagers safe sex, how reproduction really works, how saying “no” is ok, etc) because it was considered that such lessons would encourage teenagers to have sex (Sic!). What was the effect? I have not seen the numbers, but I am told that the effect has been *more* sex among teenagers, rather than a reduction. Why? You don’t have to “be taught” how to have sex; what you have to be taught is how not to get pregnant or get diseases.

The important general lesson probably is that we learn different things differently, due to what our mental adaptations evolved to learn and do. This probably holds for development and learning in general. Thus, some adaptations will respond to many kinds of stimuli, but more readily to those approximating relevant stimuli in the EEA. As Geary points out, only an evolutionary perspective can address this problem.

Segal: Evolutionary Behavioural Genetics

Scarr (1995) called for a synthesis of evolutionary psychology and behavioural genetics, to combine both the individual differences and human universals traditions of academic psychology. I concur (Kennair, 2003). Behaviour genetics must become sex, status and age sensitive, and I believe an evolutionary developmental framework would do wonders; accordingly, evolutionary psychologists must become more aware of behavioural genetics’ findings (although Steven Pinker, 2002, has usefully communicated some of this to the evolutionary community, e.g. by presenting Turkheimer’s, 2000, summary).

Segal provides the beginnings of such a synthesis in her two chapters – “Evolutionary Studies of Cooperation, Competition, and Altruism: A Twin-Based Approach” in Burgess and MacDonald and “Developmental Behavioral Genetics and Evolutionary Psychology: Tying the Theoretical and Empirical Threads” (with Hill) in Ellis and Bjorklund. The development of such an integration of differences and universals is important. Also we might, through the power of the genome project and the new, burgeoning science of molecular genetics, be able to discover some of the specific genes that partake in the development of a large number of phenotypes. At the same time we know very little about specific environmental factors that influence development (Pinker, 2002; Turkheimer, 2000). It is a problem that most evolutionary psychologists still believe that mainstream academic psychology has been discovering such factors throughout the history of the science of psychology.

Alas, as long as one does not control for genetic influence, any finding of, e.g., parent-offspring behavioural similarity is probably more due to genes than environment given what we know today, although obviously for any specific sample this is an empirical question. The problem is that most developmental psychology would attempt to force a conclusion of environmental influence (social learning, rearing influence, etc.) from such correlations, no matter how invalid such a conclusion may be methodologically. Ellis et al. (2003) present one promising factor predicted by an evolutionary perspective: the absence of a father predicting onset of puberty and teenage pregnancy. Although Rowe (2000) is sceptical of this “Belsky-Draper” hypothesis, and Ellis et al admit that better genetic control would have been an improvement, it may be that evolutionary analysis may be our best searchlight when attempting to discover significant environmental influences.

Segal’s contributions are very important, and one of them ought to be included on reading lists for courses in both evolution and human behaviour and behavioural genetics. There appears to be, in general, a greater awareness of behavioural genetics in developmental evolutionary science than in mainstream evolutionary psychology. This is probably due to the developmentalist perspective of behavioural genetics. In any case it is something of which more mainstream evolutionary psychologists ought to be aware.

Conclusions

Is evolutionary developmental psychology, as presented through these two books, a viable new field of scientific inquiry? Yes. Absolutely. It is also a necessary addition to mainstream evolutionary psychology.

It provides us with the life context in which adult minds live, as well as and how these came to be, and – when in the future research focus shifts to older adults, senescence and death – the minds these reproducing minds eventually turn into. The focus on childhood and adolescence, and the absence of old age and post-reproductive life, including a lack of chapters that would provide a life span framework, was probably the most limiting aspect of the developmental perspective presented in these two collections.

Every age needs age-specific adaptations. Waiting to have the ability to survive until adulthood is too risky to be likely. Although reproduction, not survival, is the major process in evolution, survival is obviously important. As evolution is the “art” of the developable, the developable is the process of the survivable. The universal adaptations of the adult mind are not universal at all ages, not active in all contexts. But there are probably age-specific (as there are gender-specific), evolutionary life history adaptations that are species-wide universals and can be predicted. For example, there may be differences in active, behaviour relevant, regulating adaptations between adults who are parents and those who are not.

In future studies of universal mental adaptations and possible adaptive individual differences I hope to see more sophisticated work emphasizing context and

development. In other words, to see evolutionary developmental psychology help to develop evolutionary psychology.

What book would I recommend? Both of them. I find it hard to decide which of Segal's chapters I would include on reading lists for courses on evolutionary psychology, but one is nonetheless essential. The same goes for Flinn's chapters for courses on social development, evolutionary developmental psychology or evolutionary perspectives on human development. Although MacDonald and Hershberger's "Theoretical Issues" got me thinking (and worrying), Bjorklund and Ellis' "Emerging Synthesis" had me agreeing more, so I'd probably go for that one – but that is merely a question of personal taste.

No matter what flavour of human ethology, sociobiology, human behavioural ecology or evolutionary psychology makes you salivate more, if you are interested in how mental or behavioural development may be studied from an evolutionary perspective, here are *two* books that will enlighten, inspire and guide your further thinking and research on this new and important field.

Note

1. Obviously Darwin's developmental study in mind was published a few years ago, and one of the books reviewed is a second edition. Though the field of evolutionary developmental psychology is not "new" in some important ways, it is still a field that is attempting to find its identity especially vis-à-vis mainstream developmental psychology and mainstream evolutionary psychology

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