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The Flourishing of Young Children: Evolutionary Baselines
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The Setting

Converging events make this a key time to reconsider the needs of children and their optimal development or flourishing. In light of an increasing understanding of human evolution and the dynamics of early life conditions, we are poised to make a renewed evaluation of how these early life factors influence developmental trajectories. First, contexts for childhood have shifted over generations. For example, in comparison to children in the early 20th century, many children in the USA today have less self-directed free play and rarely play outside at all (Hofferth & Sandberg, 1999; Juster et al., 2004). Young children spend more time in front of electronic screens and in institutional settings with non-family members (McGroder, 1988; Rideout et al., 2005). Recent studies suggest that these shifts are not favorable to child wellbeing. But what theoretical baseline is being used to make evaluations of early life processes that impinge on human potential? Our thesis is that the design of childhood settings needs to take into account evolutionary perspectives on children's developmental needs and trajectories, which include selective pressures that occurred during our hominin- and primate-past, having given rise to specific social, emotional, and physical needs that when met enable children to thrive.

Second, child well-being indicators are dismal in nations like the USA, possibly due in part to caregiving practices that do not meet children's needs for optimal development. Of course the USA is not the only nation with poor child wellbeing scores but we focus on those data.

UNICEF (2006, 2013) puts the USA at or near the bottom on a variety of measures of child wellbeing compared to other developed nations. The National Research Council (2013) documents that people under age 50 in the USA, no matter their background, are at or near the bottom on a variety of wellbeing measures when compared to 16 other developed nations. For example, World Population Prospects (United Nations Population Division, 2012) indicate that the United States has one of the highest infant mortality rates of any developed country. The slippage of child wellbeing in the USA may be inadvertently "exported" to other countries as many follow the practices of the USA (e.g., medicalized birth, Wagner, 2006). As a result, if not already, child flourishing may be (increasingly) at risk around the world. In fact, in recent years a host of public, personal and social health problems have been skyrocketing not only in the USA, but increasingly around the world, for which science does not have consistent or reliable answers (e.g., psychological problems

such as ADHD, autism, and depression; not to mention psychosomatic conditions such as obesity, Type II diabetes, hypertension, and a variety of autoimmune disorders, e.g., Sanchez et al., 2001). While post-hoc remedies for child developmental psychopathology are useful and important, they do not promote optimal development in the same way as more proactive, preventative care that facilitates child flourishing. Only by understanding the practices and contexts for optimal child development can comparative guidelines for prevention and interventions be established, problems be accurately analyzed and effective solutions be tested.

The final backdrop for the volume is that humanity is facing unprecedented challenges to its existence in the near future due to climate instability, overpopulation relative to the earth's capacity, and increasing social conflicts that accompany such stressors (Kolbert, 2014; Millenium Eco Assessment, 2005; Intergovernmental Panel on Climate Change, 2007; 2013). Humanity's survival may depend on fostering optimal human capacities--cognitive, social and self-regulatory, as well as the cooperative aspects of humanity-- so that communal imagination and receptive intelligence again are fostered and facilitate finding solutions that involve whole-earth ethics (Narvaez, 2014).

Flourishing and Human Development

Allan Schore (1994, 2003a, 2003b) has been at the forefront of explaining the impact of early maternal care on neurobiological development, particularly self-regulatory systems governed by right-hemisphere processes scheduled to develop in the first years of life. In fact, Schore has reinterpreted attachment theory as a regulation theory. Schore (2015) cites Leckman and March (2011) who point out: "It has . . . become abundantly clear that . . . the in utero and immediate postnatal environments and the dyadic relations between child and caregivers within the first years of life can have direct and enduring effects on the child's brain development and behavior. . . The enduring impact of early maternal care and the role of epigenetic modifications of the genome during critical periods in early brain development in health and disease is likely to be one of the most important discoveries in all of science that have major implications for our field." (p. 334) In other words, brain and behavior development are highly influenced by perinatal and early relational experience, which, through epigenetic processes, shape the expression of the genome and provide the scaffolding for the child's rapidly developing and settling neurobiology. Because humans are highly neurologically immature at birth, caregiving practices and early experiences set up thresholds, parameters and functionality for the majority of body/brain systems and so we might assume that young children's flourishing depends on receiving appropriate early care.¹ When appropriate early care is missing, we should expect that human

¹ We define flourishing below but, generally speaking, it refers to more optimal functioning for a human being.

potential is diminished and social, emotional and cognitive outcomes are less than optimal.

In discussions of flourishing, it is important to discuss foundational questions. What is a species-typical niche for humans? What does flourishing look like? What baselines do we use for understanding whether or not children are doing well? To understand human flourishing, one must have a baseline for normality and for optimization. We approach these questions and our discussion of children's flourishing with an evolutionary framework that establishes a comparative baseline for making recommendations for human infants' and children's needs. We appraise components of humanity's evolved developmental niche and its known effects on individual wellbeing. After this we define what we mean by young child flourishing and then introduce the chapters in the book.

Evolution and Human Flourishing

Broadly defined, thriving is a state of being that results from optimal developmental circumstances, which enables a member of a species to maximize its potential. For example, we learn, both from personal experience and scientific experiments, what a thriving plant looks like and what it takes to help particular plants thrive (some combination of water, sun, soil and air). Similarly, it is important to identify the nature of a human being and what is needed for optimal functioning. This requires a look at evolution and establishing (as close as is possible) general baselines for optimal and sub-optimal development, allowing us to judge what thriving looks like in a human being (a child in this case).

Evolutionary theory can help frame discussions of flourishing, at least in the broad sense. One must be careful about the evolutionary theoretical perspective one draws on because it influences the baselines one adopts. For example, scientific discourse continues to highlight natural selection and information about genetic inheritances while journalists report the work as if genes were determinative of life outcomes. Of course, a single gene or even networks of genes rarely determine outcomes in a predictable manner (Carey, 2011). For example, even with a genetic allele linked to aggression (the "violence gene"), violent behavior is only likely to become a pattern if the individual experienced child abuse (Kim-Cohen et al., 2006). That is, developmental contexts and experiences affect the expression of genes (epigenetics), including their simple activation and inactivation as well as degrees of gene transcription. Still, dominant views of human evolution typically focus on genes and how individuals maximize genetic fitness, which can lead to misperceptions about the relationships between human physiological-behavioral plasticity and more (or less) optimal developmental conditions (as is our focus here). For example, there are theorists who argue that early reproduction (e.g., as early as age 9) in response to adverse developmental conditions reflects a phenotype that emerges via

physiological pathways that were positively selected during human evolution (Belsky, Steinberg, & Draper, 1991; Boyce et al., 1995a, 1995b).² Similarly, the Adaptive Calibration Model (Del Giudice, Ellis, & Shirtcliff, 2011) contends that the biological sensitivity to context among animals is adaptive, that is, the type of physiology shaped by the context leads to survival and reproduction for that context. However, when early life conditions are poor and strongly discordant from those typically experienced by species members in the evolutionary past, individuals might have the physiological plasticity to survive and reproduce in a particular adverse ecological niche, but this is not commensurate with *optimal development*. Sometimes a niche is *species-atypical*, *outside the normal range for the species*, and so individuals in that niche fail to approach their maximal social, cognitive, and physical potential due to a damaging niche. Thus, for the purposes of our focus on thriving, we seek to outline the distinctions between the capacity to flexibly and perhaps even resiliently respond to adverse early life conditions (which might enable survival and reproduction) and the capacity to develop most optimally and adaptively when evolutionarily "expected" early life conditions are provided. As a famous but extreme example, Harlow's monkeys were not thriving in an environment deprived of social contact and touch, but they learned to fit into that situation with autistic, self-protective behaviors—contra typical emotional and behavioral norms for that monkey species. The monkeys' coping mechanisms and behavioral acclimations were indicators of primate plasticity in response to variable early environment, even though the species-atypical, mother-deprived monkeys likely would not have survived under natural circumstances. Even *functional* capacities that develop in response to early caregiving contexts that are outside the species-typical range, may not represent adaptive plasticity, in an evolutionary sense, because a one-lifetime purview for natural selection is inadequate (see below). Yet functional capacities are often discussed as if they represent evolutionary adaptations. Like Harlow's monkeys, who, lacking mother's touch from birth, stayed alive with self-comforting autistic behaviors and with a food supply given by human experimenters, children from abusive homes learn ways to survive, too, either by being aggressive or by withdrawing, behaviors not adaptive to most other contexts or longterm wellbeing. They lack the supportive environment to develop the self-regulatory and socioemotional intelligence systems that underlie higher order capacities (e.g., Schore, 1997). Instead, early stress undermines the development of self-regulatory capacities, empowering neurologically primitive survival systems, which become hardwired and dominant in one's dispositions and actions (e.g., threat reactivity) as in Harlow's monkeys (Franklin, Linder, Russig, Thony & Masuy, 2011; Heim, Owens, Plotsky & Nemeroff, 1997; Henry & Wang, 1998; Lupien, McEwen & Gunnar, 2009; Murgatroyd & Spengler, 2011). Excessive chronic social stress, especially in early life, leads to ill health and a shorter lifespan. Thus, functional accommodations to early life stressors, emerging through developmental plasticity, are frequently not reflective of evolutionary adaptations or likely to be

² In the context of public discourse, to name this an evolutionary pathway runs the risk of appearing to legitimize or condone the outcome, demonstrating the "naturalistic fallacy".

positively selected because reproductive fitness cannot be effectively gauged within one or even two generations.

The theory of evolution through natural selection is best understood if it is used to focus on reproductive success and the inheritance of traits *across multiple generations*. Indeed, Richard Lewontin (2010) argued that to measure fitness one must demonstrate that an individual reproductively *outcompetes a rival over several generations*. Although it is a simple observation, it is important to note that in the genus *Homo*, the fittest reproductive strategy in the evolutionary past was almost certainly *not* one that simply maximized the quantity of offspring produced. Given the intense demands of raising a plio-pleistocene hominin offspring, producing an excess quantity of offspring would likely have negatively impacted their collective survival and socioemotional-physical quality. Thus, in a broad sense, humans, like other hominoids and Old World primates, have been selected to produce a smaller number of higher *quality* offspring in which we invest highly and intensely-- i.e. what we define as an evolved niche that enables flourishing. For humans, grandparents and other community adults (in addition to mothers and fathers) are often key to children's survival and well-being in contemporary subsistence-level societies and were likely similarly critical in the evolutionary past (Hrdy, 2009; Kramer, 2010; Gettler, 2010; Gettler, 2014). Thus, the human developmental niche-- which helps optimize the survival and thriving of our offspring-- reflects cooperative, community-facilitated processes and diffuse investments from many stakeholders. This framework, in which postmenopausal women and older men were crucial for the younger generation's reproductive success, reflects past selective pressures that gave rise to the co-evolution of human longevity (i.e. women, particularly, often out-living their ability to reproduce-- the menopausal transition, which is absent in nearly all other mammals) and the common "stacking" (short birth intervals with cooperative caregiving) of the development periods of multiple highly dependent, slow-growing children (Hrdy, 2009; Hawkes & Coxworth, 2013). During the hominin evolutionary past, under "natural fertility" demographic conditions (i.e. see Bentley, Goldberg, & Jasienska, 1993), if flourishing was characterized by the production of healthier, emotionally well-adjusted offspring who themselves were (consequently) more reproductively successful than their less flourished peers, and who passed on their inherited, "flourishing-related" traits to their own offspring, then flourishing, itself, and its accompanying developmental niche would have been positively selected. Put another way, in this scenario, a child with a poor early niche would have been less likely to produce descendants who would outcompete rivals emerging from (trans-generational) good niches, over evolutionary time. While political economic and demographic processes associated with industrialization, globalization, and colonization have shifted some of these dynamics, this was likely particularly true in the evolutionary past, when hominins lived in small-band hunter-gatherers in which prosocial and cooperative tendencies were paramount for survival and collective thriving.

This perspective indicates that limited responsive support in childhood will undermine and adversely impact developing physiology (e.g., immune system,

neural pathways and neurotransmitters, endocrine systems), resulting in poorer well-being. Moreover, multi-generational studies are showing that adversity (trauma or malnourishment as a child in parent or grandparent) can be transferred to descendants (possibly including direct and indirect transfer of epigenetic profiles from parent-to-offspring) that result in poor health (e.g., greater chance for diabetes, heart disease, obesity, early death, altered stress response) (Thayer & Kuzawa, 2011).

Thus, through a number of (non-genetic code) inheritance pathways, early life adversity may last for generations epigenetically (Dias & Kessler, 2013). In short, because of the potential implications of these trans-generational effects on reproductive output of a *lineage*, an individual's reproductive output, measured against his/her peers within a single generation, is often insufficient to define reproductive fitness. Human data researchers typically do not investigate multigenerational information and if they did or could, the window would still allow only preliminary conclusions about the fitness of different genotypes. This is a particular challenge when it comes to the reconstruction of the evolutionary history of characteristics (and their potential adaptive value) that leave scant or no indelible indicators in the hominin fossil or archaeological record (e.g. earlier ages at first reproduction under psychosocially stressful circumstances). In total, arguments regarding the human evolution, past selection pressures, and potential human-hominin adaptations (including our focus here, the evolved developmental niche) are at their strongest when they draw on a diffuse set of supporting lines of evidence and are considered from a number of different explanatory perspectives (e.g. Huxley/Tinbergen's four-level ethological model for behavior, based on Aristotle's causal explanations, of phylogeny, ontogeny, mechanism and function). We will suggest widening the baseline for analysis below.

Theoretical Frameworks

Life History Theory uses formal modeling to explore between- and within-species variation in strategies for "solv[ing] the complex optimization problem of how-- and when-- to allocate limited resources to gain the maximum reproductive success" noting that "the most basic trade-offs are between *somatic* effort (i.e., growth, body maintenance) and *reproductive* effort; and, within reproductive effort, between *mating* (i.e., finding and attracting mates, and conceiving offspring) and *parenting* (i.e., investing resources in already conceived offspring)" (p. 1566, Del Giudice et al, 2011; Hill & Kaplan, 1999; Gettler, 2014). Many life history models are grounded in the notion that selective pressures, through evolutionary time, give rise to genetically encoded physiological pathways that plastically enable the partitioning of energetic resources and time between these basic requirements (survival, maintenance, and reproduction) in response to current ecological conditions (Gettler, 2014; Hill & Kaplan, 1999). The nature of how and when these trade-offs manifest over the life course and the related timing of key life events (such as timing of first reproduction) form the basis of species-typical "life history strategies" and the shape of reaction norms that are possible in response to variable developmental contexts (Hill &

Kaplan, 1999). In addition to offering critical insights regarding the evolution of cross-species variation in the timing of key life events and the functioning and interactions of physiological systems that underlie those strategies, Life History Theory provides a rich framework for identifying *functional and (potentially) adaptive plasticity* in response to early life circumstances (as we noted above). However, as is possible with any theoretical perspective, there is a danger that Life History Theory models can be misappropriated, leading to conflation of developmentally plastic outcomes that emerge in the face of aberrant early life conditions systems with evolutionarily-selected, physiological “trade offs” (see overviews in Ellis, 2009 and Gettler et al., 2015). The range of potential phenotypes that *can emerge* (reaction norms) should not be conflated with more optimal outcomes in a host of body/brain systems that “expect” particular postnatal experiences as they mature. Thus, such plasticity-oriented life history models often emphasize an individual’s physical and behavioral responses to its ecological and social-relational world, but less frequently focus on developmental conditions, themselves, as evolved, explicitly inherited characteristics that are critical to suites of species-specific adaptations. We suggest that these “expected” early environment conditions-- an evolved developmental niche that we argue encourages “flourishing” in humans-- can be most richly modeled through a Developmental Systems Theory (DST) perspective. DST embraces a broader view of evolution and development than neo-Darwinian natural selection theory (Oyama, Griffiths & Gray, 2001). Developmental Systems Theory suggests that evolutionary processes operate on much more than genetic material, inclusive of inheritances that construct and influence an organism’s life cycle. Development is influenced by many factors that can vary in the degree of their impacts depending on the state of the organism at the time. In fact, the life cycle of an organism is not programmed but co-constructed through multiple complex interactions internal and external to the organism, a “constructivist interactionism” (Oyama, 2000), which for humans, as we describe below, relies heavily on early caregiving.

Taking a lifespan perspective, Relational Developmental Systems Meta-Theory (RDSTM; Overton, 2013) describes human development by emphasizing the self-organizing nature of development-in-relation, providing “a holistic approach that treats endogenous activity, change, becoming, process, necessary organization and relations as fundamental categories” for human development, a non-linear process, with self-organization and social-contextual factors in constant interaction (Overton & Molenaar, 2015, pp. 3-4). The development of an individual-in-context is shaped by multiple co-acting factors which are contingent and sensitive to context. Developmental systems theories, of both kinds, are particularly suitable for discussing human development because humans are born extremely immature and have inherited a set of caregiving practices to match the maturational schedule. As we will elaborate below, humans have evolved to be co-constructed by caregiver treatment, along with self-organization, making epigenetics and plasticity the big story.

The Human Evolved Developmental Niche (EDN)

As Developmental Systems Theory points out, humans inherit much more than genes, including culture and ecology, from prior generations (Jablonka & Lamb, 2006). Most important to our discussion here is the extra-genetic inheritance of an early life niche that matches the basic needs of offspring, which is part of a species-typical developmental system and reflects selection through evolutionary time (Gottlieb, 1997). Every animal has a nest or niche for its young that matches-up with the maturational schedule of the offspring (Gottlieb, 1991, 1998). Developmental systems are particular to a species and result in a species-typical individual. Depending on the degree of malfunction and abnormality, a faulty developmental system will result in an individual who is pushed into the extremes of a species-typical reaction norm and is unlikely to survive under natural conditions. RDSTM takes advantage of the converging evidence across disciplines demonstrating that the quality of the early caregiving context has significant ramifications for later physiological and psychological functioning (Shonkoff & Phillips, 2002; Shonkoff et al., 2012). Central to a nurturing environment that fosters positive child outcomes is the provision of adequately sensitive social and emotional care, such as responsiveness of primary caregivers (Schore, 1996; Siegel, 1999). However, what’s often missing in the discussion of human *niches* is the evolved early nest or “developmental manifold” (Gottlieb, 1991; the “evolved developmental niche;” *EDN*; Narvaez et al., 2013). For humans it is a particularly intense developmental niche, in terms of reliance on caregiver input and regulation.

To elaborate on this concept, it is important to establish the baseline for human’s developmental niche, which, we suggest, is critical to modeling human flourishing and nonflourishing. One must start with the nature of being human. What are humans? Of course, humans are animals, with a suite of basic physical needs, such as food, water, oxygen, warmth, and shelter (among others). Reflecting humanity’s deep phylogenetic history as mammals and primates, they are also *social* beings with needs for affectionate touch, deep social bonding and support, which, when received appropriately in early life, help them to develop both autonomy and prosocial capacities. Humans have a unique suite of “life history” characteristics: comprehensive immaturity at birth with the longest maturational schedule of any animal (Montagu, 1963; Trevathan, 2011; Hill & Kaplan, 1999; Hrdy, 2009; Kramer, 2010; Gettler 2014.) and the greatest sociality (Panksepp & Biven, 2012). Only 25% of the adult brain size is developed at full-term birth, the smallest among hominoids, with a protracted period of brain growth and development that extends well beyond infancy, through childhood and adolescence, and extending into early adulthood. Thus, human infants and children require intensive parenting in early life while the body and brain grow most rapidly and the interaction between caregiving and developmental status sets thresholds and parameters for multiple systems, which in turn contribute to subsequent malleable development through the growing child’s environment-shaping actions.

Because the human genus spent 99% of its history in small-band hunter-gatherer groups, studies and reports of small-band hunter-gatherers provide one of our most substantive lines of evidence to derive insights into the forms and range of social groups in which modern humans are presumed to have evolved (Dentan, 1968; Everett, 2009; Gowdy, 1998; Hewlett & Lamb, 2005; Hill & Kaplan, 1999; Hrdy, 2009; Ingold, 1999; Ingold, Riches, & Woodburn, 1988a, 1988b; Kelly, 2007; Konner, 2010; Lee & Daly, 1999; Marshall, 1976; Turnbull, 1984; Woodburn, 1982; Thomas, 1989). Before proceeding, we do emphasize the imperfect, if not precarious, nature of drawing inferences about human's evolutionary past based on contemporary human groups, who are not "living fossils" of the evolutionary past and have not (generally) lived in isolation from global, historical processes for hundreds if not thousands of years.³

Among such contemporary foraging societies, fertility is intermittent based on food supply and daily physical exertion. In some societies infanticide has been practiced (or was reported, historically), particularly in response to poor conditions, such as when provisioning was inadequate, and likely for defective or premature neonates where investment of breastmilk and other forms of costly care would not pay off. Foragers typically have a roughly a 3-to-4-year gap between children (Kramer, 2010), with birth spacing variably (across groups) shaped by energetic-fecundability dynamics as well as intentional practices such as infanticide or abstaining from sex during breastfeeding. Thus, due to both natural constraints as well as cultural institutions, contemporary forager societies do not exhibit fertility practices that simply maximize offspring quantity (Bentley, Goldberg, & Jasienska, 1993; Hill & Kaplan, 1999). In terms of modeling the human EDN, which Konner (2005) has described as the "hunter-gatherer childhood model," extensive ethnographic evidence from foraging societies (Hewlett & Lamb, 2005) suggests that early life often includes soothing perinatal experiences, extensive breastfeeding, touch, play, positive social climate with multiple responsive caregivers (all of which we find influence moral development and wellbeing in children and adults; Narvaez, Gleason et al., 2013; Narvaez, Wang & Cheng, 2015). Most of these characteristics generally match the early experience of social mammals, especially primates, and are correlated with positive outcomes in children such as mental health, social and moral capacities (Narvaez, Panksepp, Schore & Gleason, 2013; Narvaez, Gleason et al., 2013; Narvaez, Wang, Gleason, Cheng, Lefever & Deng, 2013). But because humans are so immature at birth, responsive *allomothers* (caregivers other than mother) are also essential to meet the needs of the child (Hrdy, 2009; Gettler, 2014).

In prior volumes, review chapters by experts showed that these practices have long term effects on mental, social and physical health (Narvaez, Panksepp et al., 2013; Narvaez, Valentino et al., 2014). Thus, human neural and physiological development is implicitly social, scaffolded primarily by caregivers in the first years of life.

In this way, humans are deeply dynamic, living systems whose functions and behavior are epigenetically shaped, especially in early life. Early experience crafts the mind and brain through its influence on system establishment, networking and function—from immunity, to neurotransmitters, to neuroendocrine systems. As a result, early life experience has long-term effects on wellbeing. Like any dynamic system, the human is highly influenced by initial conditions as it self-organizes. In contrast to gene-centrism, evolutionary developmental biology (evo-devo) takes into account this self-organization when modeling selection and selective environments (Samson & Brandon, 2007). This theoretical approach helps to emphasize the concept that the self-organization of organisms occurs most optimally under conditions that have been consistently recapitulated and inherited over many, many generations (due to the reproductive fitness of successful lineages), i.e. "species-typical" developmental systems.

Researchers today are better able to document the effects of early capacities and map their trajectories, mostly in animal models but also in longitudinal studies. For example, human longitudinal studies demonstrate the value of responsive care which helps children self-regulate multiple systems like the Hypothalamic-Pituitary-Adrenal axis (HPA; Lupien et al., 2009).

Children who experience very atypical early care, such as abuse, are more likely to have ill health and die young (Felitti & Anda, 2005). Even if death comes after reproduction, their offspring and grandoffspring are likely to miss out on the grandparental contributions that were likely vital through human evolution to keep children thriving (Hrdy, 2009). Returning to epigenetics, animal studies have demonstrated, for example, the importance of affectionate touch in early life for the activation of gene expression and for physiological regulation (Champagne, 2014; Champagne & Meaney, 2007; Hofer, 2006; Meaney, 2013). Compared to pups raised by highly attentive mothers, rats who have low nurturing mothers in the first 10 days of life express differential activation of genes that control anxiety, with lifelong implications for their stress response physiology and (in adulthood) their own likelihood of being inattentive, non-nurturing mothers. Similar epigenetic effects are found in the brains of adults who were abused as children (McGowan et al., 2009). Because of apparent epigenetic inheritance effects, those who are overstressed (e.g., nutritionally or from toxins like cigarette smoking) in one generation tend to have children and grandchildren who are more sickly ("survival phenotype;" Gluckman & Hanson, 2005, 2007; Gluckman, Hanson, Cooper & Thornburg, 2008; Rodriguez, 2015). From an evolutionary perspective, one can surmise that over several generations, it is likely that a nurturing and sensitive familial line will outcompete a rival lineage that is critically less nurturing. If the "nurturing and sensitive" niche is reliably inherited socially-epigenetically and, especially, if there are underlying heritable, genetic aspects to the neural-endocrine-behavioral components of the system, this would lead to selection, in both a neo-Darwinian and DST sense, for reliable recapitulation of this early life environment, the Evolved Developmental Niche.

³ We are referring to immediate-return societies, foraging bands who did not keep possessions or hoard food.

Flourishing, Young Children

When people discuss the idea of flourishing it is often in the context of philosophical arguments about human ideals (e.g., Nussbaum, 2011; Snow, 2015) or in economics about ways to measure wellbeing, a relative term (OECD, 2013). Among positive psychologists, flourishing is often used in the same vein as wellbeing, which is defined as a combination of optimal functioning in all the areas of an individual's life (emotional, psychological, social), with each area having its list of ingredients (Keyes, 2002): *Emotional wellbeing* includes positive emotions and life satisfaction; *psychological wellbeing* involves having self-acceptance, autonomy, and purpose; *social wellbeing* includes social acceptance, contribution, and integration. Wellbeing is discussed in terms of ratio: low levels of disease and high levels of happiness and satisfaction (Keyes, 2002). A flourishing life is one that “connotes goodness, generativity, growth, and resilience” (Fredrickson & Losada, 2005, p. 678). Most discussions of flourishing have focused on adults.

Turning to children, to date, most research has emphasized problems and psychopathology (e.g., *lack* of resilience). When focus has been on the positive side, the emphasis has been primarily on cognitive development, though child *resiliency* (how children can recover from trauma or make it through challenging environments without risky behavior; e.g., Masten & Garmezy, 1985) has also been emphasized. Even with the burgeoning field of socioemotional research, there are not a lot of precedents for discussing child flourishing in the broad sense. We use the framing of child flourishing put forth by Narvaez & Gleason (2013). They adopt the views of positive psychology but also extend them. Examining flourishing in early life, Narvaez & Gleason (2013) add *sociomoral capacities* to the list of aspects required for flourishing, which includes various forms of self-regulation (e.g., physiological, emotional), cooperative attitudes and skills and empathy. These are fostered by early experience, and it has been argued that sociomoral capacities can be taken as a sign that an individual has experienced a positive, supportive developmental milieu (e.g., Kochanska, 2002). Thus, we define flourishing as a combination of emotional, psychological, and social wellbeing, appropriate physiological regulation, and a prosocial orientation towards others.

However, as Sanders (2009) points out, the root of “health” is the same as for *whole*, *hale* and *holy*, meaning “complete, uninjured, sound” (p. 50). Thus, flourishing includes health as a concept. In this case, damaged individuals, although resilient in continuing despite injury, cannot be said to be flourishing in the fullest sense. Flourishing requires, then, something more than survival-resilience. It is both a sign that injuries have not occurred and that one's developmental environment was likely positive, warm, and supportive, enabling thriving. With this perspective, young children in advanced nations today are injured by the very nature of their cultural institutions and political economic contexts because they often do not provide or severely constrain the potential for caregivers to provide a developmental experience commensurate with the EDN.

Certainly several caveats are in order. Now that we have discussed evolution and baselines, the reader might protest and say, the evolved developmental niche is romantic and ideal. We argue that perhaps there are (quantitatively) more complexities to a human EDN, but, qualitatively, it is no more romantic than saying that giving a house plant its requisite water, soil components, sun and appropriate air temperature will enable it to thrive, reflecting its EDN. Our generic house plant, in this example, has a normal, supportive environment to which it is adapted, under which its developmental trajectory evolved, and which has since been learned (and perhaps even modified) from experience by human caretakers. Similarly, the human EDN is the normal, supportive environment a child evolved to need, developed during the course of evolution and intuited by caregivers in natural conditions, recently characterized from scientific observation and experimentation to be related to flourishing.

The reader might say what we are overestimating the long-term effects of early experience. In light of converging evidence regarding EDN practice, we do not think so. Instead, many seem to *underestimate* the long term effects, perhaps from ignorance and a lack of awareness of epigenetics and dynamic systems, or from a focus on cognitive instead of socioemotional development, or a focus on capacities valorized in Western societies, with less attention paid other skills or capacities that emerge under other developmental and ecological conditions (for example, various accounts of small band hunter-gatherers suggest they display comparatively greater perceptual capabilities, landscape consciousness, receptivity to animal and plant communication; Cooper, 1998; Diamond, 2013; Kimmerer, 2013; Wolff, 2001). This is not to suggest that malleability of development is constrained to the early years exclusively; of course there are multiple sensitive periods. But the evidence to date does not suggest that any later period has the breadth and depth of sensitivity that has been documented for the first years of life. Early life is not necessarily inevitably determinative of adult outcomes, though it carries strong influences on physical and mental health outcomes (Anda & Felitti, 2005), and communal morality (Narvaez, Wang & Cheng, 2015). Given the overall (poor) state of physical and mental health for adults in many if not most contemporary societies, the current early environments that we are providing to our children appear to be sub-optimal. It may have a lot to do with the ways in which early life environments guide child development and the extent to which characteristics of contemporary childhood experience tend to deviate from an EDN.

Chapters in the Volume

Like research within psychology generally, developmental psychology has spent more of its attention on pathology and on environments that challenge development. With the help of anthropological description, we hope to add to the movement to shift perspectives towards flourishing—describing its characteristics and varied approaches to supporting it. The book uses an evolutionary framing but presses forward to look at the conditions for children's thriving in families and in contexts beyond families. Contributions to the volume provide cutting edge

knowledge about specific parenting practices and their relation to thriving. Authors provide suggestions for how to turn around suboptimal contexts into opportunities for growth using an evolutionary understanding of human needs. Throughout the volume and in the final chapter, policy and practical recommendations for child thriving are provided.

Section one provides initial foundations for the broad landscape of young child flourishing. In their chapter, *Life for Learning: How a Young Child Seeks Joy With Companions In a Meaningful World*, Colwyn Trevarthen and Jon-Roar Bjørkvold offer a perspective that is at once broad and integrative but also forward-thinking. Trevarthen and Bjørkvold consider how social and cultural mileaus could work with children's innate creativity, playfulness and joy to foster positive engagement with others and self-motivated engagement with the world. They contrast Western practices of early childhood education, which emphasize control, conformity, and technical intelligence, with the growing evidence from multiple disciplines that, beginning in infancy, children are intentional co-creators of their lives who find delight in being social. Music serves as an example, a metaphor, and a mechanism for imagining a revolutionary change in educational philosophy, as the rhythms of communication and aesthetics of shared activity contribute to learning environments of exploration, engagement, and enjoyment. Trevarthen and Bjørkvold propose that such a child-centered re-consideration of the role of education would enhance children's growth into joyful and community-minded citizens.

In the chapter, *Societal Contexts for Family Relations: Development, Violence and Stress*, Riane Eisler describes the results and implications of a cross-cultural comparative analysis that helps shed light on the types of cultural values and institutions that facilitate empathic, generous, and cooperative inclinations versus tendencies towards insensitivity and oppression. Her chapter reflects a "systems analysis" of a globally and historically diverse array of societies and particularly emphasizes an understanding that cultural context has a tremendous effect on familial relations, which, in turn, greatly affect cognitive, emotional, and behavioral development. Eisler argues that using this perspective we can identify fundamental societal systems and their shared characteristics that configure social relations around nodes of partnership or domination, with the former greatly increasing the possibilities (and optimization) of child flourishing.

Relationships within the family critically involve an area of increasing interest in the social sciences, socioemotional development. The discussion of emotions, specifically, the role of socialization of emotions for promoting child flourishing is addressed in the chapter, *The Role of Emotion Socialization in Promoting Child Flourishing*, by Holly Brophy-Herb, Danielle Dalimonte-Merckling, Neda Senehi and Alicia Kwon. Emotions reflect complex processes that are designed to promote the species' adaptive responses to the environment. The authors focus on practices for emotion socialization from evolutionary, cultural, and family contextual frameworks. They also consider variations in emotion socialization based on family culture and ethnicity, parent characteristics and practices, and children's characteristics such as gender and temperament. Brophy-Herb et al. conclude by

pointing out how emotion socialization moderates associations between family risk (e.g., low income) and children's positive outcomes.

Emotion regulation may be a key mediator that links early infant characteristics and experiences with later flourishing. In the chapter, *Healthy Children: The Role of Emotion Regulation*, Julie Braungart-Rieker and Elizabeth Planalp focus on emotion regulation (i.e., the ability to manage distress) during infancy and early childhood. They propose a model and provide evidence in which infant characteristics such as temperament and the quality of the caregiving environment (i.e., parent sensitivity) during infancy help explain and shape infants' affective and emotional regulatory responses. In addition, the quality of parent-infant attachment relationships and emotion regulation are reciprocally related, such that infants with better regulation skills are more likely to be securely attached and those with secure attachments show more positive affective and regulatory trajectories over time. They also suggest that emotion regulation during infancy plays a key role in children's behavioral regulation and physical health (e.g., healthy weight vs. obesity) as they develop.

Section two targets parenting and family cultural contexts, which include the attitudes and expectations that surround the child from conception and beyond. One of the most rapidly growing areas of research on parenting is the application of human neuroscience to maternal and paternal behavior. In *The Parental Brain – Regulation of Mother and Father Behavior that Influences Infant Development*, James Swain offers an integrative and illuminating perspective on this literature, revealing how this research has advanced our understanding of the neural underpinnings of four key processes that support effective parenting of infants, the instinctive motivation to provide care, emotional responsiveness, emotion regulation, and executive functions, with particular emphasis on parental empathy. Informed primarily by fMRI research, Swain's review shows that widely distributed networks of brain systems, shaped over the course of mammalian evolution and in the context of human family groups, contribute to parents' abilities to attend selectively and respond appropriately to their infants' needs. He concludes with valuable recommendations for ensuring continued progress in the neuroscience of parenting.

In their chapter, *Parent-Child Symbolic Relationship In-Utero: Parents' Prenatal Expectations Regarding Their Child's Temperament and Their Own Parenting*, Lior Abramson, David Mankuta and Ariel Knafo-Noam focus on the concept of parental schemas, which are generalized information structures that influence how parents organize experience and respond to their children. In this chapter, Abramson et al. examine parents' schemas regarding the parent-child relationships during pregnancy—before the parent has even interacted with their child. Using a sample of Jewish Israeli women and their partners, Abramson et al. found that expected positive parenting behaviors (i.e., warmth and affection) correlated with expected positive child temperament, whereas expected negative components of parenting (i.e., rejection) corresponded with expected negative child temperament. Results from their study support the notion that parenting and child temperament are connected in the minds of parents, before children are even born. Their study also

suggests that interventions designed to allow parents to be more aware of their preconceived judgments, with a goal to focus on children's actual behaviors, might enhance parenting and ultimately, child flourishing.

The next chapter underscores how parental attitudes can influence child wellbeing and moral development. In their chapter, *Wellbeing and Sociomoral Development in Preschoolers: The Relation of Maternal Parenting Attitudes Consistent with the Evolved Developmental Niche*, Tracy Gleason, Darcia Narvaez, Ying Cheng, Lijuan Wang, and Jeff Brooks focus on the relation between parenting attitudes and preschool-aged children's sociomoral development and wellbeing. Children derive a sense of morality and a moral self from experience which is integrated with their sense of belonging and contributing to a larger community. Gleason and colleagues discuss and provide empirical support showing that the caregiving context includes both attitudes and behaviors which are related to children's wellbeing. In their study, they showed that children whose mothers endorsed more nurturing parenting (positive attitudes toward responsiveness to the child, alloparenting, play, and touch) showed more sociomoral flourishing (happiness, social consideration, social attunement, imagination, and empathy). Moreover, children of more nurturing mothers had lower levels of illbeing (e.g., depression, anxiety, withdrawal) and antisocial behaviors. Gleason and colleagues recommend that more attention could be directed toward examining mechanisms, such as children's regulation skills, by which parenting attitudes and behaviors influence children's outcome.

In *Biopsychosocial Models of Prosociality: Compassionate Love, Vagal Regulation, and Children's Altruism*, Jonas Miller and Paul Hastings examine the familial and neurobiological factors that support young children's developing capacities to care about, and act kindly towards, others. Evolutionary pressures on the protracted period of infant dependence in hominids necessitated parental care characterized by attentiveness and nurturance, characterized in modern parenting by a compassionate orientation towards the well-being of the child. They present the polyvagal theory as a model of how the autonomic nervous system evolved to support making such prosocial responses to the needs of others. Drawing on the research of themselves and others, they show that dynamic modulation of parasympathetic activity, which they term vagal flexibility, is linked with many aspects of sympathetic and altruistic behavior. Further, children who exhibit such vagal flexibility appear to be most receptive to mothers' compassionate caregiving, displaying the greatest altruism towards other children. They conclude by arguing that vagal flexibility may itself be shaped by compassionate caregiving, such that reciprocal and synergistic ties between neurobiology and socialization serve to support young children's flourishing.

George Holden, Rose Ashraf, Erin Brannan, and Paige Baker discuss *The Emergence of "Positive Parenting" as a New Paradigm: Theory, Process, and Evidence*. Holden and colleagues review the history, theoretical underpinnings and contemporary research on positive parenting practices. Here, Holden and colleagues focus on the parent-child relationship as a necessary element of flourishing in early childhood. Specifically, they articulate the historical shift in parenting practice from

the egalitarian relationships practiced by hunter-gatherer groups to clear power hierarchies common to contemporary society. Focusing on the importance of positive socialization and attachment in building children's self-esteem, self-confidence, and self-regulation, they explore how parenting practice can be reoriented to better support children's flourishing. They conclude with specific recommendations for practice and policy to help identify concrete pathways to supporting positive parenting practice in families.

Hillary N. Fouts and Lauren R. Bader bring to bear a cross-cultural and evolutionary framework to explore the ways in which the transition to being an older sibling might impact a child's ability to thrive. In *Transitions in Siblinghood: Integrating Developmental, Cultural and Evolutionary Perspectives*, Fouts and Bader provide a succinct review of the existing literature on this topic, which focuses primarily on data from Western societies, from research conducted by developmental psychologists and other scholars focused on family studies. In doing so, they point out that very little is known about cultural variation in how the transition to becoming a sibling affects the older child in terms of his/her interactions with parents and alloparents, levels of investment from those caregivers, and children's social and emotional responses to the presence of a new sibling. To help expand our limited cross-cultural knowledge on this subject, they present ethnographic observations from three brief case studies. Finally, they argue that evolutionary-based theoretical perspectives, including Life History Theory, Kin Selection Theory, and Parent-Offspring Conflict Theory, can usefully expand our thinking on this childhood experience. In doing so, Fouts and Bader provide a foundational set of theory-derived predictions about the ways in which human children may have undergone selection in the evolutionary past to both protest and embrace the transition to being an older sibling, based on ecological and family system dynamics.

Section three focuses on contexts of conflict. Although many environments place children's flourishing at general risk, exposure to violence in childhood represents one of the most pernicious risks to the health and development of children. In her chapter, *Multi-contextual influences on resilience in young children exposed to intimate partner violence*, Laura Miller-Graff reviews research on positive influences and protective factors for children living in homes where intimate partner violence is present. From a social-ecological perspective, Miller-Graff suggests that there is substantial evidence to support the protective role of both internal resources (e.g., prosocial skills) and close social relationships. The research on broader community and sociocultural protective factors that may enhance resilience and promote well-being, however, is sparsely studied and as such, is an important consideration for future empirical and policy research.

The second chapter in this section by Katie (Bergman) Miller, Kelly (Kuznicki) Warmuth, and Mark Cummings discusses *The Benefits of Marital Conflict: Constructiveness and Resolution as Predictors of Positive Child Outcomes*. They review a history of theoretical and empirical work on constructive conflict behaviors in the context of marital interactions. Importantly, they point to how particular constructive strategies (e.g., humor, problem-solving, support) promote children's

flourishing and healthy adjustment. Using novel methodologies, including analog video prompts and daily diaries, Cummings and colleagues have found that across developmental periods, children can discern between and react differently to constructive and destructive conflict behaviors. Given that children learn from and positively react to constructive marital conflict behaviors, Cummings and colleagues have moved forward to develop novel intervention programs to support family-wide flourishing for a diverse range of families.

Section four examines community contexts beyond the family such as group care settings and early schooling. In their chapter, *Flourishing in Transactional Care Systems: Caring with Infant and Toddler Caregivers about Wellbeing*, Mary B. McMullen and Kathleen McCormick conceptualize flourishing as wellbeing for all individuals and constituents involved in raising children. McMullen and McCormick focus on infant and toddler flourishing within childcare environments. They argue that for infant and toddlers to flourish and thrive, all individuals involved in a caring society must be involved in caring for, about, and with families and professionals. They discuss the elements that constitute high quality caregiving and developmentally appropriate practices. McMullen and McCormick also discuss theoretical perspectives and empirical evidence that supports the need to promote wellbeing within the caregiving system. Finally, they make a call to action in terms of advocacy, research, policy and practice to support the wellbeing of infants and toddlers.

In the chapter, *Enrichment and Isolation: Institutional Care and Challenges to Child Development in Jamaica*, Robin Nelson provides a focus on child flourishing that extends beyond a (comparatively) narrow perspective that tends to prioritize only maternal contributions. Specifically, she explores the factors and contexts that affect how Jamaican youth thrive within both familial homes and children's homes (institutional care settings). In the local Parish in which Nelson conducted her research, as well as elsewhere in Jamaica, children's homes represent an institutionalized care setting in which youth are raised when they have no family members who can consistently provide them care. Nelson's chapter provides a nuanced description of the contextual factors that differ across familial homes and four children's homes and the ways in which the characteristics of each setting are likely to enable or inhibit flourishing. However, she prefaces these accounts by orienting the reader to political economic factors and cultural institutions that shape children's developmental experiences and gender socialization within familial homes, with implications for the circumstances under which they might find themselves in an children's home. This carefully constructed anthropological perspective helps the reader to understand the broader system within which children's flourishing takes place in this Parish and Jamaica, more broadly, and gives critical context to the differential experiences of girls and boys.

Marilyn Watson provides an overview of attachment as it applies to the elementary school classroom. In *The Elementary Classroom: A Context for Supporting Children's Flourishing* Watson describes the Child Development Project (CDP) which was a project that created and assessed classroom and school approaches with

an objective that fostered elementary school children's social, emotional, and moral development. CDP's intervention strategies were guided by attachment theory and constructivist models of learning and moral development. Results of the project showed success for both impoverished and middle class schools. Watson discusses the need to change current American educators' goals from controlling negative behaviors to building positive relationships that support trusting views of the self and others.

Section five explores the broader contexts for young child flourishing, suggesting policies, programs and practices that enable thriving. Joshua Sparrow discusses *Culture, Community and Context in Child Development: Implications for Family Programs and Policy*, reflecting upon the extent to which technological advances have led to social and cultural transformations that are inconsistent with the evolved developmental niche of childhood, and the lack of evidence that family education programs and policies serve to foster child flourishing. He highlights the extent to which neuroscience and developmental research on small samples of economically-advantaged, Western families has generated a skewed perspective of 'optimal' parental behavior that 'experts' incorporate into parent education and training that is applied to diverse communities. Sparrow critiques this universalistic approach, recommending instead that efforts be put into developing systemic interventions that recognize the complex dynamics arising from the embeddedness of families within communities and cultures, and the emergent characteristics of human society that arise from these complex systems, particularly a social justice perspective.

Finally, the editors discuss *Young Child Flourishing as an Aim for Society*. The editors offer several suggestions for moving forward towards increasing child flourishing through institutional practices, policies.

Chapters in the book come from different research paradigms but all scrutinize an important and often neglected aspect or perspective about child development, which is how to optimize the conditions and contexts to fit the evolutionary characteristics of human child growth and development. We hope readers will benefit from reading the contributions.

References

- American Psychological Association (2012). *Stress in America: Our health at risk*. Washington, D.C.: American Psychological Association.
- Barnard, A., & Woodburn, J. (1988). Introduction. In T. Ingold, D. Riches, & J. Woodburn (Eds.), *Hunters and gatherers, Vol. 2, Property, power and ideology* (pp. 4-32). Oxford, England: Berg.
- Barrett, J., King, P., Greenway, T., Schnitker, S., & Furrow, J. (2014). *Mind the gap: An evolutionary analysis of human thriving*. Unpublished manuscript.
- Belsky, J., Steinberg, L., & Draper, P. ~1991!. Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development*, 62, 647– 670.
- Bentley, G. R., Goldberg, T., & Jasieńska, G. (1993). The fertility of agricultural and non-agricultural traditional societies. *Population Studies*, 47(2), 269-281.

- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York: Basic Books.
- Boyce, W.T., Alkon, A., Tschann, J.M., Chesney, M.A., Alpert, B.S., 1995a. Dimensions of psychobiologic reactivity: cardiovascular responses to laboratory stressors in preschool children. *Ann. Behav. Med.* 17, 315–323.
- Boyce, W.T., Chesney, M., Alkon, A., Tschann, J.M., Adams, S., Chesterman, B., Cohen, F., Kaiser, P., Folkman, S., Wara, D., 1995b. Psychobiologic reactivity to stress and childhood respiratory illnesses: results of two prospective studies. *Psychosom. Med.* 57, 411–422.
- Boyce, W.T., Ellis, B.J., 2005. Biological sensitivity to context: I. An evolutionary–developmental theory of the origins and functions of stress reactivity. *Dev. Psychopathol.* 17, 271–301.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Carey, N. (2011). *The epigenetic revolution: How modern biology is rewriting our understanding of genetics, disease and inheritance*. London: Icon.
- Champagne, F. A. & Meaney, M.J. (2001). Like mother, like daughter: evidence for non-genomic transmission of parental behavior and stress responsivity. *Progress in Brain Research*, 133, 287-302.
- Champagne, F. A. (2014). The Epigenetics of Mammalian Parenting. In D. Narvaez, K. Valentino, A. Fuentes, J. McKenna, & P. Gray, *Ancestral Landscapes in Human Evolution: Culture, Childrearing and Social Wellbeing* (pp. 18-37). New York, NY: Oxford University Press.
- Champagne, F.A. (2008). Epigenetic mechanisms and the transgenerational effects of maternal care. *Frontiers in Neuroendocrinology*, 29(3), 386-397.
- Champagne, F.A., & Meaney, M. (2007). Transgenerational effects of social environment on variations in maternal care and behavioral response to novelty. *Behavioral Neuroscience*, 121(6), 1353-1363.
- Cicchetti, D. & Thomas, K. M. (2008). Imaging brain systems in normality and psychopathology. *Development and Psychopathology*, 20, 1023-1027;
- Cicchetti, D., & Roisman, G. I. (Eds.) (in press). *The Origins and Organization of Adaptation and Maladaptation: Minnesota Symposia on Child Psychology* (Vol. 36). New York: Wiley
- Cooper, T. (1998). *A time before deception*. Santa Fe: Clear Light Publishers.
- Cortese, S., Holtmann, M., Banaschewski, T., Buitelaar, J., Coghill, D., Danckaerts, M., ... Sergeant, J. (2013). Practitioner Review: Current best practice in the management of adverse events during treatment with ADHD medications in children and adolescents. *Journal of Child Psychology and Psychiatry*, 54(3), 227–246.
- Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2011). The Adaptive Calibration Model of stress responsivity. *Neuroscience & Biobehavioral Reviews*, 35, 1562-1592.
- Dentan, R.K. (1968). *The Semai: A Nonviolent People of Malaya*. New York, NY: Harcourt Brace College Publishers.
- Diamond, J. (2013). *The world until yesterday: What can we learn from traditional societies?* New York: Viking Press.
- Dias, B. G. & Ressler, K. J. (2013). Implications of memory modulation for post-traumatic stress and fear disorders. *Nature Neurosci.* 16(2):146-53. doi: 10.1038/nn.3296. Epub 2013 Jan 28.
- Dominoni, D., Quetting, M., & Partecke, J. (2013). Artificial light at night advances avian reproductive physiology. *Proc. R. Soc. B*, 280 20123017; DOI: 10.1098/rspb.2012.3017
- Dumontheil, I. et al. (2010). Development of the Selection and Manipulation of Self-Generated Thoughts in Adolescence, *The Journal of Neuroscience*, 30(22), 7664-7671.
- Ellis, B. J., Figuerdo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). Fundamental dimensions of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Hum Nat*, 20(204-268).
- Everett, D. (2009). *Don't sleep there are snakes*. New York, NY: Pantheon.
- Felitti, V.J. & Anda, R.F. (2005). *The Adverse Childhood Experiences (ACE) Study*. Atlanta: Centers for Disease Control and Kaiser Permanente.
- Franklin, T., Linder, N., Russig, H., Thöny, B. and Mansuy, I.M. (2011). Influence of early stress on social abilities and serotonergic function across generations in mice. *PLoS One*, 6(7), e21842.
- Fredrickson BL, Losada MF (2005). Positive affect and the complex dynamics of human flourishing. *Am Psychol* 60 (7): 678–86. doi:10.1037/0003-066X.60.7.678.
- Fry, D. P. (2006). *The Human Potential For Peace*. New York: Oxford University Press.
- Fry, D. P. (2006). The human potential for peace: An anthropological challenge to assumptions about war and violence. New York, NY: Oxford University Press.
- Fry, D. P. (Ed.) (2013). *War, peace and human nature*. New York, NY: Oxford University Press.
- Gettler, L. T., McDade, T. W., Bragg, J. M., Feranil, A. B., & Kuzawa, C. W. (2015). Developmental energetics, sibling death and parental instability as predictors of maturational tempo and life history scheduling in males from Cebu, Philippines. *Am J Phys Anthropol*, epub.
- Gettler, L. T. (2010). Direct male care and hominin evolution: Why male-child interaction is more than a nice social idea. *American Anthropologist*, 112(1), 7-21.
- Gettler, L. T. (2014). Applying socioendocrinology to evolutionary models: Fatherhood and physiology. *Evol Anthropol*, 23(4), 146-160.
- Gibson, T. (1985). The sharing of substance versus the sharing of activity among the Buid. *Man*, 20, 391-441.
- Gleason, T., & Narvaez, D. (2014). Child environments and flourishing. In D. Narvaez, K. Valentino, A., Fuentes, J., McKenna, & P. Gray, (Eds.), *Ancestral Landscapes in Human Evolution: Culture, Childrearing and Social Wellbeing* (pp. 335-348). New York, NY: Oxford University Press.
- Gluckman, P. & Hanson, M. (2005). *Fetal Matrix: Evolution, development and disease*. New York: Cambridge University Press.

- Gluckman, P. D., & Hanson, M. A. (2007). Developmental plasticity and human disease: Research directions. *Journal of Internal Medicine*, 261, 461–471.
- Gluckman, P. D., Hanson, M. A., Cooper, C., and Thornburg, K. L. (2008). Effect of in utero and early-life conditions on adult health and disease. *N. Engl. J. Med.* 359, 61–73.
- Gluckman, P.D., & Hanson, M.A. (2004). Living with the past: Evolution, development, and patterns of disease. *Science*, 305(5691), 1733-1736.
- Goleman, D. (1995). Emotional intelligence: Why it can matter more than IQ. New York, NY: Bantam Books.
- Gottlieb, G. (1991). Experiential canalization of behavioral development: Theory. *Developmental Psychology*, 27, 4-13.
- Gottlieb, G. (1997). Synthesizing nature and nurture: Prenatal roots of instinctive behavior. Hillsdale, NJ: Erlbaum.
- Gottlieb, G. (1998). Normally occurring environmental and behavioral influences on gene activity: From central dogma to probabilistic epigenesis. *Psychological Reviews*, 105, 792–892.
- Gowdy, J. (1998). Limited wants, unlimited means: A reader on hunter-gatherer economics and the environment. Washington, D.C.: Island Press.
- Gowdy, J. (1999). Gatherer-hunters and the mythology of the market. In R.B. Lee, R.B. & R. Daly (Eds.), *The Cambridge encyclopedia of hunters and gatherers* (pp. 391-398). New York: Cambridge University Press.
- Hawkes, K., & Coxworth, J. E. (2013). Grandmothers and the evolution of human longevity: A review of findings and future directions. *Evolutionary Anthropology*, 22(6), 294-302.
- Heckman, J. (2008). *Schools, skills and synapses*. IZA DP No. 3515. Bonn, Germany: Institute for the Study of Labor.
- Heim, C., Owens, M.J., Plotsky, P.M., Nemeroff, C.B. (1997). Persistent changes in corticotropin-releasing factor systems due to early life stress: Relationship to the pathophysiology of major depression and post-traumatic stress disorder. *Psychopharmacology Bulletin*, 33(2), 185-192.
- Henry, J. P., & Wang, S. (1998). Effects of early stress on adult affiliative behavior. *Psychoneuroendocrinology*, 23(8), 863-875. doi:10.1016/S0306-4530(98)00058-4
- Hewlett, B.S., & Lamb, M.E. (2005). *Hunter-gatherer childhoods: evolutionary, developmental and cultural perspectives*. New Brunswick, NJ: Aldine.
- Hewlett, B.S., & Lamb, M.E. (2005). *Hunter-gatherer childhoods: Evolutionary, developmental and cultural perspectives*. New Brunswick, NJ: Aldine.
- Hill, K., & Kaplan, H. (1999). Life history traits in humans: Theory and empirical studies. *Annual Review of Anthropology*, 28, 397-430.
- Hofer, M.A. (1987). Early social relationships as regulators of infant physiology and behavior. *Child Development*, 58(3), 633-647.
- Hofer, M.A. (1990). Early symbolic processes: Hard evidence from a soft place. In R.A. Gick, & S. Bore (Eds.), *Pleasure beyond the pleasure principle* (pp. 55-78). New Haven: Yale University Press.
- Hofer, M.A. (1994). Hidden regulators in attachment, separation, and loss. In N.A. Fox (Ed.), *Emotion regulation: Behavioral and biological considerations. Monographs of the Society for Research in Child Development*, 59, 192-207.
- Hofferth, S. & Sandberg, J. (1999), Changes in American Children’s Time, 1981-1997. Ann Arbor, MI: University of Michigan Institute for Social Research. <http://www.puttingfamilyfirst.org/research.php>
- Hrdy, S. (2009). Mothers and others: The evolutionary origins of mutual understanding. Cambridge, MA: Belknap Press.
- Ingold, T. (1999). On the social relations of the hunter-gatherer band. In R.B. Lee, R.B. & R. Daly (Eds.), *The Cambridge encyclopedia of hunters and gatherers* (pp. 399-410). New York: Cambridge University Press.
- Ingold, T. (1999). On the social relations of the hunter-gatherer band. In R. B. Lee & R. Daly (Eds.), *The Cambridge encyclopedia of hunters and gatherers* (pp. 399–410). New York: Cambridge University Press.
- Ingold, T., Riches, D., & Woodburn, J. (1988a). *Hunters and gatherers, Vol. 1: History, evolution and social change*. Oxford, England: Berg.
- Ingold, T., Riches, D., & Woodburn, J. (1988b). *Hunters and gatherers, Vol. 2: Property, power and ideology*. Oxford, England: Berg.
- Intergovernmental Panel on Climate Change. (2007). *Climate change 2007: A synthesis report*. Geneva, Switzerland: World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP).
- Jablonka, E., & Lamb, M. J. (2006). The evolution of information in the major transitions. *Journal of Theoretical Biology*, 239(2), 236–246.
- Juster, F. T., et al. (2004). Changing Times of American Youth: 1981-2003, *Child Development Supplement*. Lansing, Michigan: Institute for Social Research, University of Michigan.
- Kelly, R.L. (2007). *The foraging spectrum: Diversity in hunter-gatherer lifeways*. Clinton Corners, NY: Eliot Werner Publications.
- Keyes, C. L. M. (2002). The Mental Health Continuum: From Languishing to Flourishing in Life.” *Journal of Health and Social Behavior*, 43, 207-222.
- Kim-Cohen, J., Caspi, A Taylor, A., Williams, B., Newcombe, R., Craig, I.W., Moffitt, T.E, (2006). *MAOA*, maltreatment, and gene–environment interaction predicting children's mental health: new evidence and a meta-analysis. *Molecular Psychiatry*, 11, 903–913.
- Kimmerer, R.W. (2013). *Braiding Sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Milkweed Editions, Minneapolis, MN.
- King, J.A. (1996). Perinatal stress and impairment of the stress response: Possible link to nonoptimal behavior. *Annals of the New York Academy of Sciences*, 794, 104-112.
- Kolbert, E. (2014). *The sixth extinction: An unnatural history*. New York, NY: Henry Holt.
- Konner, M. (2005). Hunter-gatherer infancy and childhood: The !Kung and others. In B. Hewlett & M. Lamb (Eds.), *Hunter-gatherer childhoods: Evolutionary, developmental and cultural perspectives* (pp. 19-64). New Brunswick, NJ: Transaction.
- Konner, M. (2010). *The evolution of childhood*. Cambridge, MA: Belknap Press.

- Konner, M. (2010). *The evolution of childhood*. New York: Oxford University Press.
- Kramer, K. L. (2010). Cooperative breeding and its significance to the demographic success of humans. *Annual Review of Anthropology*, 39(1), 417-436.
- Leckman, J. F., & March, J. S. (2011). Editorial: Developmental neuroscience comes of age. *Journal of Child Psychology and Psychiatry*, 52, 333-338.
- Lee, R. B., & Daly, R. (Eds.). (2005). *The Cambridge encyclopedia of hunters and gatherers*. New York, NY: Cambridge University Press.
- Lee, R.B. (1979). *The !Kung San: Men, women, and work in a foraging community*, Cambridge: Cambridge University Press.
- Lee, R.B., & Daly, R. (Eds.) (1999). *The Cambridge encyclopedia of hunters and gatherers*. New York: Cambridge University Press.
- Lewontin, R. (1991). *Biology as ideology*. New York, NY: Harper Perennial.
- Lewontin, R. (2010). Response to comment on Not So Natural Selection from the May 27, 2010 issue. *New York Review of Books*.
- Lupien, S.J., McEwen, B.S., Gunnar, M.R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour and cognition. *Nature Reviews Neuroscience*, 10(6), 434-445.
- Marshall, L. (1976). *The !Kung of Nyae Nyae*. Cambridge: Harvard University Press.
- Masten, A., & Garmezy, N. (1985). Risk, vulnerability, and protective factors in developmental psychopathology. In B. Lahey, & A. Kazdin (Eds.), *Advances in clinical child psychology* (Vol. 8) (pp. 745-764).
- McGowan, P.O., Sasaki, A., D'Alessio, A.C., Dymov, S., Labonté, B., Szyf, M., Turecki, G., & Meaney, M.J. (2009). Epigenetic regulation of the glucocorticoid receptor in human brain associates with childhood abuse. *Nature Neuroscience*, 12, 342 - 348.
- McGroder, S. M. (1988). *A synthesis of research on child care utilization patterns*. Washington, D.C.: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation
- Meaney, M. (2010). Epigenetics and the biological definition of gene x environment interactions. *Child Development*, 81(1), 41-79.
- Meaney, M. J. (2001). Maternal care, gene expression, and the transmission of individual differences in stress reactivity across generations. *Annual Review of Neuroscience*, 24, 1161-1192.
- Millennium Ecosystem Assessment (2005). *Ecosystems and human well-being: Synthesis*. Island Press, Washington, DC.
- Montagu, A. (1957/1963). *Anthropology and human nature*. New York, NY: McGraw-Hill.
- Murgatroyd, C., Spengler, D. (2011) Epigenetic programming of the HPA axis: early life decides. *Stress*, in press (DOI:10.3109/10253890.2011.602146).
- Narvaez, D. (2013). The 99 Percent—Development and socialization within an evolutionary context: Growing up to become “A good and useful human being.” In D. Fry (Ed.), *War, Peace and Human Nature: The convergence of Evolutionary and Cultural Views* (pp. 643-672). New York, NY: Oxford University Press.
- Narvaez, D. (2014a). *Neurobiology and the Development of Human Morality: Evolution, Culture and Wisdom*. New York, NY: W.W. Norton.
- Narvaez, D. (2014b). The co-construction of virtue: Epigenetics, neurobiology and development. In N. E. Snow (Ed.), *Cultivating Virtue* (pp. 251-277). New York, NY: Oxford University Press.
- Narvaez, D., & Gleason, T. (2013). Developmental optimization. In D. Narvaez, J., Panksepp, A. Schore, & T. Gleason (Eds.), *Evolution, Early Experience and Human Development: From Research to Practice and Policy* (pp. 307-325). New York, NY: Oxford University Press.
- Narvaez, D., Gleason, T., Wang, L., Brooks, J., Lefever, J., Cheng, A., & Centers for the Prevention of Child Neglect (2013). The Evolved Development Niche: Longitudinal Effects of Caregiving Practices on Early Childhood Psychosocial Development. *Early Childhood Research Quarterly*, 28 (4), 759-773. Doi: 10.1016/j.ecresq.2013.07.003
- Narvaez, D., Panksepp, J., Schore, A., & Gleason, T. (Eds.) (2013). *Evolution, Early Experience and Human Development: From Research to Practice and Policy*. New York, NY: Oxford University Press.
- Narvaez, D., Valentino, K., Fuentes, A., McKenna, J., & Gray, P. (2014). *Ancestral Landscapes in Human Evolution: Culture, Childrearing and Social Wellbeing*. New York, NY: Oxford University Press.
- Narvaez, D., Wang, L., & Cheng, A. (2015). *Evolved Developmental Niche History: The effects of early experience on adult health and morality*. Manuscript under review.
- Narvaez, D., Wang, L., Gleason, T., Cheng, A., Lefever, J., & Deng, L. (2013). The Evolved Developmental Niche and sociomoral outcomes in Chinese three-year-olds. *European Journal of Developmental Psychology*, 10(2), 106-127.
- National Research Council. (2013). *U.S. Health in International Perspective: Shorter Lives, Poorer Health*. Washington, DC: The National Academies Press.
- Nussbaum, M. C. (2011). *Creating capabilities. The human development approach*. Cambridge, Massachusetts: Harvard University Press.
- Organisation for Economic Cooperation and Development (2013), *How's Life? 2013: Measuring Well-being*, OECD Publishing. <http://dx.doi.org/10.1787/9789264201392-en>
- Organization for Economic Cooperation and Development. (2009). *Doing better for children*. Paris: OECD Publishing.
- Overton, W. F. (2013). A new paradigm for developmental science: Relationism and relational-developmental-systems. *Applied Developmental Science*, 17(2), 94-107.
- Overton, W.F., & Molenaar, P.C. (2015). Concepts, theory, and method in developmental science: A view of the issues. In W. F. Overton & P. C. M. Molenaar (Eds.), *Theory and Method*. Volume 1 of the *Handbook of child psychology and developmental science*, 7th ed. (pp. 2-8). New York, NY: Wiley.
- Oyama, S. (2000). *Evolution's eye: A systems view of the biology-culture divide*. Durham, NC: Duke University Press.
- Oyama, S., Griffiths, P.E., & Gray, R.D. (2001). *Cycles of contingency: Developmental systems and evolution*. Cambridge, MA: MIT Press.

- Oyama, S., Griffiths, P.E., & Gray, R.D. (2001). Introduction: What is developmental systems theory? In S. Oyama, P.E. Griffiths & R.D., Gray (Eds.), *Cycles of contingency: Developmental systems and evolution* (pp. 1-11). Cambridge, MA: MIT Press.
- Panksepp J. (2001). The long-term psychobiological consequences of infant emotions: Prescriptions for the 21st century. *Infant Mental Health Journal*, 22, 132-173.
- Reichow, B. (2012). Overview of meta-analyses on early intensive behavioral intervention for young children with autism spectrum disorders. *Journal of autism and developmental disorders*, 42(4), 512-520.
- Rideout, V. et al. (2005). *Generation M: Media in the Lives of 8-18 Year-Olds*. The Henry J. Kaiser Family Foundation.
- Rodriguez, T. (2015). Descendants of holocaust survivors have altered stress hormones. *Scientific American Mind*, March/April, p. 10.
- Sahlins, M. (1972). *Stone-age economics*. Chicago: Aldine.
- Sahlins, M. (2008). *The Western Illusion of Human Nature*. Chicago: Prickly Paradigm Press.
- Sahlins, M. (2008). *The Western illusion of human nature*. Chicago, IL: Prickly Paradigm Press.
- Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with autism: Four-year outcome and predictors. *Journal of Information*, 110(6).
- Samson, R., & Brandon, R. (2007). *Integrating Development and Evolution*. Cambridge, MA: The MIT Press
- Sanchez, M.M., Ladd, C.O., & Plotsky, P.M. (2001). Early adverse experience as a developmental risk factor for later psychopathology. *Development and Psychopathology*, 13 (3), 419-449.
- Sanders, S.R. (2009). *A conservationist manifesto*. Bloomington, IN: Indiana University Press.
- Schore, A. (1994). *Affect regulation*. Hillsdale, NJ: Erlbaum.
- Schore, A. (1996). The experience-dependent maturation of a regulatory system in the orbital prefrontal cortex and the origin of development psychopathology. *Development and Psychopathology*, 8, 59-87.
- Schore, A. N. (2003b). *Affect regulation and the repair of the self*. New York: Norton.
- Schore, A.N. (1997). Early organization of the nonlinear right brain and development of a predisposition to psychiatric disorders. *Development and Psychopathology*, 9, 595-631.
- Schore, A.N. (2000). Attachment and the regulation of the right brain. *Attachment & Human Development*, 2, 23-47.
- Schore, A.N. (2001a). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22, 201-269.
- Schore, A.N. (2002). Dysregulation of the right brain: a fundamental mechanism of traumatic attachment and the psychopathogenesis of posttraumatic stress disorder. *Australian & New Zealand Journal of Psychiatry*, 36, 9-30.
- Schore, A.N. (2003a). *Affect regulation and the origin of the self*. Hillsdale, NJ: Erlbaum.
- Schore, A.N. (2005). Attachment, affect regulation, and the developing right brain: Linking developmental neuroscience to pediatrics. *Pediatrics In Review*, 26, 204-211.
- Schore, A.N. (2011). Bowlby's "Environment of evolutionary adaptedness": Recent studies on the interpersonal neurobiology of attachment and emotional development. In D. Narvaez, J. Panksepp, A.N. Shore, & T. Gleason (Eds.), *Human Nature, Early Experience and the Environment of Evolutionary Adaptedness*. Oxford: Oxford University Press.
- Schore, A.N. (2015). Plenary address, Australian Childhood Foundation Conference Childhood Trauma: Understanding the basis of change and recovery: Early right brain regulation and the relational origins of emotional wellbeing. Children Australia. Available on CJO 2015 doi: 10.1017/cha.2015.13
- Schreibman, L. (2000). Intensive behavioral/psychoeducational treatments for autism: Research needs and future directions. *Journal of Autism and Developmental Disorders*, 30(5), 373-378.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5-14.
- Shonkoff, J.P. & Phillips, D.A. (2000). *From neurons to neighborhoods: The science of early childhood development*. National Research Council, Committee on Integrating the Science of Early Childhood Development. Washington, D.C.: National Academy Press.
- Shonkoff, J.P., Garner, A.S. The Committee on Psychosocial Childhood, Adoption, and Dependent Care, and Section on Developmental and Behavioral Pediatrics, Dobbins, M.I., Earls, M.F., McGuinn, L., ... & Wood, D.L. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129, e232 (originally published online December 26, 2011)
- Shostak, M. (1981). *Nisa: The life and words of !Kung woman*. New York: Vintage Books.
- Siegel, D. (1999). *The developing mind: How relationships and the brain interact to shape who we are*. New York: Guilford Press.
- Snow, N.E. (in press). Generativity and flourishing. *Journal of Moral Education*.
- Thayer, Z. M., & Kuzawa, C. W. (2011). Biological memories of past environments: Epigenetic pathways to health disparities. *Epigenetics*, 6(7), 798-803.
- Thomas, E.M. (1989). *The Harmless People* (rev. ed.). New York: Vintage.
- Tindale, N.B., & George, B. (1971). *The Australian Aborigines*. Sydney, Australia: Golden Press.
- Trevathan, W.R. (2011). *Human birth: An evolutionary perspective, 2nd ed.*. New York: Aldine de Gruyter.
- Turnbull, C. (1984). *The human cycle*. New York: Simon and Schuster.
- UNICEF (2007). Child poverty in perspective: An overview of child well-being in rich countries, a comprehensive assessment of the lives and well-being of children and adolescents in the economically advanced nations, Report Card

7. Florence, Italy: United Nations Children's Fund Innocenti Research Centre.
- UNICEF. (2013). *Child well-being in rich countries: A comparative overview*, Innocenti Report Card 11. Florence: UNICEF Office of Research.
- United Nations Intergovernmental Panel on Climate Change (2013). Climate change 2013: The physical science basis. Working Group I Contribution to the IPCC 5th Assessment Report - Changes to the Underlying Scientific/Technical Assessment" (IPCC-XXVI/Doc.4). Geneva, Switzerland: United Nations.
- United Nations Population Division (2012). World Population Prospects. Retrieved from: <http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3A77>
- Wagner, M. (2006). *Born in the USA: How a broken maternity system must be fixed to put women and children first*. Berkeley, CA: University of California Press.
- Williams, G.C. (1966a). *Adaptation and natural selection: A critique of some current evolutionary thought*. Princeton, NJ: Princeton University Press.
- Wolff, R. (2001). *Original wisdom*. Inner Traditions, Rochester Vermont.
- Woodburn, J. (1982). Egalitarian societies. *Man*, 17, 431-451.
- World Wildlife Fund (2014). *Living Planet Report 2014: Summary*. [McLellan, R., Iyengar, L., Jeffries, B. and N. Oerlemans (Eds)]. WWF: Gland, Switzerland.