

Developmental Optimization

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Anthropologists and other scientists involved in similar research consistently remark on how much the people from hunter-gatherer societies are “more intelligent, more alert, more expressive, and more interested in things and people around them than the average European or American” (Diamond, 1997, p. 20; see also Dentan, 1968; Everett, 2009). Why? What about the hunter-gatherer way of life might elicit engagement in the physical and social world more so than life in industrialized societies? Certainly the fitness requirements in physiologically harsh living conditions might make for a more severe culling of less intelligent genetic stock (Diamond, 1997). But could genes explain everything? We think not. As the study of epigenetics and developmental plasticity expands, the fact that early life factors, particularly psychological ones, influence developmental outcomes as much as genes, if not more, becomes ever more clear (Jablonka & Lamb, 2006).

In recent years, the field of developmental traumatology has emerged, which seeks to unravel the complex interactions among a child’s genetic makeup, environmental stressors, and sensitive periods for child outcomes (De Bellis, 2010). Recent years have also put key elements of our distant past in higher relief (e.g., the health effects of high levels of vitamin D among our ancestors due to high skin exposure to sunlight; Cannell, Hollis, Zasloff, & Heaney, 2008). In this chapter, using ancestral practices as a baseline, we propose research into “developmental optimization,” in which the complex interactions among genes, environment, critical periods, and the timing, intensity, and duration of experiences and their contexts are examined for their

interrelationships and effects on the functioning of brain and body systems and implicated in child and adult outcomes. Our particular interest is sociomoral development, which includes personality characteristics such as empathy, conscience, and self-regulation. But we do not mean to imply that a developmental optimization framework is unrelated to other outcomes. It can also frame the study of intelligence, health, and other factors related to human well-being.

Human Nature and Moral Functioning

Darwin (1871) believed that morality was integral to human nature, emphasizing humanity's "moral sense" as a unique contributor to human evolution. In *Descent*, Darwin (1871) identified several evolved components of the moral sense: (1) pleasure in the company of others and sympathy or concern for their well-being; (2) cognitive awareness allowing for comparison of past and future behavior, and dissatisfaction with mismatched expectations; (3) concern for social rules constructed by the community, which, in concert with cognitive awareness, fosters shame when group expectations are not met; and (4) habit or practice, allowing for cultural transmission. Darwin assumed that these were commonly held characteristics of humans, forming the backbone of any society.

But perhaps Darwin was too quick to assign these characteristics to innateness. Evidence suggests that some of the characteristics may be on the decline in the US population. Here are some examples. Concerning (1), contra the enjoyment of sociality, single-person households are rising more rapidly than other types of households and are second most prevalent, after households with married adults with no children (Johnson, 2009). Further, according to Cacioppo and Patrick (2008), isolation and loneliness are increasing (recall *Bowling Alone* from 1995), suggesting that the ability to get pleasure from social engagement is decreasing or that modern forms of interaction are not fulfilling social needs (at the same time, note the increase in

the use of interactive social media). As for empathy, longitudinal analyses document a decrease in empathy among college students over the last decades (Konrath, O'Brien, & Hsing, 2011; but note that other work suggests that younger cohorts generally may show more empathy than older ones: Grünh, Rebucal, Diehl, Lumley, & Labouvie-Vief, 2008). Regarding (3), the number of families exhibiting antisocial behavior seems to be on the rise (Mooney & Young, 2006; Walker, 1993), antiheroes are celebrated in television and the media (Bloch, 2006), and cheating to get ahead is widespread (Callahan, 2004). More and more communication is mediated by technology, but the quality of those interpersonal exchanges are decidedly less socially and emotionally fulfilling than face-to-face interaction (Turkle, 2011). Regarding (4), in the earliest years a child's ability to conform to the requirements of formal schooling gives a measure of success or failure in building habits appropriate for one's social context. The number of children who arrive in kindergarten with behavior dysregulation appears to be increasing, suggesting that many children have not mastered the requisite level of self-regulation for early schooling (Gilliam, 2005; Powell, Fixen, & Dunlop, 2003) and/or that current practices in early childhood education and care are developmentally inappropriate to prepare them for success in kindergarten. In summary, the empirical work that addresses the characteristics of Darwin's moral sense components suggests that they may be more epigenetic than genetic and that modern society may not, or may no longer, be providing the necessary environment for their optimal manifestation.

Indeed, in chapter 1 (Narvaez, Panksepp, Schore, & Gleason, this volume), the authors described some of the evidence for the decline in well-being among US children and youth. Similar declines in moral and prosocial functioning are also apparent. For example, moral reasoning sophistication has been declining in college students, from postconventionality not to

the next level down, conventionality, but to the lowest level, personal interests (Thoma & Bebeau, 2008). Moreover, in the past 50 years, “rates of maladaptive aggression and antisocial behaviors” have risen “in frequency and severity among children and adolescents” (Connor, 2002, p. 28). The picture is not good. At the same time, violent crime rates overall are down (Federal Bureau of Investigation, 2010), suggesting to some that morality has improved. But this view is only true if one takes morality to be “do no harm” rather than something more prosocial. Consequently, our concern is for the development and promotion of sophisticated social engagement and prosocial behavior, and for the facilitation of the developmental processes that bring them into being.

Setting the Stage for Moral Development Early in Life

Developmental psychology has made great strides in recent decades in identifying behaviors in early life that are foundational for moral functioning in adulthood. Underlying these behaviors are two important characteristics: self-regulation and concern for others. These attributes provide the foundation for social interaction, in that successful prosocial engagement with others requires both management of one’s internal world, so as to move beyond personal concerns, and attention to the needs of others. Moreover, these qualities are characteristic of moral exemplars.

As a group, moral exemplars are more agreeable, conscientious, and open to new experience than the average person (Colby & Damon, 1991; Walker, 1999), and they show high regulation of emotion and successful management of stressful experiences. At the same time, they exhibit a higher than average affiliation with others (communion and compassion) and a higher than average sense of self-efficacy or agency (Frimer, Walker, Dunlop, Lee, & Riches, in press; Walker & Frimer, 2008, 2009), behavioral orientations associated with social engagement, and concern for the welfare of others. These components of personality develop over many

years. Self-regulation, for example, is a complicated and long-term developmental task that includes physiological, emotional, and social components. Successful automatic self-regulation frees the individual to be able to focus on external concerns, such as the needs of others. In this sense, self-regulation is a necessary but not sufficient condition for the development of virtue. The second component, development of concern for others, depends on the construction of a brain that is relationally oriented and experienced in intersubjectivity, the emotional attunement that characterizes good early experience. The ability to act on concern for others emerges from experiences of mutuality, leading to the internalization of parental mores and the emergence of conscience (Kochanska, 2002). We examine the research on these two characteristics, which provides clues as to the kinds of early experiences that promote optimal moral functioning and can help in finding a proper moral baseline for human behavior. Because concern for others and the ability to act prosocially are necessarily dependent on good self-regulation (Kochanska, DeVet, Goldman, & Murray, 1994), we begin with the latter.

Self-Regulation

Self-regulation is a fundamental goal of successful development (Als, 1982) but is not the task of the child alone. It is by definition a social, and primarily dyadic, process that begins at (or even before) birth. The human infant is characterized by significant neurological immaturity, and thus even such basic physiological processes as regulating temperature and the sleep/wake cycle require support from a responsive, caring adult. Specifically, maternal sensitivity has been identified as an important component of an infant's physiological regulation (Moore et al., 2009; Spangler, Schieche, Ilg, & Maier, 1994). Failure to receive responsive care results in a maladaptive stress response in the infant. Indeed, even with custodial care that manages physiological regulation but is emotionally unresponsive, infants experience a heightened level

of stress response (Gunnar, Larson, Hertzgaard, Harris, & Brodersen, 1992). A young child who is cared for with little warmth and responsivity, even if his or her physical needs are met, shows more depressed affect and fewer social bids than a child with a nurturing caregiver (Karrass & Walden, 2005).

Early life is a sensitive period for self-regulation development. Repeated experience of stress in early development can become an entrenched pattern that establishes a poor foundation for future development. Neglected and abused children show permanent changes to their neurological functioning as a result of poor vagal tone (Porges & Carter, 2010) and frequent hormonal imbalances (for reviews, see Lanius, Vermetten, & Pain, 2010; Schulkin, 1999). Poor physiological self-regulation is also linked to insecure or disorganized attachment to caregivers (Spangler & Grossman, 1993). On the other hand, attentive early caregiving results in what Fogel and colleagues (Fogel, 2000; Fogel & Branco, 1997) call a kind of “relational communication system,” in which parent and child successfully modulate their behavior to achieve an optimal level of physiological arousal and coordinated action (Evans & Porter, 2009). Starting early in life, parental face-to-face interaction with infants often shows efforts to match infant affect, a process that leads to positive arousal and ultimately to mutual synchrony between parent and child later in the first year. Successful navigation of these processes is associated with measures of self-control (Feldman, Greenbaum, & Yirmiya, 1999). As Schore (this volume) points out, the mother–child relationship is critical to the foundation of emotion systems and the cultivation of right brain emotional signaling. Attachment behaviors are reflective of this deep neurobiological entrainment.

As the infant grows, the regulation of emotion becomes integral to the development of an attachment relationship (Schore, 2001; Sroufe, 1996). Security of attachment is highly correlated

with measures of emotion regulation, such as impulse control and aggression (Egeland, 1983), through such physiological mechanisms as vagal tone shaping by caregiver touch (Carter & Porges, this volume). Beyond the attachment relationship and the neurobiological construction of the emotion systems through caregiver support in infancy, Morris, Silk, Steinberg, Myers, and Robinson (2007) identified three means by which parents shape emotion regulation beyond infancy: through the demonstration of particular emotions (i.e., modeling), as social references for situations in which children are unsure how to react, through the general emotional atmosphere parents provide in the family (e.g., marital relationship), and through direct tuition around emotions—at first helping children explicitly identify and manage their emotions and the emotions of others and subsequently suggesting ways in which children can cope with their negative emotions (in particular) on their own. All these co-constructions are facilitated by a good neurobiological base.

Social regulation builds on the physiological and emotional components of self-regulation. The development of a secure attachment relationship and well-shaped emotion systems in infancy sets the stage for creating and managing social relationships later in life. Theoretically, a secure attachment relationship provides a model of the self as worthy of love from others, creating the expectation that social relationships will be a beneficial and rewarding experience (Bowlby, 1979; Sroufe & Fleeson, 1986). Moreover, these relationships are thought to provide the infant and young child with the self-regulatory tools needed to manage stressful situations, whether social or not. Indeed, recent work in neurobiology has illuminated some of the mechanisms by which secure attachments facilitate healthy and adaptive strategies for coping with stress and novelty (Schoore, 2001, this volume), and certainly associations have been found between early secure attachments and later relationships, both with adults (Erickson & Crichton,

1981) and with peers and friends (Hartup, 1983). As with emotion regulation, the development of social regulation continues to be a dyadic process throughout childhood as parents advise their children regarding social interactions, facilitate their participation in social groups, and model appropriate social behavior (Hartup, 1991). Even into adolescence, parents provide important resources to guide their children's emerging autonomy into the social world (Collins, Gleason, & Sesma, 1997).

Concern for Others

In addition to the ability to regulate physiological, emotional, and social responses, the development of optimal moral functioning requires an external focus, in which the needs and desires of others are not only noticed but also given attention and concern. To behave in moral ways, a person must not only refrain from transgressions but also feel empathy for the plight of others and take some responsibility for their welfare. The ability to engage in these processes regularly and consistently requires resources beyond those needed to attend to the needs of the self.

The roots of empathy are apparent in newborns, who cry in response to the cries of other newborns (empathic distress), and it continues to develop throughout childhood under conditions of good care (Hoffman, 2000). Empathy is shaped particularly in the mother-child dyad of mutual coregulation. When the mother is sensitively responsive, she fosters the child's emotional attunement with others (Siegel, 1999). Concern for others emerges as the basic components of self-regulation are developing (Eisenberg, 2000). The intersubjectivity of the mother-child relationship fosters both empathy and self-regulation through a mutually responsive orientation (partners regulate themselves in response to the other; Kochanska, 2002).

Although the ability to refrain from wrongdoing—virtue as noncommission at its most basic level—requires a significant element of self-control (Grusec & Goodnow, 1994), evidence has emerged for the internalization of parental mores, the emergence of conscience, and the development of empathy as early as toddlerhood. Internalization of parental rules has been studied in young children as the ability to abstain from wrongdoing and the development of conscience. Kochanska and colleagues have published extensively on this topic, demonstrating consistently and repeatedly that a child’s ability to internalize parents’ rules and successfully demonstrate conscience is directly related to the parent–child relationship and to maternal responsivity (e.g., Kochanska, 1994; Kochanska & Aksan, 2004, 2006; Kochanska, Barry, Aksan, & Boldt, 2008). The emphasis in this work and others like it (e.g., Laible, 2004a, 2004b) has been on the relation between a warm, nurturing social environment and not only compliant and caring behavior in children but also the desire to comply with parental requests (Grusec & Goodnow, 1994). Indeed, caregiver responsivity is related to cooperation and compliance in young children (Holden & West, 1989; Kuczynski, Kochanska, Radke-Yarrow, & Girniss-Brown, 1987; Parpal & Maccoby, 1985), and the relation between responsivity and outcomes such as early conscience is moderated by the security of attachment in the parent–child relationship (Kochanska, Aksan, & Koenig, 1995).

Virtue is not only about self-control but also about sympathetic action for others based on empathy. Although direct linkages between parent and child empathy do not always emerge in research (Strayer & Roberts, 1989), parent empathy may be associated with particular parenting practices such as low coercive control and encouragement of emotional expressiveness, even for negative emotions. These practices, in turn, relate to higher empathy in children (Strayer & Roberts, 2004). Socialization that includes parental warmth, but also the demonstration of

prosocial behavior and explicit references to the reasoning for prosocial actions, appears to be most successful in eliciting prosocial behavior in children (Yarrow, Scott, & Waxler, 1973). Moreover, parents consciously and unconsciously inform their children to whom prosocial behavior should be shown and for whom empathy should be felt. For some families, such moral attitudes are applied to a specified in-group, such as family, a religious community, or a nationality. For others, ethical obligations are understood to apply to everyone (Oliner & Oliner, 1988).

The fact that caregiving is heavily implicated in the development of moral functioning comes as no surprise. Indeed, research in child development provides many clues for the practices that make up the kind of caregiving that results in prosocial, moral functioning. Even so, the standards we currently hold for exemplary moral behavior may, in fact, be only a fraction of our capacity. Our abilities to imagine the future, and to envision long-range effects of current decisions, suggest that we could be empathizing with our great-grandchildren and regulating our current behavior so as to benefit future generations. If so, satisfaction with current levels of sociomoral functioning, if indeed we are satisfied, may be unwarranted.

Getting the Baseline Right

To aim for developmental optimization, we suggest using our *ancestral human mammalian milieu* (AHMM) as a baseline. We gather the information for the AHMM from our catarrhine mammalian heritage, which is more than 30 million years old and was modified in the context of our small band gatherer-hunter (SBGH) ancestors. The human genus is presumed to have existed in the SBGH context for over 99% of its existence (Fry, 2006). Using the AHMM as a baseline, to the extent that we can draw information from it, is a logical and systematic way of developing a theory of the conditions for optimal human development. The AHMM baseline is especially

useful when considering social and moral functioning because we have anthropological and explorer reports on the social and moral functioning of SBGH groups.

In addition to its basis in our evolutionary heritage, using the behaviors of SBGHs as a baseline for optimal human development has good face validity for the development of moral functioning. Members of nomadic foraging societies are reported to have pleasant and deeply prosocial relations and communities. Interpersonal violence is rare (for a review, see Fry, 2006). SBGH societies tend to be amiable and egalitarian (more closely resembling our bonobo rather than our chimpanzee cousins; de Waal & Lanting, 1998). In these contexts, acting virtuously was most effective for survival and thriving (Everett, 2009; Fry, 2006; Thomas, 2006; Turnbull, 1983). Community members who did not act virtuously were expelled. The prosocial orientations shown by individuals in these groups have parallels with those of moral exemplars, and the parenting practices they use may as well (see Oliner & Oliner, 1988). Attending to these practices offers possible avenues for facilitating the development of a society that supports optimal moral functioning.¹

¹ Note, however, that once human groups became larger and more complex, they often adopted raiding behavior, much like an overgrown chimpanzee group (Wrangham & Peterson, 1996). As humans, however, we have a powerful tool unavailable to chimpanzees and other apes: our larger, more complex brains. Even in contexts that may push us toward aggression and war (i.e., dwindling resources), we have the option of using our extensive creativity and problem-solving skills to choose prosocial and virtuous solutions to the issues that perplex us. The motivation to use our brains in such productive ways, however, depends on the kind of caregiving and support those brains receive early in life. We contend that such nurturance is to be found in caregiving

As noted in chapter 1 in this volume, early life experience for hominids involved (1) touch, being held or kept near others constantly; (2) caregiver prompt and appropriate responses to fusses, cries, and needs; (3) breastfeeding on demand frequently (2 to 3 times/hour initially) and on average 2 to 5 years; (4) cosleeping close to caregivers; (5) multiple alloparents, that is, frequent care by individuals other than mothers (fathers and grandmothers, in particular); (6) multiage free-play groups in nature; (7) high social embeddedness; and (8) natural childbirth (see Table 12.1). Because the merit of each of these was explained in chapter 1, we will not reiterate it here, but we can name these characteristics as mammalian consistent.

Testing the Effects of Mammalian-Consistent Care

We have hypothesized that care consistent with that of the AHMM would be important to and facilitative of optimal sociomoral development (Narvaez, 2008). To that end, in several studies with our colleagues, we have been testing the effects of mammalian-consistent care on child moral development (Narvaez, Cheng, Brooks, Wang, & Gleason, 2012; Narvaez, Gleason, Brooks, Wang, Lefever, Cheng, & Centers for the Prevention of Child Neglect, 2012; Narvaez, Wang, Gleason, Cheng, Lefever, & Deng, 2012; Narvaez, Wang, Gleason, Cheng, & Lefever, 2012). For two studies, we created a measure called the Family Life Attitude and Behavior Measure (FLAM), which we gave online to a few hundred American mothers and in a paper-and-pencil version to a similar group of Chinese mothers, all of whom had 3-year-old children. The FLAM is a survey that measures maternal behaviors and attitudes toward AHMM-consistent care (frequent touch, cosleeping, frequent and lengthy breastfeeding, multiple caregivers, prompt response to fusses and cries). The questionnaire also addresses child outcomes, such as

practices that acknowledge and support our evolution as mammals: those of the ancestral human mammalian milieu.

manifestations of concern, empathy, and self-regulation (from the My Child measure; Kochanska et al., 1994) and inhibitory control as measured by the Child Behavior Questionnaire (Putnam & Rothbart, 2006).

In the American sample, several AHMM components emerged as particularly important for child sociomoral outcomes. In terms of empathy, mothers' reports of the choice to breastfeed and how long they breastfed were correlated with their reports of their children's empathy. Prompt responses to fusses and cries and reports of positive touch in infancy and currently also predicted child empathy. Interestingly, attitudes about touch also predicted empathy but were mediated by touch behaviors. In other words, a mother's attitude about how and how much she should touch her child seemed to relate directly to whether she did so, and these behaviors in turn predicted her child's empathy. Empathy was also related to mothers' reports of how close their children seemed to feel to important caregivers. This result emphasizes the role of closeness in relationships for fostering empathy in young children.

Children's inhibitory control and self-regulation were also predicted by AHMM components. Again, breastfeeding predicted higher inhibitory control, and responsivity—prompt responses to fusses and cries—and current levels of positive touch both influenced inhibitory control and self-regulation. In general, a parenting orientation that emphasizes comforting touch, breastfeeding, and responsiveness to the child's needs was associated with positive sociomoral development in this sample.

Results from the Chinese sample were quite similar but not identical to those of the American sample. For example, the choice to breastfeed was again related to empathy, but breastfeeding length was related to the child demonstrating concern after wrongdoing. Responsivity predicted empathy, just as in the US sample, but was also related to concern, as

were both positive touch in infancy and current positive touch. Touch also predicted self-regulation in the Chinese children, according to maternal report.

The similarities between the results for the American and Chinese samples suggest that caregiving experiences may be related to moral outcomes, such as empathy, in ways that are minimally affected by culture. Alternatively, US and Chinese culture may overlap sufficiently such that similar parenting practices result in similar outcomes. The ways in which culture influences the dynamic interplay between AHMM components and sociomoral outcomes remains to be explored. Contextual effects may mean that differences in the goals of socialization result in different AHMM-outcome connections.

We were also interested in whether AHMM consistency in parenting practices would relate to children's observable behavior, rather than just to mothers' reports of such behavior. The behaviors we chose to examine include those that tap sociomoral development, such as self-regulation, emotion recognition, physiological regulation, and empathy. To that end, we asked a new group of 50 mothers of 3-year-old children to fill out the FLAM, and in the lab, we measured a range of child outcomes, including but not limited to children's physiological response to stress using cortisol, and tasks measuring emotion recognition (Ribordy, Camras, Stefani, & Spaccarelli, 1988) and inhibitory control (adapted version of the Stroop task; Gerstadt, Hong, & Diamond, 1994). Mothers and children were also observed in a free-play session together, which was coded using Landry's observation measure (Landry, Smith, Miller-Loncar, & Swank, 1997). Some of the child outcomes measured using this coding scheme include social engagement and self-regulation. We are still in the process of examining these data, but a few trends are emerging. For example, mothers' warmth (as measured by Landry) was related to children's ability to recognize the emotion of sadness and to inhibitory control. Children's social

engagement was predicted by the mother's ability to show responsiveness to her child, and her positive affect was related to physiological functioning.

Although these analyses are far from complete, the pattern that is emerging seems to suggest a connection between AHMM-consistent parenting behaviors and components of moral development, such as self-regulation and emotion recognition. Of course, in any of our studies, not every AHMM-consistent behavior is related to every outcome. Rather, the picture emerging seems to resemble a pattern seen for physiological health in terms of micronutrients like vitamins. Each vitamin targets particular systems or processes, yet for good health one needs a complement of vitamins. Similarly, each AHMM practice may facilitate particular outcomes, yet all practices are needed for good social, emotional, physical, and moral health. Clearly, we need to do more work to tease apart the mechanisms, mediators, and moderators of these relations to understand how early experience provides the building blocks for moral behavior in early childhood, and subsequently for exemplary moral behavior in adulthood.

Effects of Early Experience on Moral Functioning in Emerging Adults

Demonstrating a connection between parenting behaviors in infancy and early life and child outcomes at age 3 is useful, but it is insufficiently persuasive evidence that early experience plays a significant role in sociomoral functioning in adulthood. Triune ethics theory (Narvaez, 2008, 2009) makes the theoretical links between the neurobiological effects of early care and moral functioning later in life. Specifically, poor early care or trauma can lead to a disposition or propensity to use a self-concerned morality (a *security* ethic) based in primitive survival systems, which represents either an externalizing or internalizing approach to moral interactions with others. Responsive early care, as that of the AHMM, and lack of trauma lead to a fully functioning *engagement* ethic—moral attunement with others in the present moment—based in

full mammalian sociality. Care consistent with the AHMM also facilitates the *imagination* ethic, the ability to abstract from the present moment, consider alternative possibilities for more moral outcomes (communal imagination), and guide moral action. The imagination ethic, rooted in the prefrontal cortex and related structures, can also be driven by self-protection for a vicious imagination focused on long-term self-aggrandizement or be completely dissociated from emotion (detached imagination).

One set of evidence for triune ethics theory comes from attachment research in adolescents and adults. Those whose poor early care leaves them with overreactive stress response systems are more likely to experience personal distress instead of compassionate concern when under stressful interpersonal situations (Mikulincer & Shaver, 2008). Laboratory priming studies show that those who are primed for insecurity are less compassionate toward those in need (Mikulincer & Shaver, 2005). Further studies have examined the theoretical predictions of triune ethics theory. For example, Narvaez, Brooks and Hardy (2012) found that insecure attachment was related to favoring a security ethical mindset, poor perspective taking, and low empathy. Secure attachment was related to agreeable personality, empathy, preference for an engagement ethical mindset, and a humanistic worldview. Engagement identity also strongly predicted integrity and moral action for the less fortunate. These findings are a first step toward demonstrating a more direct link between early experience and adult moral functioning.

Low Standards and Suboptimality

Right now, US culture has accepted low standards for childrearing as normative. This adoption of poor-quality care as normative appears to be grounded in three perspectives. First, it is undergirded by widespread cultural beliefs in children's resilience. After all, children survive and continue to develop in war zones and orphanages with minimal care, so that by comparison, low-

quality daycare seems hardly problematic. These stressful conditions, however, compromise development in ways we are only beginning to understand (see, e.g., the NICHD Study of Early Child Care findings related to poor-quality care). Moreover, success in studies of resilience is not typically identified as empathy or social responsibility so much as graduation from high school and avoidance of incarceration. Second, the low standards currently held for childrearing are accepted because of the belief that children successfully adapt to their poor conditions (see Belsky, this volume). These adaptive behaviors, described and measured using partial evolutionary criteria—in which “success” is defined solely as reproducing a child²—hardly reflect well-being or a thriving life. Third, as understanding of the genetic roots of behavior has gradually increased, the belief that genes actually, and uniquely, control behavior has gained strength in the popular press. For example, when babies who died of sudden infant death syndrome were discovered to be more likely to have a deficit in serotonin receptors, researchers and reporters discussed this problem as genetic (Talan, 2010), rather than considering the epigenetics of serotonin receptor construction from breast milk and from touch (Lien, 2003). In short, these positions are exaggerated, if not completely wrong.

All development happens in a context, influencing gene expression, and during sensitive periods shaping personality, cognition, and social functioning. The phenotypes that are associated with particular genotypes are influenced by the confluence of events that surround their emergence. The same genotype can result in a range of phenotypes depending on the

² Although reproduction is often seen as a proxy for genetic success, determining actual genetic success is more complicated and requires a comparison with the success of the competition in terms of relative fertility and the success of offspring over several generations (see Lewontin, 2010).

timing, intensity, and duration of environmental effects (Fuentes, 2009). However, it is our position that children with extreme insecure attachment (e.g., disorganized)—who demonstrate anger, alienation, aggression, and low empathy—are suffering much like Harlow’s (Harlow Dodsworth, & Harlow, 1965) isolated monkeys. Their antisocial characteristics represent mammals who are neurobiologically damaged and emotionally undernourished. Even within the “normal” ranges of personality differences, we wonder if the phenotypic ranges have grown too large or become skewed from the effects of poor early care on neurobiology. The increase in psychopathology in US society may be owing to suboptimal support in early life, when the brain and body systems are built, given that early stressors are not easily remedied but have lasting effects on brain and behavior (Lupien et al., 2009).

What is the current context for families? Several societal indicators, such as the consistent rise in rates of psychopathology and actual data on stress experience from families (American Psychological Association, 2010), suggest that stress has become characteristic of far too many family environments. Caregivers need time and support to be responsive (Hrdy, 2009). The US society puts children in stressful environments that foster self-protective responses—detachment from others and vigilance for threats. Evidence clearly shows that stress-reactive brains, fostered by early stress experiences or lack of support, are less able to use their more relational and abstracting functions (e.g., Henry & Wang, 1998; Mirescu & Gould, 2006). In other words, stress can make you stupid over the short or long term (Sapolsky, 2004).

For all the reasons we have mentioned thus far, we surmise that Western brains are not developing optimally. In other words, from an evolutionary perspective, Westerners (or at least typically those from the United States) are neither optimal nor normal specimens (but this does

not mean they have not been successful in reproducing with all the societal supports for *childbearing*, in contrast to *childrearing*, such as care for premature infants).

Epigenetics and Culture

Among our ancestors, survival would have been virtually impossible without the early life AHMM characteristics that foster secure attachment and the neurobiology that underpins it. For example, not breastfeeding would have led to early death, as would a lack of sociality (learned partly through play) or a lack of deep connection with the natural environment (see Gray, this volume). Very unlikely would have been a lack of touch, as social mammals die or become defective, nonreproductive adults if given only custodial, but no emotionally responsive, care (Bowlby, 1979). Being nonresponsive to a child would have been risky to the whole troop. Raising children with insecure attachment and the faulty neurobiology that accompanies it would have been dangerous for all concerned. AHMM-consistent parenting is vital for human well-being, and its absence represents a thwarting of fixed evolved practices that led to greater fitness long ago.

What catapulted humans into evolutionary success may, in fact, have been their *prosocial* and *cooperative* skills—particularly their ability to cooperate successfully in caring for their children (Hrdy, 2009; Roughgarden, 2009). Even today, one can distinguish between peaceful, prosocial cultures and more violent cultures by their childrearing practices; peaceful cultures practice AHMM-consistent parenting (Kemp & Fry, 2004; Montagu, 1978; Prescott, 1996). Cultures consistent with the AHMM also emphasize cultural narratives that lead to more peaceful behavior. Consideration of the AHMM context as a whole may be useful in our understanding of the development of morality and of moral exemplars.

A developmental optimization view takes the parenting of the long-standing AHMM as the evolutionary framework for developing optimal sociomoral functioning and offers a way to structure research. Within the AHMM framework, researchers can examine the specific effects of developmental timing for particular caregiving practices and their effects on later outcomes. Outcomes, shaped by epigenetic and developmental effects, include not only emotion and regulation systems and the human moral personality that results but also mental, physical, and social health.

Conclusion

Current Western human nature and culture are abnormal in terms of world history and world cultures (Sahlins, 2008), and yet conclusions about human nature and normal functioning are drawn regularly from studies of its members (Heinrich, Heine, & Norenzayan, 2010). If we accept Western culture as normal, then humans are on a fast train to self-demise. After all, Western culture is notably destroying humanity's habitat (Merchant, 2003). However, if we step back and examine the range of human characteristics, including social and individual characteristics, we can find evidence for societies that lived sustainably and peaceably for hundreds if not thousands of years (Fry, 2006). If we attend to their social and family practices, we may be able to restore some sensibility to our own childrearing practices, social structures, and supports for families, even within the aberrant constraints of modern Western culture, and thereby foster greater holistic intelligence.

Acknowledgments

The first author acknowledges the support of the Spencer Foundation and the University of Notre Dame Institute for Scholarship in the Liberal Arts. The second author acknowledges the Brachman-Hoffman Small Grants from Wellesley College.

We thank Douglas Fry and Margery Lucas for their comments on earlier drafts.

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