The Evolved Developmental Niche and Children's Developing Morality

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Abstract

Like every animal, human offspring evolved to fit into their communities, but social fittedness for mammals requires a supportive early nest that fosters socioemotional intelligence, self-regulation and sympathy. Within a supportive environment, children naturally develop orientations that facilitate prosocial behaviors within the community. We use the evolved developmental niche (EDN), apparent in 99% of human history as small-band hunter-gatherers, for a baseline representative of human evolution. In these societies, children grow into cooperative, agile moral actors. We compare the EDN with five modern approaches to young child group care and make suggestions to early caregivers on how to provide in the modern world what children evolved to need.

Keywords: socioemotional intelligence, self-regulation, sympathy, evolved developmental niche, group care, wellbeing

Introduction

Mammals require nurturing caregiving for optimal post-natal development. It has been some time since Harlow (1958) systematically documented the psychologically devastating effects of long-term isolation from caregivers on primates. Spitz (1947) demonstrated how severely human development and survival was compromised when babies lacked secure human relationships. Bowlby (1951) noted how loss of caregivers at an early age caused extensive separation distress, leading to psychological deterioration. Indeed, decades earlier Hartmann (1939) identified the "ordinary expectable environment" to which human morphology, physiology and behavior had adapted during biological evolution. Similarly, Bowlby (1980, 1988) conceptualized the profound human need for a natural, evolutionarily adaptive social relatedness that emerged in an "environment of evolutionary adaptedness" (EEA). More recently, anthropologists have summarized the characteristics of the species-typical niche.

The Evolved Developmental Niche

The human genus spent 99% of its history in small-band hunter-gatherer societies (SBHG; for reviews, see Fry 2006; Ingold 2005; Lee and Daly 2005; Narvaez 2013). SBHG are nomadic foragers, immediate-return societies (no domestication of animals, cultivation of plants, or resource accumulation). These communities are highly communal, experiencing ongoing deep social embeddedness and enjoyment, positive social support, and relationally purposeful living (Narvaez 2013). Although they have high physical contact with others in cooperative relationships, they also enjoy high personal autonomy with fluid social boundaries, individual freedom, and egalitarian relationships with people of all ages (Ingold 2005; Narvaez 2013). Living close to the earth and to one another, SBHG are immersed in a world of cooperative give and take, valuing generosity and cooperation with the social and natural world. The natural world forms part of the community and they are relaxed and comfortable within it. They do not tolerate selfish or dominant behaviors so there is no coercion, even from adult to child. Because meeting basic needs are part of the flow of life, pent up frustration or anger is very rare, so their imaginative and abstraction capabilities are kept within a sympathetic cooperative framework.

The EDN, based on hunter-gatherer childhood model, emerged with social mammals more than 30 million years ago (Konner 2005). The human EDN intensified as humans became bipedal, shrinking the pelvis and requiring offspring to be born highly immature due to head size (Trevathan 2011). Because humans are born 9-18 months early compared to other hominids (including apes), much of their growth, and particularly brain development, occurs postnatally. The characteristics of the human EDN, identified by anthropologists studying present day SBHG, includes high levels of responsivity, lengthy on-request breastfeeding, extensive positive and lack of negative touch (no coercion), multiple adult caregivers, social cohesion and connection to the larger community, self-directed playful interactions, and soothing perinatal experiences (Hewlett and Lamb 2005; Konner 2005).

Neurobiological sciences are now demonstrating the importance of each of these caregiving practices for healthy nervous system development (for reviews, see Narvaez, Panksepp, Schore and Gleason 2013a 2013b). For example, caregiver responsiveness to a child builds his or her prosocial orientation (Kochanska 2002); years of breastfeeding provides the immunogen building blocks fundamental to the construction of a resilient immune system (e.g., Slusser and Powers 1997; Walker 1993); touch facilitates the functioning of the vagus nerve required for autonomic arousal and visceral regulation

(Porges 2011); child-directed social play develops the capacities of emotion regulation (Panksepp 2007) and curtails social aggression (Flanders and Herman 2013).

The mechanisms for the effects of the EDN on social development include the fostering of self-regulation and empathy (Gleason and Narvaez 2014; Narvaez and Gleason 2013). Parents and other caregivers have the greatest impact on moral development in early life during the shaping of when what might be called "submoral" components of an individual, such as the "affective core" (Emde et al. 1991). Maternal sensitivity and attentive care foster development of a "relational communication system" (Fogel 2000; Fogel and Branco 1997). Within the system, caregiver and child co-modulate behavior to achieve optimal levels of physiological arousal and coordinated action (Evans and Porter 2009). Successful development of this mutual synchrony is associated with self-control (Feldman, Greenbaum, and Yirmiya 1999) and development of emotion systems and attachment relationships (Schore 1994). Self-regulation includes physiological, emotional, and social capacities. Constructed on the physiological and emotional aspects of self-regulation, social regulation helps children manage interactions with peers and friends (Narvaez and Gleason 2013). Additionally, in order to behave morally, a person must feel sympathy for others and take responsibility for their welfare.

Narvaez and colleagues have begun examining whether the EDN corresponds with children's outcomes such as self-regulation and empathy. Using an existing dataset in a longitudinal study across the first three years of childhood, they found that EDN-consistent parenting (responsivity, breastfeeding, touch, and social support) was positively related to child prosociality and negatively related to behavior problems (Narvaez, Gleason et al. 2013). After controlling for responsivity, breastfeeding and social support were positively related to prosociality and negatively to behavior problems, whereas touch was no longer positively related to prosociality, but remained negatively related to behavior problems. In another study, a questionnaire measuring maternal behaviors and attitudes towards EDN consistent parenting used with Chinese children showed that EDN-consistent care was a significant predictor of child's development of behavior regulation, empathy, and conscience (Narvaez, Wang et al. 2013). In summary, in the first years of life, evolved expected care involves a focus on social experience which fosters capacities for social self-regulation and concern for others.

Analysis of group childcare practices in relation to the EDN

One key distinction between the EDN and modern life in large urban and industrial communities is the loss of intimate family life, for example with separation of child from mother for much of the day. Although allomothers (caregivers other than the mother) have always been needed through human evolution, they typically would have been at the side of mothers who were still present to their children. In contrast, infants and toddlers today are often sent away from mothers and family members to group care settings with non-family members. Lancy (2014) comments that Western nations "helicopter" their children, unlike non-nomadic foraging societies. It is important to distinguish between meeting the baby's needs and coddling or helicopering. Human babies have built-in needs for the EDN which helps their brains and bodies grow properly. Denying the EDN sets the child off on a suboptimal trajectory, undermining their confidence and capacities, leading to what looks like a need for helicopering later. Mother-young child separation causes a great blow to a child's sense of security, which may contribute to the coddling and helicopering with older children that often occurs in Western nations. Perhaps early undercare is why the Western child is given additional attention and supports *after* early childhood (rather than during) by parents and other adults.

With the EDN and the societal complexities of non-family child care in mind, we examine five approaches to group care which aim for child wellbeing and assess their consistency with EDN care: Developmentally Appropriate Practice, the Child Wellbeing Framework, Resources for Infant Educarers (RIE) ®, Montessori Method, and Reggio Emilia Approach. Table 1 provides a summary of basic findings.

Table 1. Comparison of Five Approaches to Early Life Group Care.

EDN Component	Developmentally Appropriate Practice	McMullen's Child Wellbeing Framework	RIE®	Montessori Method	Reggio Emilia Approach
Age focus	0-8	Infant and toddler	Infant and toddler	0-3; 3-6; 6-12	0-3; 3-6
Natural Childbirth	✕	✕	✕	✕	✕
Breastfeeding	✕	✕	✓	✕	✕
Responsivity	✓	✽	✽	✽	✽
Positive Touch	✕	✓	✽	✕	✕
Multiple familiar adult caregivers	✕	✕	✽	✽	✽
Classroom community building	○	○	✽	○	✽

Embeddedness in larger community	✕	◯	✕	◯	✱
Free play	✓	✓	✱	✱	✱
Immersion in natural world	✓	✕	✱	✱	✱
Positive climate	✓	✱	✱	◯	✱
Social and emotional support	✓	✱	✱	✓	✱
Self-regulation Fostered	◯	◯	✱	✱	✱
Sympathy and compassion fostered	◯	✱	✱	◯	✱

Note: ✕ for not mentioned, ◯ for implied, ✓ for mentioned, ✱ for substantively mentioned

Developmentally Appropriate Practice

Many infant and toddler daycare and preschool programs use the framework of "Developmentally Appropriate Practice" (DAP; National Association for the Education of Young Children; NAEYC 2009a), which is used by the NAEYC to accredit early childhood programs. DAP is grounded in research on child development and effective education, focused on children from birth through to 8 years of age. In programs where DAP is applied, teachers are presumed to have core knowledge in three areas: (1) child development and learning (2) individually appropriate treatment, and (3) cultural diversity (NAEYC 2009b).

In regards to the first type of core knowledge, NAEYC (2009) has laid out twelve principles of child learning and development to be used to inform practice. These are generalizations about children's learning and development-- including physical, social and emotional, and cognitive domains--all of which interrelate and are interdependent. Although DAP principles make reference to multiple domains of development, in examining the list of principles, the primary emphasis is on cognitive development and learning (NAEYC.org).

The second and third core knowledge components, making decisions for individuals and being attentive to cultural differences, can be combined. Both involve setting challenging and achievable goals for each child by thoughtfully planning activities that build on existing knowledge. For these core knowledge components, teachers must have particular knowledge to enable good decision making (1) knowledge about child development, including strategies to improve development, and typical developmental trajectories (2) knowledge about the individual child, from multiple sources, such as observation of the child, conversations with the family, and individual child assessments and (3) knowledge about the child's social and cultural context outside the classroom. Incorporating these three sets of information allows for effective long-term and short-term decisions about individual children and the classroom as a whole.

Beyond the core components, in their 2009 statement, NAEYC outlines five overarching guidelines for DAP:

1. "Creating a caring community of learners" (NAYEC 2009 p.16), which encourages teachers to value each member and relationship by providing respect in physically and psychologically safe environments, fostering a positive social and emotional climate.

2. "Teaching to enhance development and learning" (ibid p.17) emphasizes the teacher's responsibility for providing an environment and strategic lesson plan to fulfill the program learning goals for each child.

3. "Planning curriculum to achieve important goals" (ibid p.20). This guideline says that teachers must have individualized goals for children's learning, to be obtained through application of an effective curriculum.

4. "Assessing children's development and learning" (ibid p.21) is attained by implementing a system to assess the children's achievement over time.

5. "Establishing reciprocal relationships with families" (ibid p.22) emphasizes the importance of collaboration between teachers and families to encourage child development.

DAP addresses only some of the characteristics of the EDN. It seems DAP would support responsivity, play (although primarily dramatic play, and more emphasis on academic learning than spontaneous self-satisfying and social play), a positive climate, and social and emotional support, all within the framework of cognitive goals. DAP suggests outdoor play, which can give children chances for immersion in the natural world. However, DAP has little or nothing to say about natural childbirth, breastfeeding, positive touch, multiple adult caregivers, the nature of classroom community building or links to the large community. DAP is intended for use from birth to age eight. For the younger end of this range, this framework seems overly focused on academic achievement and learning. While it mentions cooperative adult relationships, it is unclear what particular social-developmental philosophy guides building of the child's relationships. Perhaps the

approach would benefit from being split into narrower age ranges to allow more focus on socioemotional development for the first 4-5 years, and then more cognitively focused curriculum and assessment for the last few years if developmentally appropriate for the individual child. In all, it is unclear how much *social* self-regulation and sympathy will be built within care centers implementing DAP principles alone.

Child Wellbeing Framework

Researchers Mary McMullen and Kathleen McCormick (2016) provide a framework for group childcare for infant and toddler age groups. They contend that wellbeing or flourishing should be the primary goal of group childcare. Wellbeing reaches beyond resiliency and strives towards "a *general* state of being and feeling well overall, in terms of physical and psychological health and safety, emotional stability and soundness, and overall satisfaction in activities and relationships within the group" (McMullen, Buzzelli and Yun 2015). Based on a body of research, they outline nine interdependent requirements for achieving wellbeing in group care settings. When these elements are achieved, individuals should be able to quickly regain equilibrium after distressing experiences, although such circumstances should rarely occur in these environments. McMullen and colleagues place the nine requirements into three overarching categories of wellbeing: environmental, experiential, and relational.

Environmental wellbeing

Two aspects encourage environmental wellbeing.

1. *Contentment* gives special attention to the space provided for the children, which should be organized in a thoughtful and pleasant manner, visually appealing and comfortable with natural lighting, comfortable temperature, and a relaxed atmosphere.

2. *Security*, the second aspect of environmental wellbeing, is ensured when all safety and health regulations are followed, spaces and objects are safe, kept clean and sanitized. The classroom has predicable routines and policies.

Experiential wellbeing

Four aspects provide experiential wellbeing.

1. *Engagement* is supported with enticing activities, uninterrupted time for exploration and experimentation, alone or with others, including adults who are also available for problem solving. The goal is to foster feelings of fulfillment and satisfaction, rather than boredom or dissatisfaction.

2. *Contribution* results when both children and adults have a sense of belonging through meaningful roles and responsibilities, use their strengths and talents which are valued like their presence in the group.

3. A sense of *efficacy* comes from feeling confident and accomplished, which emerges from caregiver acknowledgement of effort, persistence or success.

4. *Agency* refers to a sense of empowerment of voice and choice and control as each person—children, teachers, parents-- contributes to group planning and decision-making aiming for wellbeing of each child.

Relational wellbeing

Three components animate relational wellbeing.

1. *Affinity* is promoted when children receive affectionate touch and nurturance within a positive emotional climate with others.

2. *Communication* includes respectful and continuous dialogue between caregivers, children and families to promote mutual understanding.

3. *Self-respect* is fostered when caregivers create and communicate a culture of respect for who the child is, what the child believes, and what the child feels.

In terms of the EDN, the Child Wellbeing framework for infants and toddlers clearly addresses responsive care and personal autonomy. It mentions the value of positive touch, as well as the need for spaces where children can play freely. It offers no recommendations for natural childbirth or breastfeeding. Although the approach does not require that caregivers remain with children over a long time period, it does emphasize the importance of building a sense of community and a positive social and emotional climate within the caregiving setting. However, it is unclear how this is implemented, leaving it unknown how and whether opportunities for social self-regulation and sympathy are provided. Nor is there mention of connection to the wider community or natural world.

RIE®: Resources for Infant Educarers

The RIE (Resources for Infant Educarers) Approach® (pronounced "wry") focuses on care for infants and toddlers. It was founded by Magda Gerber while working in Budapest, Hungary, with Dr. Emmi Pikler who served as medical director of Loczy, a state-run orphanage in Budapest. In 1957, Gerber moved to the United States, and founded the RIE® Center in Los Angeles. She coined the term "educarer" referring to a parent or other caregiver whose role is to care for and educate the child. Whether parent or teacher, Gerber viewed each interaction with a child, even feeding and diapering, as an opportunity to show love, trust, and respect. The approach strives to simplify caregiving and focus on being authentic and respectful towards infants as complete and autonomous beings. RIE® follows seven basic principles (principles are quoted from Gerber, 1998; with additional material cited from Carlisle Solomon 2013; Lansbury 2014,).

1. Basic trust in the child to be an initiator, an explorer, and a self-learner.

RIE® caregivers trust that infants learn primarily on their own by initiating actions, exploring the world, and signaling needs to the parent or caregiver. In learning to observe the infant, a caregiver must slow down, and spend time in simple, quiet togetherness. The adult learns the subtle signs in which the child initiates interactions or conveys information about her needs and desires. A caregiver receives and follows cues from the children, rather than imposing her own thoughts, lessons, or agenda.

2. An environment for the child that is physically safe, cognitively challenging, and emotionally nurturing

The RIE® environment provides the child with a developmentally appropriate space. For young infants, a gated off area, room or outdoor space dedicated to safe play with simple household objects or natural elements is appropriate. Toddlers enjoy more challenging climbing areas and sensory materials, like water or sand. Simple, manipulable play objects that allow for creative activity are preferred over complex "entertaining" toys that elicit passive observation from the child. Examples of appropriate toys for infants include household objects like a bowl and spoon, some soft scarves, or lightweight stainless steel pots, whereas complex lighted or motorized toys are avoided.

RIE® caregivers provide emotional nurturing by showing authenticity in their interactions. For example, if a child displays a signal, such as a wrinkled nose or a vocalization, the adult does not act abruptly or intrusively to simply stop quiet the infant, but responds with calm sensitivity and attention in order to understand and appropriately provide what the child needs in that moment..

3. Time for uninterrupted play

RIE® philosophy understands that children do not need to be taught to play, but when given the opportunity, play in the manner for which they are ready. In contrast to some who emphasize exposing babies to targeted stimuli in order to promote development, Gerber (1998) believed that the world itself is naturally a very stimulating place for infants, and no extraordinary stimulation is needed to help them learn. Babies are thought to grow by playing and exploring their new environment, and therefore should not be interrupted when immersed in an activity. Similarly, children explore and self-direct their activities, though with support available from adults. That is, an adult is always on the child's level but might remain near the edge of a play area, available to provide help or comfort.

4. Freedom to explore and interact with other infants

RIE® supporters recognize that children interact with and learn from one another in different ways than they do with adults. Children are allowed to play and learn from one other, in multi-aged groups whenever possible.

5. Involvement of the child in all caregiving activities to allow the child to become an active participant rather than a passive recipient

RIE® caregivers collaborate with the child in caregiving activities. For example, during diapering, the caregiver describes each step of the process ahead of time, asking the child for participation, building dialogue and prompting cooperation.

6. Sensitive observation of the child in order to understand her needs

In order to fully attend to a child's needs, caregivers slow down and become fully engaged with the child. This primarily involves disengaging from the "hustle and bustle" of life and technology and allowing the caregiver to be emotionally and attentionally present with the child.

7. Consistency and clearly defined limits and expectations to develop discipline

Respectful and compassionate limits and consistency are very important to RIE® caregivers in order to encourage a secure developmental environment. Whenever possible, choices are offered to allow the child autonomy in her actions. Similarly, children are given opportunities to solve their own problems within particular limits. For example, if two toddlers are frustrated because they both want the same toy, RIE® caregivers closely watch the interaction, but allow the children opportunity to work out their problem. When adults refrain from intervening, children often display the abilities to peacefully resolve

conflict on their own. Of course, the time to intervene is if a child is in danger, or if conflict becomes physical, but children learn social competence when they are given opportunities to navigate their own social interactions, rather than adults rushing in to solve them.

RIE® emphasizes that eating and sleeping schedules should ideally adhere to the child's cues and needs. For example, a child who is sleepy should never be kept awake for the sake of the parents' or teachers' convenience. In the ancestral environment, children and even adults often fall asleep when sleepy, wherever they are (Gowdy 1998) and as soon as they are old enough, community members forage to find snacks when hungry (Hrdy 2009). In many ways the RIE® approach fits with the EDN where the flow of the community varied day to day.

Outside of the seven principles, Gerber emphasized the necessity of a designated outdoor play area for all children. She describes the essential natural stimulation and games provided by the sky, clouds, earth, insects and animals. "A sense of nature's presence (sky, trees, flowers) is desirable… Outdoor play is important because we are the only animals who don't live outside" (Gerber 1998, p.176).

RIE® does not address some aspects of the EDN for young children, including those outside the purview of early education such as natural childbirth or breastfeeding, leaving these matters to parents and medical professionals. While the EDN emphasizes extensive affectionate touch, RIE® believes that fewer, deeply affectionate interactions are more important than constant physical interaction. However, the amount and timing of physical touch should be guided completely by the desires of the child.

Generally, RIE® tries to provide the type of responsive allomothering found in the EDN, and emphasizes free, uninterrupted play and deep interpersonal connectedness. In both RIE® and our ancestral environment, adults were nearby and nondirective, allowing the child to be immersed in the natural world.

RIE® programs prefer continuity of care, where the caregivers commit to remaining with the same group of children until at least the age of three, and longer if possible (Elam 2005), a practice that seems to help prevent staff turnover, and builds long-term relationships among children and teachers. Overall RIE® practices support EDN principles of community building with familiar caregivers. Social self-regulation and sympathy are likely to be developed within the authentic community of practices.

Montessori Method

The Montessori method is currently used for the 0-3 years, 3-6, and 6-12 age groups. It began with Dr. Montessori, who was the first Italian woman to become a physician who, in 1907, began overseeing a daycare center for very poor children (Montessori 1966). She had a unique conceptualization of children: "An adult environment is not a suitable environment for children, but rather an aggregate of obstacles that strengthen their defenses, warp their attitudes, and expose them to adult suggestions" (ibid, p.109). "Children have a deep sense of personal dignity…adults, as a rule, have no concept of how easily [children] are wounded and oppressed" (ibid p.127). Dr. Montessori believed that a child's outward behavior is a "storm" that disguises the child's true spirit, and it is the adult's job to provide an environment which allows the child's spirit to be uncovered. Thus the goal of the Montessori method is for "the discovery and freeing of the child" (ibid p.110). Adults should not be an obstacle to child learning by performing activities for a child but instead have a neutral character, a sense of "intellectual calm", which is not merely a lack of nervousness, but a "deeper calm, an empty, or better, unencumbered state that is a source of inner clarity. This calm consists of a spiritual humility and intellectual purity necessary for the understanding of a child" (ibid p.137). By maintaining a passive role, adults remove the obstacle of their own activity and authority, allowing the child to become an active agent. Dr. Montessori observed the common developmental stages and preferred activities during each stage. She based her method off the following observations:

1. Children enjoy repetitive exercise or activity. On somewhat rare occasions, children have moments of deep concentration, where they repeat actions over a period of time. She observed that children engage in this repetition after learning a new skill, and that after finishing the repetition, they seem to be filled with joy of accomplishing the task.

2. Children enjoy having free choice of activity, and engage more fully in tasks they choose on their own. Children have little interest in toys chosen for them. "Since they never freely chose these toys, I realized that in the life of a child play is perhaps something of little importance which he undertakes for lack of something better to do… Since a child is constantly growing, he is fascinated by everything that contributes to his development and becomes indifferent to idle occupations." (ibid p.122).

3. Children are generally indifferent to rewards and punishments but are motivated and fulfilled by learning and choosing their own activities.

Based on these observations, Dr. Montessori provided an environment in which the children learned and grew. She started by helping children develop everyday skills, like preparing meals and cleaning. "There was no method to be seen, what was seen was the child" (ibid p.136). Rather than describe a particular method, Dr. Montessori focused on providing an environment optimal for learning: one that is pleasant, filled with furniture and objects scaled to the children's size, where a child can be left to her own resources, and feel efficacious to maintain the classroom on her own. Materials and objects are adapted to the children's need, guided by observation. She found that children enjoyed having their own workspaces, defined by a small rug to sit on in an orderly environment. By organizing a child-sized environment where children could take part in everyday activities, the aim was to instill a sense of confidence and independence for the children. A peaceful atmosphere where children are taught basic rules about order and tidiness allows for "perfect discipline." By practicing silence, children learn to listen carefully, and to move gracefully without bumping objects in their path.

The Montessori approach has become a popular method in the United States for young children (and even for general schooling). Key aspects of the approach, based on Dr. Montessori's observations described above, are: (1) child centeredness, (2) learning through experiences and a stimulating environment, and (3) child activities are how the children learn. By allowing children to choose their own projects and activities in a deliberately orderly environment, the approach hopes to instill a sense of intrinsic motivation and love of learning (Seldin 2006).

An additional concept in modern Montessori education is that children are "stewards of the Earth" and must learn to care for nature, both near and far (Seldin 2006). For example, children are taught to appreciate rich, life supporting soil, rather than thinking of it was "dirt" which "implies something nasty to many people." (Seldin 2006). Children are taught to treat all living things with care. "Teach your children not to pick leaves and flowers aimlessly and toss them aside, but to gather them only for a good purpose" (Seldin 2006, p.136)

Some research has examined modern Montessori classrooms, known for having multiage classrooms, student-chosen work in long time blocks, and individual small group instruction in academic and social skills (Lillard and Else-Quest 2006). Montessori education has been related to outcomes including positive interactions on the playground, high scores on standardized math and reading tests, advanced social cognition and executive control, concerns for fairness and justice, and creativity (Lillard and Else-Quest 2006).

Recalling the habits among the SBHG, it is evident that children who develop within the EDN similarly have high autonomy and freedom in a Montessori setting. With the emphasis on respect and observation, responsiveness is encouraged. Dr. Montessori only discusses touch in regards to newborns "The manner in which we touch and move a child, and the delicacy of feeling which should inspire us at the time, makes us think of the gestures that a priest uses at the altar" (Montessori 1966, p.24) There is, however, no mention of natural childbirth practices or breastfeeding. There is not any particular focus on ensuring familiar adult caregivers or community building within a classroom. A positive climate and social emotional support is implied in the idea of respect and peaceful atmosphere, although not explicitly covered. It is unclear whether social self-regulation or consideration for others will be fostered. The integration into the larger community is implied but not specified in the principles.

Reggio Emilia Method

The Reggio Emilia method is designed for use in birth to 3-year and 3- to 6-year old age groups. It is well described in *The Hundred Languages of Children: The Reggio Emilia Experiences in Transformation* (Edwards, Gandini and Forman 2012). It is a holistic and constructivist approach to both understanding children and guiding their development. The pedagogical method is uniquely tailored for each locale and culture but always includes concern for wellbeing, artistic taste, relationships that enhance belonging and autonomy, continuity of relationships across years and documentation of children's activities and ideas. The essence of the Reggio approach is captured by its founder, Loris Malaguzzi: "We think of a school for young children as an integral living organism, as a place of shared lives and relationships among many adults and many children. We think of school as a sort of construction in motion, continuously adjusting itself." (Gandini 2012, p.41). "Adult and child roles are complementary they ask question of one another, they listen, and they answer...the system of relationships has in and of itself a virtually autonomous capacity to educate." (ibid p.46). "To learn is a satisfying experience…to understand is desire, drama, and conquest….to disappoint them deprives children of possibilities that no exhortation can arouse in later years." (ibid p.44). The role of teacher is quite flexible: a teacher is a co-constructor of knowledge, creator of the environment as a third teacher, exchanger of understandings, supporter of the competent child, documenter and researcher, partner with parents, listener, provocateur, negotiator of meaning (Edwards 2012) and "dispenser of occasions." (ibid p.151).

The Reggio practice is built on notions of multiple intelligences ('a hundred languages') and gives special attention to the design and aesthetics of the physical environment into which children are placed. The building, usually put together by teachers and parents, needs to

have an overall softness, provide multiple sensorial experiences (e.g., a flower garden with different colors and aromas), be connected with surrounding environments, and supportive of social connections. The space should be relational, allowing for a variety of social interactions. "Exchanges or conversations with children are crucial. It is important to note that the quality of a space (or environment) results from many factors: size and shape, functional organization, and sensory experience, color, light, and materials." (Gandini 2012 p.325). The space should represent and allow for flexibility and adaption, community and participation, social constructivism, narration, communication and documentation. Overall, the setting should provide an intense richness everyday where children can develop and test hypotheses and artistically express what they learn.

Gandini (2012) provides an example of typical activities. Teachers value the spaces near the schools, considering them extensions of the classroom space. They take the children to explore neighborhoods and landmarks. In one example, the group explored how the town was transformed during rainstorms. They first explored the town on days without rain and thought about what to observe, measure, collect, photograph and record when the rains came. Then, when a thunderstorm came, the children implemented their plans and noticed, "how people changed their speed and posture in walking, how the shining reflections and the splash from the puddles changed the streets, how the sound of the raindrops differed depending on whether it was falling on the pavement, the hoods of cars, or the leaves of trees. Then after experiencing the rainstorm, and following the customary procedure in Reggio Emilia, the children became engaged in representing their experiences of the rainstorm (e.g., musically and through fine arts). This, in turn, led to more questions and hypotheses, and explorations that the teacher and the atelerista [artistic organizer] thoroughly documented." (ibid p.322).

In the Reggio approach, each child is viewed as "an organic unity who needs personal space for action and movement in his or her own personal way" (ibid p.321). Children are involved in living aspects of the world including multiplicity, circularity, visibility, collectivity, open-endedness, and courage. Children and teachers learn together "through cooperation, organization, and a strategy of listening and welcoming…that leads to mutual attention, dialogue and exchange." (ibid p.324). The setting provides ongoing opportunities for individual and community discovery and creative expression. It emphasizes inclusion and universal access along with involvement of families, citizens, and policy makers.

In regards to the EDN, the Reggio approach appears to be highly supportive of children's full-board development. It is personalized to the individual child, group of children, and community and natural locale, with teachers themselves growing and changing, creating and learning with the children. It is very much "spiritual" in promoting the holistic child,

beyond cognitive or physical development, suggesting that social self-regulation and sympathy are likely to be fostered. Reggio discussions do not refer to touch or breastfeeding but do emphasize responsivity, play and multiple layers of positive relational support.

Summary of practices

Each approach to group care concerns itself with the wellbeing of children. As we have noted, each has a different set of governing practices, some wider than others. One characteristic they all seem to share is the granting of personal autonomy which may be a way to provide a similar type of autonomy to our evolved setting where adults do not set up environments for children. In fact SBHG adults do not coerce children in any way, considering them their own agents. Efficacy is built by the child herself who is granted full autonomy (unless aggressive), and is eager to learn the ways of the group, for example in food getting and preparation (Morelli et al. 2014).

In evolved conditions, social support is provided to all ages by the "village" of allomothers. All participate in an ongoing pleasurable social life. Communication occurs through singing, joke telling and playfulness. No one is coerced, there are no designated leaders. Individuals have high autonomy but also a sense of communalism. Personal autonomy is always integrated with social concerns. The Reggio method seems the most focused on creating an EDN-consistent learning community that involves parents and the local human and other-than-human communities, but within which children have autonomy to select their own activities and explore their interests in relation to the world around them. The Reggio method seems to provide a highly nourishing, living environment.

One aspect that is found implicitly in the EDN settings but empathized less in approaches is interaction with the undomesticated natural world, something vital to mental and physical health (Louv 2016). In our evolved setting, the natural environment would have been enjoyed as a pleasant companion, except perhaps under storm conditions, or when a hungry predator was roaming. DAP says nothing about environmental aesthetics or naturalness. Visual appeal is mentioned by McMullen, but Reggio stresses the aesthetics and connection to natural settings (with plants in urban centers at least). RIE® stresses the importance of exploration and play in the natural world and Montessori emphasizes respect for nature. Play in the wild natural world should be the emphasis, something that may be required for the development of ecological intelligence.

Moral development in early childhood

Fundamental developments occur during infancy that undergird moral development, including self-regulation, which is reliant on the physical comfort provided by caregivers (Schore 1994); the sense of self that develops through social-relational intersubjectivity with the mother and the co-construction of rituals of play (Trevarthen 2005). The child prepares for a moral life by practicing and learning to value emotional presence and empathy with caregivers (Narvaez 2015).

What happens morally when children live within the EDN? We can see it in the personalities of the children and adults in SBHG societies where the EDN is provided. Members are happy, agreeable, and generous (Ingold 2005). Moral functioning in these settings is focused on social engagement, or treating others as equals through play and friendship (ibid), which occurs through both companionship attachment which is critical in early childhood (Trevarthen 2005).

What is also striking about small-band hunter-gatherers are the high states of mental health and socio-moral wellbeing among children and adults. Noted by many observers, they appear "more intelligent, more alert, more expressive, and more interested in things and people around them than the average European or American" (e.g., Diamond 1997). Might these outcomes be related to the EDN? Indeed, initial studies of adult retrospective reports of EDN childhood experiences are also related to adult mental health and morality (Lawrence and Narvaez 2013; Narvaez, Thiel et al, 2016; Narvaez, Wang and Cheng 2016). Thus, the EDN may be important for later outcomes that characterize a society as a whole.

Morality when the EDN is missing

The last 1% of the history of the human genus is very different from the 99% of our past. The 1% exists with the complexities of animal domestication, intensive (some say totalitarian) agriculture, accumulation of possessions, and war (Fry 2006). These concerns have shifted the practices of child raising away from the EDN. Cultural narratives and ideologies have also had their effects. For example, messages regarding optimal child raising are muddied when people are led to believe that babies are meant to be denied (suffer) "for their own good." (Miller 1990). Such Calvinist views purvey the child raising landscape in the United States. With gene-centric and deterministic views (that children are born a certain way and not much can be done about it), many institutions, policies and expectations are not structured to help provide the nurturing described by the EDN. Rather, societies seem to be inadvertently experimenting with early care in a way that minimizes the healthy, effective nurturing found in the EDN.

Over the 20th century EDN-consistent care diminished in the USA as medicalized birth became the norm along with formula usage, decreased self-directed outdoor play, advocacy of "scientific" (i.e., detached) parenting (Watson 1928), and the breakdown of the extended family networks (for reviews, see Narvaez, Panksepp, et al. 2013a, 2013b). Rising rates of psychosocial problems in young children suggests that child development is being undermined in response. The American Academy of Childhood and Adolescent Psychiatry is declaring a "crisis" in regard to our children's mental health (Campaign for America's Kids 2011). Corroborating data from cohort analyses (Twenge et al. 2009) suggest the decline in wellbeing is a real phenomenon, particularly for college students.

What happens when a child does not receive evolved expected care? Experiences of suffering depress the child's optimal developmental trajectory, resulting in cascading effects throughout the child's life and social context. Research supports the intergenerational nature of parent-child dynamics. In one study, mothers who maltreated their children were more likely to have experienced physical and emotional abuse, emotional neglect, physical neglect, and sexual abuse in their own childhoods, as well as receive less support from their families as adults (Cicchetti, Rogostch, and Toth 2006). Maltreating mothers were also less likely to be sensitive parents, lacked empathy, used more physical punishment, and had inappropriate expectations of their children. Parenting and child outcomes appear intertwined over generations.

In modern societies, especially in the USA, corporations have a financial interest in advocating *against* EDN practices (e.g., pushing infant formula, advocating sleep training and baby isolation in all sorts of equipment). Tragically, the USA exports its birthing and child rearing practices and attitudes around the world (Wagner 2006), contributing to the perpetuation of the misguided practices.

Modern societies foster very different worldviews and personalities from those found in contemporary 'small-band hunter-gatherer' societies. Mistreatment or neglect of needs in childhood leads to misdevelopment and misperceptions of the world, and to very different personalities and moralities, including a shift to fixedness of habits and ideas, and to materialism (Narvaez 2014). If we isolate mother and child at birth, and separate children from close contact throughout childhood, we are punishing children for their mammalian desire for physically closeness with caregivers, often leading to self-protective moral and social orientations (Narvaez 2008). Undercare impairs multiple physiological functions, including brain systems that control memory and wellbeing (Meaney 2001), while also undermining social development, which in turn affects moral orientations (Narvaez 2016).

When toxically stressed, the child will necessarily grow in a self-protective manner, one that promotes self-interest, making it more difficult to grow cooperative skills. In contrast, when mutually supportive relationships are emphasized through the structures of the setting and activities, compassion and openness are likely to ensue. In fact, in the Reggio Method, cooperative ethics are emphasized as its founder, Malaguzzi, proclaims:

> "When we see young children cooperating, we notice a sort of ethic: They do everything they can to keep the situation stable and ongoing. Some children have more advanced capacities than others. When one such child makes a suggestion or proposal, the others accept it more willingly than if it had come from an adult. Many of them learn the relativity of their own point of view and how to represent their ideas in a delicate way. They say, "I think," or "in my view," or "I do not know if my ideas are right for everybody" (Gandini 2012b, quoting Malaguzzi p.68-69).

What kind of morality develops in the group settings we have described for a modern industrial society? Children naturally develop cooperative ethics in a supportive setting but in the modern environments described here, adults may need to be more deliberate about providing a supportive setting. Taking up an intentional approach to ethical education means providing the very sorts of social and physical environments described here (Narvaez 2005; Narvaez and Bock 2014). In a time period when children are exposed to a plethora of vicious and self-centered role models in the media, and with little time spent in a community of familiar, caring adults, educators can be the most consistent presence in a child's life, with special significance for moral development.

Recommendations

For some centuries, civilized nations have been changing standards for early care, bringing us to the point where the bulk of parenting research emphasizes child resiliency and "good enough" parenting (Narvaez and Gleason 2013) but this aim may be too low. When compared with extreme stress such as war and poverty, low quality daycare seems of little concern. However, we are beginning to understand that low quality care does in fact compromise development of the sense of good fellowship and shared well-being (e.g., the National Institute of Child Health and Human Development, Early Child Care Research Network 2003). Standards for resilience do not often include evaluation of compassion and a well-formed conscience, but focus typically on the absence of negative outcomes despite risk. In this case, a "successful" childhood is one that does not result in pathology and incarceration. However, it appears the standard of care is too low and what defines a successful childhood in the United States is too narrow (Narvaez, Gettler, et al. 2016;

Narvaez, Hastings, et al. 2016; Narvaez, Panksepp, et al. 2013b). As we have shown paying attention to evolved needs of the young child and the type of human character promoted by EDN-consistent care, child wellbeing and sociomoral development can be promoted.

Additionally, as understanding of neurobiology has increased, researchers are less prone to attribute behaviors to genetics, and rather look to epigenetics. For example, babies who die from sudden infant death syndrome are more likely to be deficient in receptors for the neurotransmitter serotonin. Many times, this problem is discussed using a genetic lens (Talan 2010) failing to consider the epigenetics of serotonin receptor construction that results from breastfeeding and touch.

In a time when motherhood is often overshadowed by the necessity of work outside the home and materialism has dominated goals for life, many children do not receive what they evolved to need within the family. Instead, to accommodate the current way of life, children are often put in the arms of strangers. Although some centers try to approach the kind of care that a child has evolved to need, none that we have identified provide it completely. In light of today's situation, we have several suggestions for changes to foster optimal development in young children.

Public policy recommendations

First, we suggest the following public policy initiatives:

- All nations should provide paid parental leave for at least a year, if not longer, so that parents can focus their full attention on bonding and building responsive care based on the needs of the child. Several European nations are effectively implementing this practice (Pew Research Center 2016).

- Workplaces should allow mothers to bring babies to work to facilitate breastfeeding and responsiveness. When well cared for, babies will be quiet (unless traumatized). Grassroots efforts for organizing baby-friendly-workplaces are gaining some momentum.

- Child care centers should be available at workplaces so that mothers can breastfeed and be available for other needs.

- Government supplementation of quality child care would reduce worker turnover. Free market systems do not work properly for this service as most parents cannot afford the cost of a highly educated and trained caregiver who provides quality

care. Teachers also struggle within the profession due to unsustainably low wages.

Recommendations for child care centers

We have several suggestions for child care centers so that they better meet the evolved developmental needs of children.

- Support breast milk feeding in the first years.

- Provide extensive positive touch in babyhood for optimizing endocrine systems, and vagus nerve development.

- Support parental involvement, ideally in a manner like Reggio where parents, mothers and fathers, contribute to the design and ongoing activities of the center.

- Provide multi-aged experiences for children. Placing day care centers next to elementary schools and nursing homes would provide a chance for cross-age interaction beneficial to all.

- Provide more experience in natural world settings with nonhuman organisms (e.g., trees, animals) and natural features of landscape (e.g., hills).

- Focus more on development of receptive intelligence and creative, playful feelings, not just cognitive, problem-solving development for limited contexts, since this matches up with the brain's early maturational schedule which learns best from self-directed social play. Caregivers need to be aware that optimal development requires intimate social experience with the same responsive adults across time.

- Support the continuity of teachers and child groups across time, such that teachers and children build a community that remains together for three or more years. Additionally, when more than one teacher is present, a particular teacher should be designated as primary caregiver for a child (preferably according to natural affinity between the child and the caregiver). This 'primary caregiver' carries out routines with their assigned subgroup of children whenever possible (e.g., diapering and feeding).

Conclusion

In economically advanced nations, young children are not being provided with the type of intensive parenting they evolved to need, which undermines their social and moral development. After describing the rich resources of the evolved early nest and discussing several approaches to early group care, we have offered some suggestions to policy makers and to child care providers on how to adopt policies and practices that better match children's evolved needs and facilitate child flourishing.

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