Universality claim of attachment theory: Children's socioemotional development across cultures

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The first part of this paper reviews the basic tenets of attachment theory with respect to differences in cultural socialization strategies. In one strategy infants have the lead, and the social environment is responsive to the infant's wishes and preferences. In another strategy the caregivers—children or adults—are experts who know what is best for a baby without exploring his or her mental states. Accordingly, the definition of attachment is conceived as a negotiable emotional bond or a network of responsibilities. Attachment theory represents the Western middle-class perspective, ignoring the caregiving values and practices in the majority of the world. However, attachment theory claims universality in all its components. Since the claim of universality implies moral judgments about good and bad parenting, ethical questions need to be addressed. These issues are discussed in the second part of the paper. It is first demonstrated that sensitive responsiveness in attachment theory is built on a different concept of the person and self than concepts of good caregiving in many rural subsistence-based farming families. Evaluating one system with the standards of another ignores different realities and different value systems. The common practice of large-scale interventions in rural subsistence-based contexts promoting Western-style parenting strategies without knowing the local culture positions a false understanding of scientific evidence against cultural knowledge. This practice is unethical. Diversity needs to be recognized as the human condition, and the recognition of diversity is an obligation for better science as well as for improving people's lives.

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Mr. Bhattacharya migrated from India to Norway since he had accepted work as geophysicist and information technology specialist in an oil company. After 1 y he went back to India to marry. The new family settled in Norway and had two children. The young woman did not feel comfortable in the new country, and the marriage did not develop smoothly. Mrs. Bhattacharya felt overworked with responsibility for the household and the two children while her husband worked long hours. The nursery school became aware of tantrums by the 2-y-old son and eventually reported the family to the Norwegian Child Welfare Service (CWS), who visited the family's home for observations and video recordings. After several home visits over several months, the CWS decided to separate the two children from the parents because the parenting style of the mother did not conform with their ideas of appropriate parenting. Specifically, the mother raised a threatening palm to her son with a firm instruction to stop what he was doing, a common Indian parenting practice which was taken as a threat of physical abuse. Another point was that the 4-mo-old daughter did not look into her mother eyes, which the investigator found peculiar. However, the CWS never talked to the mother about her parenting or voiced their impressions and concerns. With no prior announcement, the 2.5-y-old son and the 5-mo-old daughter were placed in state custody. This came as a complete surprise to the parents. After a long battle with the CWS over many years and the intervention of the Indian Government, Mrs. Bhattacharya, by then legally separated from her husband, received the custody of her children. She now lives in Kolkata, and both the children are with her (for more information see https://masalachaimusings.com/).

In the first part of this paper, the basic tenets of attachment theory are reviewed with regard to cross-cultural variation. In the second part, ethical questions are raised related to the worldwide application of attachment theory.

Attachment Theory: The WEIRDest Theory in the World

This heading is obviously inspired by the influential 2010 *Behavioral and Brain Sciences* paper by Henrich et al. (1), which comes to the conclusion that the psychology of Western, educated, industrialized, rich and democratic (WEIRD) people is a weird exception on a worldwide scale. However, attachment theory postulates a WEIRD model of children's socioemotional development with a claim of worldwide validity. The concept of sensitive, child-centered parenting that is regarded as a crucial condition for children's healthy development obviously was guiding the Norwegian Child Welfare Service as well as many other Western state agencies for the protection of children and justifying the decisions to take children out of their families because the parents' parenting practices differ from the child welfare workers' expectations. Children in families migrating to the Western world are particularly targeted in this respect (e.g., see saveyourchildren.in).

Families all over the world value children and try to do their best for them, but the expression of care and love is different in different cultures (2). This is necessary because care practices are delicately adapted to the ecological conditions and social history of any given community. The claim of universality for attachment theory, qualifying one particular view as best for all children in the world, is in stark contrast to the actual ecosocial diversity.

Attachment theory was first formulated by the British psychoanalyst and clinician Bowlby (3–5). In his formulation of an attachment theory he incorporated pieces from evolutionary theory, ethology, primatology, and systems theory. He later was teamed by the US-Canadian psychologist Mary Salter Ainsworth who worked empirically with Bowlby's concept first in Uganda and later in Baltimore (6, 7). She developed an assessment tool, the Strange Situation Procedure, to differentiate attachment qualities: secure, insecure avoidant, and insecure ambivalent (8). The basic tenets of attachment theory have remained largely unchanged from the late 1960s until today (e.g., see ref. 9). From the onset of his theory, Bowlby was criticized for not incorporating cultural variability in parenting strategies and children's development [e.g., by Mead (10); also see refs. 11 and 12]. However, the attachment theory has not been changed (cf. ref 13).

Attachment is defined as an emotional bond that emerges during the first year of life in interactional situations between an infant and one or a few significant adult caregivers, mainly the mother. The emotional bond should result in the feeling of security or trust that an infant develops in him or herself. A secure relationship is expressed by the child's seeking proximity to the attachment figure when the child feels tense or anxious. An insecure relationship is expressed either by avoidance or by a conflict between approach to and avoidance of the primary caregiver in these situations. Later Mary Main added a fourth category of disorganized attachment when child reacts bizarrely by freezing or displaying confusion (14).

The child's social experiences until the age of 3–4 y are expressed in an internal working model that is considered to be an organizational construct for children's future development (15), including molding future relationships (e.g., ref. 16). Moreover, attachment quality (secure vs. insecure) is assumed to have far-reaching implications not only for socioemotional development but also for all other domains of development (e.g., ref. 17).

In Bowlby's framework, the definition of attachment and its qualities, emergence, and consequences are considered to be universal. Universality is also claimed for the other core assumptions of attachment theory: normativity, sensitivity, and competence (13). Normativity defines the secure attachment relationship as the universal norm, expressed in the so-called "standard distribution" in the Baltimore study of Ainsworth et al. (8): 66% secure, 22% insecure avoidant, and 12% ambivalent attachment. This assumption implies that secure attachment is the result of evolution. Sensitivity defines child-centered responsivity as the universally best condition for children's development and the precursor of secure attachment relationships. The competence assumption defines the children's development of competence in diverse developmental domains as contingent on the development of attachment security.

However, the central assumption of universality as defined by Bowlby and followers is not only inconsistent with documented cultural variability but also is not in line with the evolutionary concept of adaptation. Attachment theorists and researchers have recognized that not only secure attachment should be adaptive; insecure attachment also can be regarded as an adaptation, depending on the context (18). Michael Lamb and colleagues had already argued in 1984 that psychological well-being or happiness associated with secure attachment is not compatible with the biological concept of adaptation. Science theorist Marga Vicedo also stresses that the biological concept of adaptation is incorrectly applied because adaptation does not imply universality, as assumed by attachment theorists. She refers to the example of the blood disorder sickle cell anemia, which is an adaptation (in terms of malaria resistance) but increases fitness only in certain ecological contexts (where malaria is widespread) (11, 12, 19). Thus, the universality claim is based in false assumptions.

In the following paragraphs, cultural variability challenging the universality assumption will be presented from two different perspectives, that of Western middle-class childcare philosophy and that of non-Western traditionally living subsistence-based farming communities (20, 21). These two groups are significant for different reasons. Western middle-class individuals, the WEIRD people (1) constitute the cradle of psychological knowledge, because the great majority of researchers as well as the great majority of research participants share this background and operate within this framework (22, 23). The premises of attachment theory are based in the childcare model of the Western middle class, i.e., families with high levels of formal education, late first parenthood, few children in the family, and nuclear, two-generation households (24). However, the Western middle class represents only about 5% of the world's population.

Traditionally living farmers in non-Western countries represent about 30–40% of the world's population and the great majority of migrants into Western countries. Due to cultural anthropologists' and psychologists' long-standing interest in traditional modes of life, especially in African and Asian countries, we have some knowledge about this population and their child-rearing philosophies and practices (e.g., refs. 24–28). Non-Western traditionally living subsistence-based rural farmers generally have low degrees of formal education, women have a first child in their mid- to late teens (men are usually several years older), and families have many children and live in extended or joint multigenerational households.

The living circumstances and the opportunities and constraints of the two groups necessitate very different child-rearing practices, resulting eventually in different personalities. It is important to stress that the two groups do not represent a dichotomy (e.g., the West and the rest), nor are they the only two models on a worldwide scale. There are other groups with other modes of subsistence (e.g., foragers, pastorals, fishermen, and highly formally educated middle-class families in non-Western countries), about whose child-rearing philosophies and practices we have little information to date (21, 25, 28–30). Since, as reported by Henrich et al. (1), there are profound differences in psychological functioning between the WEIRD population and all other groups for whom information is available, it would be very surprising if their childcare patterns did not differ. The study of diverse cultural groups is of utmost importance if we aim at an inclusive developmental science with relevance for application. In the following paragraphs, the defining components of attachment theory are reviewed.

Attachment Is an Emotional Bond. An infant's development of attachment in the Western middle-class family is based on emotionally rich interactions with mutual exchange and expression of emotions. Accordingly, the display of emotions in the strange situation (e.g., distress during separation and relief and joy during reunion with the mother) is indicative of attachment quality. This kind of emotional regulation is regarded as applying to all children worldwide. Moreover, the expression of emotional cornerstones, e.g., stranger anxiety, is regarded as biologically based and therefore universal. In Western textbooks (based on WEIRD psychology) stranger anxiety is assumed to appear in the behavioral repertoire of an infant at about 8 mo of age, when the emotional bond with the primary caregiver is developing (8). Confrontation with a stranger in the strange situation is assumed to generate distress in an infant so that attachment behaviors (proximity seeking) are displayed. However, cultural evidence [e.g., from sub-Saharan communities such as the Ivorian Beng (31) or the Cameroonian Nso (32)] clearly indicates that stranger anxiety is not part of the behavioral repertoire of the developing child in these agrarian cultures. Even if infants were born with a biologically based predisposition to develop stranger anxiety, the actual occurrence of anxiety would depend on contextual experiences (24). Close-knit traditional farming communities in the non-Western world are usually not a target for visits of strangers, so that families do not see potential dangers. On the other hand it is vital for families to familiarize infants with the multiple caregivers associated with distributed workloads and responsibilities.

Moreover, the experience and the expression of emotions vary tremendously across cultures (30, 33, 34). Attachment networks in farming village communities are based on conventions and social obligations in which emotions are regarded as disturbing. Therefore, children are socialized to expressive neutrality from early on. For example, most Cameroonian Nso children in farming villages are not afraid of an approaching strange woman who picks them up and moves away from the mother with them. They display neutral facial expressions, and the level of the stress hormone cortisol (as indicated in the saliva) declines from the visual to the physical approach of the stranger (32). Results like these clearly indicate that assessment procedures relying on

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Western values and standards of behavior are inappropriate outside their cultural territory.

The Significant Attachment Partner Is an Adult. The significant caregiver(s) for infants in Western middle-class families are adults, mainly the mother with some participation by the father and occasionally a grandmother and/or a babysitter. The developing attachment is specific to the particular dyad. One relationship is assumed to be primary and the model for future relationships. This concept is based in the nuclear family model and generational discontinuity due to fast-changing environments in Western middle-class families (35).

The social partners for infants in traditional farming villages are multiple, reflecting the distribution of responsibilities in large multigenerational households. The mother may play a special role in a caregiving network and, at least for some time, may have specific functions (e.g., nursing and carrying the child); she may or may not be one of several others playing a role in the relational network. Fathers often do not play an active role in infants' early lives, whereas grandmothers may be important (2, 36). Often, however, children are the most significant caregivers of infants. Scheidecker (37) has analyzed the social relationships of children during the first 4 y of life in South Madagascan villages. It turned out that the peer group of children up to 5 y of age almost exclusively interacted socially with infants. Although attachment researchers recognize the existence of multiple caregiving arrangements, they nevertheless conclude that the different relational experiences result in the same concept of attachment relationships worldwide (e.g., ref. 13). This conclusion contradicts evidence from cross-cultural studies demonstrating that the early experiences have crucial implications for children's developmental achievements (24).

Attachment Emerges in Dyadic Interactional Situations. The Western middle-class family model rests on exclusive dyadic relationships between the couple as well as between mother and child and father and child, especially during infancy and the early childhood years. Triadic interactions involve objects rather than people (38). The interactional style is distal, i.e., comprises the visual and auditory senses. Face-to-face contact is the main channel of communication, which is by definition dyadic. Elaborative verbal conversations centering on the cognitions, emotions, wishes, and preferences of the individual baby are an expression of the intimate dyadic bond. An abundance of toys defines the child's world as separate from the adult living space.

The traditional non-Western rural farming family model rests on distributed attention and multiparty polyadic social exchanges in which infants are incorporated. The interactional style is proximal, i.e., comprises extensive body contact and body stimulation, most often rhythmical and in synchrony with the caregivers. The infant participates in the social life and the everyday activities of a multigenerational household (26).

These different family models provide very different experiences for infants' concept of their selves and their relations to others during the early months and years and must have consequences for their attachment relationships (21).

Secure Attachment Is the Consequence of Sensitive Parental Responsiveness. The concept of sensitive responsiveness as developed by Ainsworth and colleagues (8, 9) refers to a caregiver's "ability to notice infant signals, to interpret these signals correctly, and to respond to them promptly and appropriately by adapting her [the mother's] behaviors to the infant's needs" (ref. 9, pp. 231–232). However, sensitive responsiveness is only one dimension of parenting quality as defined by these authors. Overall, four scales were suggested: (*i*) sensitivity vs. insensitivity to the baby's signals and communications; (*ii*) acceptance vs. rejection (with explicit reference to maternal emotionality); (*iii*) cooperation vs. interference;

and (*iv*) accessibility vs. ignorance (www.psychology.sunysb.edu/attachment/measures/content/ainsworth_scales.html). Two more scales developed by Mary Main were part of the original analyses of the Baltimore data. These scales evaluated "emotional expression" (a scale concerned with the degree to which a mother lacks emotional expression in her face, voice, or bodily movements) and "maternal rigidity." The most commonly used scale, the sensitivity scale, has been modified by later attachment researchers to include warmth and emotionality explicitly. Of the eight instruments reviewed by Mesman and Emmen (39), seven included warmth as a major dimension of sensitivity. The original scales as well as the later versions all rest on the assumptions that it is the autonomous child who takes the lead and whose view is primary and that communication is built on the dialogic turn-taking format and the open (facial/verbal) expression of warmth (40). This concept of sensitivity is based on the dyadic and dialogic relational model between an infant and an adult interactional partner.

In rural subsistence-based farming families good parenting/infant care implies taking the lead in organizing and directing the children's activity. This is realized mainly through proximal care, with almost constant body contact and bodily sensitivity (41). Being in synchrony with others is transmitted through shared bodily rhythms. Caregivers orient the infants facing outward, toward others (29, 42). (For summaries of careful observational and interview studies that support these claims, see refs. 2, 25–28, and 43–46) The idea that the child needs to be instructed, directed, and guided goes hand-in-hand with the view of the child as an apprentice. Thus, in many non-Western rural communities, in different but complementary ways, infants learn first and primarily the views of others and their place in the social system (40).

Reassessing the Claim of Universality for the Attachment Theory. The concept of universality in attachment theory ["when given an opportunity, all infants without severe neurophysiological impairments will become attached to one or more specific caregivers" (ref. 13, p. 854)] is interpreted inclusively and conclusively. It spans the predisposition to form attachment relationships as well as the phenotypical appearance, the emergence, and the consequences as expressed in the core assumptions of normativity, sensitivity, and competence (13). This conclusiveness is expressed in their view that "what has not changed … is that the available cross-cultural studies have not refuted the bold conjectures of attachment theory about the universality of attachment, the normativity of secure attachment, the link between sensitive caregiving and attachment security, and the competent child outcomes of secure attachment. In fact, taken as a whole, the studies are remarkably consistent with the theory. Until further notice, attachment theory may therefore claim cross-cultural validity" (ref. 13, p. 871).

This conclusion not only is surprising after the review of multiple arrangements of caretaking but also contradicts evolutionary assumptions as well as developmental and cross-cultural evidence; it is a contradiction even in terms of attachment theory's own claim that early experiences have developmental consequences. Undoubtedly all children need to develop a relational network as a first developmental task. Bowlby's recognition of the primacy of the socioemotional development during human ontogeny was an important milestone in the history of developmental science. However, the false and unjustified extension of the basic assumptions that characterize attachment theory and research from its beginning not only is scientifically questionable but also is unethical in its worldwide application. This evaluation will be qualified in the next section.

The Ethics of Infant Care

Attachment researchers' understanding and promotion of universality is both a description of parenting and subsequent children's socioemotional regulation and, at the same time, is a moral statement (47). It defines what a good mother is and what

she should do to support her child's healthy development. In particular the (implicit) assumptions that were briefly introduced in the previous paragraphs raise ethical questions in general, especially when they are applied to families that follow different moral standards and ethical principles. These dimensions will be illustrated with the concept of sensitivity.

The Case of Sensitive Responsiveness. In their endeavor to defend the claim of universality for the attachment theory in general and the concept of sensitive responsivity in particular, Mesman et al. (48) argue that sensitive responsiveness is universal when the original definition of Ainsworth et al. (9) (see above) is applied. They recognize different strategies of caregiving across cultures and conclude that they are all aimed at being responsive toward the infant's needs. With this argument they define caregiving in general as universal, which is trivial. What they continue to ignore is that caregiving is embedded in larger cultural models of personhood that define desired developmental outcomes and give meaning to behavior. There is no one to one relationship between behaviors and beliefs (the behavior–belief gap); instead, parenting beliefs, e.g., socialization goals, mediate the effects of behaviors and exert direct effects on children's behavioral development in different domains such as mirror self-recognition (49) or inhibitory control (50). Ainsworth's concept of sensitive responsiveness is based on a view of the baby as an independent intentional agent with free will and the right to a social environment that follows the baby's signals, as described before.

Non-Western traditional farmer families socialize infants to follow the directives of caregivers and become part of polyadic social encounters attending to a multiplicity of inputs at the same time. The underlying view of the child is that of a calm, unexpressive, quiet, and harmoniously well-integrated communal agent. Keller et al. (40) conclude in a comment to the Mesman et al. (48) paper that attachment theory and cultural/cross-cultural psychology are not built on common ground.

Claiming universality has ethical and moral implications when evaluating parenting quality in clinical settings, family court decisions, educational practices, and the like that rely largely on an understanding of the child as an independent agent (see the example of the Indian family in Norway), no matter what the family culture may be. Thus, parenting practices in other than the Western middle class and in accordance with attachment theory's philosophy are often misconceived as intrusive and unresponsive (not following the infant's lead), harsh (motor and rhythmic handling), emotionally distant (not expressing emotions openly), neglectful (not interacting primarily verbal), and unable to mentalize (not talking about infant's inner mental states) (e.g., examples in refs. 51 and 52). Thus, sensitive responsiveness in the Ainsworth definition is not just a description of parenting but is a moral judgment about its quality.

Scientific and Ethical Concerns Regarding the Applicability and Validity of Assessment. Although attachment researchers also claim universal validity for the attachment assessment procedures in terms of applicability and meaning, serious doubts about all these dimensions have been articulated by cultural anthropologists and psychologists who have knowledge of local living conditions and representational systems (see refs. 27, 28, and 45 for more information).

Recently children's family drawings have also been interpreted in terms of security of attachment with a coding system and a rating scale that are considered universally applicable (53). In a comparative study, Gernhardt et al. (54) coded and rated family drawings from children belonging to Berlin middle-class families or Northwest Cameroonian Nso farmer families. The Berlin children were predominantly classified as securely attached, whereas the Nso children were predominantly classified as insecurely attached. However, most children in both groups drew

their families in line with the cultural concepts of person and family that had been analyzed in previous studies with children's drawings of the self and their family (with drawing competence controlled for) (55, 56). The majority of German middle-class children drew themselves next to the mother or father, all figures separated from each other, tall, and standing on the baseline of the sheet with arms upwards, being individualized with smiling faces. These characteristics are all indicative of secure attachment relationships (53). The Nso farmer children often drew their families floating somewhere on the sheet or in the corners with figures close together or overlapping. Figures are drawn incomplete, small, not individualized, arms downward, and with neutral facial expression or no facial details at all. Many children do not draw themselves or the mother or father and never draw themselves next to a parent. All these characteristics are indicative of insecure attachment relationships according to attachment researchers. Classifying children without taking the local standards and meaning systems into consideration is unscientific, because relevant information is left out, and it is unethical because it misjudges the condition of families and children, although more information would be available.

From Diagnosis to Intervention. Many intervention programs aimed at fostering good parenting and infant/child care are based on principles of attachment theory expressed as positive parenting practices. These standards of care advocate child-centered responsivity of adult caregivers with exclusive dyadic exchanges and verbalization/mentalization as the golden standard (57). Other conceptions of care are devalued as "compromising" children's success in school and thus their chance of a better life. For example, this attitude is expressed in the title of a recent paper by Weber et al. (52): *When Cultural Norms Discourage Talking to Babies*. This assumption is made without considering local standards of communication in terms of who talks to whom, how, when, and about what.

Moreover realistic communication patterns in which children participate and to which children are exposed are often miscalculated, since only the language that the primary caretaker addresses to a child is considered (for an encompassing data-based discussion, see ref. 58). On the other hand, language is often regarded as the sole avenue to cognitive stimulation (e.g., see ref. 52). Morelli et al. (36) argue "that there are many scientific and ethical problems with ... parent intervention efforts in applied developmental science. Scientifically, these programs derive their applicability and effectiveness on data from a small and narrow sample of the world's population; assume the existence of fixed developmental pathways; and pit scientific knowledge against indigenous knowledge. Based on our own work and that of others, we question the critical role of afforded talk as solely providing the rich cognitive stimulation important to school success, and the critical role of primary caregivers as teachers of children's verbal competency. In addition, these programs raise serious ethical concerns as they do not sufficiently explore how an intervention in one aspect of childcare will affect the community's culturally organized patterns of child care."

These studies usually do not test how influencing one dimension of behavior or development affects other areas of behavior and development. Also, long-term consequences are rarely assessed. Jukes et al. (59) recently published a study that demonstrates that residence in cities and schooling have complex effects on Gambian adolescents. Temporary urban residence (often associated with school attendance) was associated with improved performance in cognitive tests but with a decrease in social responsibility scores. Social responsibility, however, is a crucial competence in that cultural environment.

Also, parenting programs in Western countries apply attachment-based principles of positive parenting to families no matter what

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their sociocultural background may be. After reviewing studies applying parenting programs in Western countries to migrant and nonmigrant populations, Malda and Mesman (60) even conclude that "policies ... should not distinguish between families from different ethnic backgrounds. Attachment based interventions can be seen as basic groundwork for all struggling families across ethnicities, especially in early childhood ... ." (p. 82). How can those conclusions be drawn if relevant questions evaluating these programs are not even addressed, e.g., how does language training in the Weber et al. (52) study affect nonverbal communication skills that are basic for social regulatory processes in this and many other cultures? When all the implications and contextual parameters are not sufficiently addressed, these kinds of interventions remain unscientific and unethical.

Outlook

In this paper, the pervasiveness of the claim of universality and its consequences have been exemplified with attachment theory. Attachment theory started out as an essential alternative to the scientific zeitgeist of the time of its foundation. After a few decades it became more widely recognized [for a thorough discussion of the historical dimensions, see Vicedo (11, 12, 19)], and today it informs science, application, and policy. It also coincides with the 42 articles that spell out children's rights and the expectation that parents and others will ensure these rights put into the United Nations' Convention of the Rights of the Child (CRC). Morelli et al. (57) argue that children's rights in this convention are based on what childhood is believed to be like, reflecting the Western middle-class view of the (mentally) independent and self-contained child that also informs attachment theory. Also, the CRC assumes that this view is uniform across the world (see, e.g., ref. 61). Morelli et al. (57) conclude "A

notable feature of the CRC is that children's rights have priority over parents' rights. However, this priority is unfamiliar for many communities where children are not viewed as separate individuals outside of their families, but are, instead, nested within the identity of their parents, wider kin group, or community at large. In such contexts, the notion of separating the rights of children from the family or community circle would be deeply and structurally—indeed, ethically—problematic." Thus, the UN convention that is deemed to protect children all over the globe ironically poses substantial ethical challenges due to the hegemonic nature of its tenets. Cultural innovations and discoveries that define progress and modernization in fact originate in other parts of the world, notably in Asia and the Arab world, as Medin and Bang (62) convincingly demonstrate (see also ref. 63). These authors concur with Morelli et al. (57) and many others that scientific theories and concepts depend on cultural models and goals and values of personhood.

To understand the quality of parenting strategies, the cultural beliefs and practices in which they are embedded, i.e., the local context and the living conditions of the local people, need to be understood. Morelli et al. (57) contend that the best way to do this is to obtain first-hand knowledge of the community by conducting ethnographic research and/or to rely on reputable ethnographic historical accounts. Multimethod research designs can shed light on the issues at question from multiple angles (64). In the same vein, Medin and Bang (62) stress the generative role of pluralism at multiple levels from theory to research methodology, data analysis, and interpretation (see also ref. 45). Diversity needs to be recognized as the human condition, and its recognition is an obligation for better science as well as a requirement for improving people's lives.

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