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# Meaning and Methods in the Study and Assessment of Attachment

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## Abstract

As originally conceived and still practiced today, attachment theory is limited in its ability to recognize and understand cross-cultural variations in human attachment systems, and it is restrictive in its inclusion of cross-species comparisons. This chapter argues that attachment must be reconceived to account for and include cross-cultural and cross-species perspectives. To provide a foundation for rethinking attachment, two universal functions of attachment systems are proposed: they provide (a) socially organized resources for the infant's protection and psychobiological regulation and (b) a privileged entry point for social learning. Ways of understanding the nature of the cultural and ecological contexts that organize attachment systems are suggested, so that they can be recognized as culturally specific, normative behavior. Culturally valid methods for describing children's attachment systems are also discussed. In conclusion, a wide range of research strategies are proposed to facilitate the extension and contextual validity of measures of attachment across cultures and species.

## Conceptualizing Attachment

Redefining the concept of attachment itself is logically prior to expanding on the ways in which researchers can engage with attachment in cultural contexts.

**Group photos (top left to bottom right)** Kim Bard; Marjorie Beeghly; Suzanne Gaskins; Relindis Yovsi; Thomas Weisner; Ariane Gernhardt; Ross Thompson; Suzanne Gaskins; Douglas Teti; Cindy Liu; Relindis Yovsi; Kim Bard; Douglas Teti; Marjorie Beeghly; Ross Thompson; Relindis Yovsi; Thomas Weisner; Ariane Gernhardt; Cindy Liu; Suzanne Gaskins, Marjorie Beeghly, and Douglas Teti; Marjorie Beeghly

Thus we begin by addressing two central questions: What is an attachment system? In natural interactions, how can we recognize and characterize attachment in the daily lives of human infants and young children as well as in infants and young juveniles from other primate groups?

If we are to rethink the ways in which attachment might be studied in cultural contexts, we need to understand not only what attachment is, but also what it is not. While a particular child may well have more than one attachment figure, there is something distinctive about an attachment relationship compared to all other social relationships: not all social interlocutors have that status conferred on them just because they interact with the child, even if it is on a regular basis.

It is also necessary to consider attachment across species. Although much of our discussion in this chapter is situated within a frame of human infancy and early childhood, we more broadly refer to infancy and the early juvenile period in any primate species that may have attachment systems. In particular, we know that infant great apes (chimpanzees, orangutans, gorillas, and bonobos) develop attachment systems that function much like those of humans (e.g., Pitman and Shumaker 2009; van IJzendoorn et al. 2009). For ease of readability, however, we highlight the cross-cultural perspectives of human attachment.

Rather than beginning with a theoretical conception or attempt a decontextualized description of behavior, we begin by articulating what the functions of attachment are in an infant's life. We use "function," in an evolutionarily meaningful sense, to refer to the relation between attachment and the increased chances of an immature member of a species to reach adulthood, and thus function effectively as a member of the social group. Because all cultures (and all mammalian species, for that matter) must solve the problem of ensuring that the young survive infancy to reach and achieve reproductive maturity, the attachment system (despite its cultural variants) can be regarded as part of that species-wide adaptational challenge.

Our functional definition of attachment has two parts. The first function of attachment is to provide socially organized resources for the infant's protection and psychobiological regulation (including stress regulation when stress is present). Attachment figures serve in a privileged capacity to manage infants' safety, their behavior, and their emotional and physical well-being. Attachment thus ensures that one or more caregivers has privileged capacity to protect infants from harm and to help regulate their psychobiological systems, which are essential to their survival but which are poorly regulated at birth (e.g., systems related to feeding and nutritional intake, immunological functioning, protection). With respect to stress regulation, attachment figures have a privileged (or amplified) capacity to act as buffers of stress and thus help to regulate the child's stress reactivity and its potential consequences for emotion regulation, behavioral self-control, as well as cognition and learning (Thompson 2014). One important way that cultures differ from one another (and which has not been recognized in attachment research) is in the amount and type of stress children experience during the course of everyday activities, depending on

whether care is organized to be proactive or responsive to the children's needs. In some cultures, stress or distress is thought to be detrimental to the child, so caregivers provide anticipatory care before the child expresses discomfort or desires (Keller and Otto 2009). In contrast, caregivers in Western cultures are more likely to allow their offspring to experience distress before intervening, based on a belief that doing so promotes children's self-regulatory skills and builds independence. Because there are cultural variations in strategies for regulating (and producing) children's stress, the concept of responsiveness to the child's distress signals must be considered only a provisional indicator of attachment. To reflect this range of behavior across cultures, we therefore characterize this first function of attachment in terms of psychobiological regulation rather than in terms of stress.

The second function of attachment is to provide the child a privileged entry point into social learning. Although cultures (Lancy 2015) and indeed primate groups (Whiten et al. 1999) differ widely in the specifics that infants must learn to become a well-functioning member of their particular group, infants everywhere face the task of learning to become a competent participant, and in all cultures, social learning (learning through social participation) plays a central role in this process (Lancy et al. 2010). The capacity to engage in social learning is universal but not well organized at birth; it develops over the child's first few years of life (Tomasello et al. 2005; Callaghan et al. 2011; Bard and Leavens 2014). We believe that attachment figures play a privileged role in facilitating and encouraging young children's earliest accomplishments in social learning in a number of ways (not all of which will be found in a given culture or a given primate group). These include, but are not limited to, providing motivation, facilitating nascent attempts, and providing a culturally specific road map for social expectations and practices. This social interdependence, itself a product of an attachment system (Sroufe and Waters 1977), serves as an entry point for children's more general acquisition of a cultural meaning system as the child develops a working model of the social world through daily social interactions.

We hypothesize that attachment figures become specially recognized by the developing infant because of their special roles in these diverse forms of regulation. They can be, for example, a source of salient and sometimes unique emotional experiences, the focus of infants' social expectations for responses that provide stress relief and positive arousal, and eventually the locus of motivational processes that cause the infant to seek proximity to that person and to interact with that person preferentially. Because of these cognitive and emotional processes in an attachment system, infants and their attachment figures will eventually come to share and coordinate psychobiological regulation and social learning (Tronick and Beeghly 2011). Some of the characteristics of these interactions are unique to the individuals involved, whereas others will be widely shared within a culture (or group) yet vary across cultures. These variations may be particularly significant between cultures that systematically invite

the child to act independently and those that invite the child to coordinate their actions more closely with others. However, as their capacities, knowledge/expertise, and culturally organized social roles expand over developmental time, children in all cultures are likely to become more capable of managing all aspects of the attachment system, again in ways that are consistent with the cultural expectations for how children can and should act.

How can attachment relationships and figures be recognized? When one makes the assumption that there is a single primary attachment figure who is either “mother” or “mother-like,” the answer to this question is almost trivial. However, it becomes more problematic and complex when it is recognized that there can be multiple attachment figures. It is further complicated when one acknowledges that attachment figures for a particular child may change over time, and that one attachment figure can be favored in a given context or activity but not in another. When a child’s attachment system consists of multiple attachment figures, it will undoubtedly have more complexity and fluidity in its structure, making it harder to identify and describe.

In the face of this increased complexity, there is a risk of expanding membership in the attachment system to include any important social partner. We would discourage overexpansion because it threatens to dilute the significance of the privileged role of attachment figures in a young child’s experiences and socialization. Thus, while we attempt in this chapter to expand the definitions and conceptualizations of attachment systems, and the behaviors that occur within those systems, we are also committed to the idea that attachment figures will be members of a closed set and that some regular social partners in a child’s world will not be included. In the abstract, social partners should be considered attachment figures only if their presence in the child’s world consistently serves the two functions described above:

1. Ensuring safe engagement with the environment while supporting psychobiological regulation.
2. Providing a privileged entry point for social learning.

Based on our understanding of the ethnographic and primatological literatures, we believe that while, in any infant’s everyday experience, there may well be multiple social partners (Hrdy 2009) who play these roles, there will not be an extremely large number of attachment figures. When there are multiple attachment figures, responsibilities may be distributed more or less equally and interchangeably. Alternatively, there could be a hierarchy of attachment figures (e.g., when one attachment figure is not available to provide care, another consistently steps in) or a set of specialized ones (e.g., mother providing nursing, grandmother co-sleeping).

At a more practical level, one might begin to identify attachment figures by observing which figures are responsible for supporting and organizing a child’s most basic daily activities (e.g., sleeping, eating, holding/carrying, bodily care, assurance of physical safety) and engagement with the world. Who regulates

a child's under- and overactivity, in either a proactive or responsive manner? Who feels a responsibility to respond in a (culturally defined) "timely" manner? Who does the child turn to preferentially for such regulation (e.g., soothing when distressed), and who is responsible for organizing the child's network of care, assigning caregiving responsibility to others and supervising or evaluating them? In short, we think that attachment figures can be best identified by starting from the perspective of the children: what are their needs, and who addresses those needs?

Why is an attachment system important? We argue that it leads infants to engage safely with (and learn from) the environment through visual, manipulative, and locomotive exploration, and to coordinate or synchronize their social behavior with attachment figures and others. The attachment system will serve these purposes if infants experience social interactions with attachment figures that address the infants' needs and that are consistent and therefore predictable, so that infants not only react to behavior directed to them, but also come to anticipate, even expect, certain kinds of behavior. The particular characteristics of the caregivers' and infants' behavior may, however, vary widely across cultures.

We chose to initiate our attempt at conceptualizing attachment as a cultural activity without direct reference to the established tradition of attachment research. However, it is useful to revisit Bowlby's (1969) original work on attachment. Bowlby described pre-locomotive attachment behaviors as "goal-directed" (i.e., they draw the attention of the caregiver to the infant) and post-locomotive attachment behaviors as "goal-corrected" (i.e., infants' propensity to signal to and seek the proximity of their caregivers continually varies, depending on the caregiver's whereabouts and the infants' emotional state). We hasten to note that there is cultural variation in the degree of infant signaling, in general (Gaskins 2006; Salomo and Liszkowski 2013), as well as the degree to which infants signal distress, in particular. According to Bowlby, a distressed infant will be highly motivated to seek out the caregiver for comfort and will cease to do so once proximity is achieved. A nondistressed infant may not be motivated to seek out the caregiver and be content instead to explore the environment; in the next moment, however, this same infant may engage in proximity seeking if the caregiver moves away from the infant, a stranger approaches, etc. Infants with multiple attachment figures may not show these types of reactions in the same way (e.g., Meehan and Hawks 2013). Bowlby stated that goal-corrected attachment is characterized by continual shifts in the relative balance of the attachment and exploratory behavioral systems in response to changes in exogenous (e.g., caregiver separation or approach of a stranger) and endogenous (e.g., hunger, pain, or fatigue) conditions.

Although Bowlby (1969) identified the "set-goal" of the attachment behavioral system as maintaining proximity to the caregiver, Sroufe and Waters (1977) argued that the set-goal of the attachment system was "felt security," because the degree to which infants appear to be perturbed by separations from

their caregivers, stranger approaches, etc. varies across infants. This variation is partly a function of infants' differing amounts of experience with potentially stressful events (e.g., separation from attachment figures and contact with strangers) as well as a function of individual differences in temperamental thresholds for experiencing distress.

Drawing from Bowlby's formulations about the developmental significance of early attachment (Bowlby 1969), a central tenet of attachment theory is that as goal-corrected attachments develop, infants develop "working models" of their caregivers and themselves that are shaped by the quality of care (Bowlby 1969; Ainsworth et al. 1978; Sroufe and Fleeson 1986; Bretherton and Munholland 2008). Infants who have enjoyed a history of sensitive caregiving are expected to develop a representation of their caregiver(s) as responsive to their needs, and of themselves as worthy of love and support. By contrast, infants who have experienced a history of insensitive care (e.g., unresponsive or inconsistently responsive, intrusive, and/or rejecting) are expected to develop a representation of their caregiver(s) as unresponsive to their needs and of themselves as unworthy of love. These internal working models are theorized to have a powerful organizational influence on infants' behavior toward caregivers and others, although, as the term "working" implies, they can also be further shaped by experience. Indeed, Bowlby (1973) argued that the quality of care in infancy, and the content of the internal working models that emerge from infancy onward, directly impact children's capacity to resolve subsequent psychosocial adaptations. Infants who come to trust in their caregivers' availability and responsiveness are expected to negotiate subsequent adaptations (e.g., separation-individuation and autonomy in toddlerhood, social competence with peers in later childhood) more successfully than infants who do not.

These central concepts of set-goals and internal working models sit in uneasy tension with some of the ethnographic knowledge about the variation that exists in how children's everyday environments are culturally organized (Morelli et al., this volume) and the primatological literature about the variation that exists in parental strategies (Hawkes et al., this volume). For example, whether all children will actively maintain proximity to a caregiver is not clear, even if "proximity" is defined in a more general way than physical proximity, because different normative care practices characterize different cultural systems. Konner (1976) reports that for !Kung infants raised in the Kalahari Desert in Africa, physical contact by all caregivers was observed 90% of the time at three to five months of age, and was still a high 42% of the time by 18 months; in such cultures, proximity is a given much of the time. Substituting it with the term "felt security" is equally troublesome, if not more so because of the various sources of felt security that may be derived from different practices of early care other than attachment.

Moreover, what should count as "sensitive caregiving" is also defined to a large degree by culturally organized parental goals. LeVine provided an example to the Forum from Mary Ainsworth based on her original comparisons

between Ganda infants and parents, and U.S. middle-class infants and parents (Ainsworth 1967). Both communities provided sensitive care within the framework of their own culture, but the Ganda caretakers and infants did not emphasize face-to-face smiling and overt displays of affection—signs of “sensitive” responsive care in the Western context. As Ainsworth (1967:334–345) stated:

In our American households the parents, loving relatives and interested visitors alike bend over the baby as he lies in his crib, presenting him a smiling face, and waggle their heads and talk to the baby in an effort to coax a smile. This kind of face-to-face confrontation was not observed to occur in the Ganda sample. Indeed, it was rare for an adult even to hold a baby so that there could be a face-to-face confrontation, for the baby was, at least from about eight months on, usually held in a sitting position on the adult’s lap, facing outward and leaning back.

By the end of the first year of life, babies in our society are able to return an embrace or kiss when it is given to them, perhaps clumsily, but in distinct response to the adult’s affectionate advance. That this is largely a culture-bound pattern of response—whether learned through reinforcement or imitation—is suggested by the fact that Ganda babies very rarely manifest any behavior pattern even closely resembling European affection, and, indeed, their mothers did not try to elicit hugging or kissing in the baby, although they themselves occasionally nuzzled the baby while holding him.

The fact that Ganda babies do not hug or kiss, whereas Western babies who are encouraged to hug and kiss do so, suggests that this pattern of attachment behavior is of a different order than the other patterns considered in this chapter—it is much more contingent on a specific learning process.

Since both Ganda and Western babies are receiving culturally meaningful, sensitive care and they display appropriate attachment to their mothers, the fact that Ganda babies do not experience the Western cultural patterns of engaging in face-to-face interaction and encouraging children to hug and kiss should not be considered evidence of insensitive care. To the contrary, it is a sign that the Ganda social-learning orientation is outward toward multiple others in the social setting, and less dyadic toward a single caregiver. Similar patterns are seen in many other cultures (e.g., Martini and Kirkpatrick 1981; de León 1998).

During our discussions at the Forum, we tried to respect the theoretical foundations of the traditional claims made about attachment. However, these traditional claims often make culturally specific assumptions that lead to excessively broad claims about the universal nature of attachment systems. Although we are committed to the argument that attachment is a universal process in humans and other primates, we think it is imperative to begin by looking at attachment systems across cultures with an open mind about which specific characteristics of attachment systems are universal and necessary, and which ones are culturally specific. These distinctions cannot be made by relying on the existing research, which has been formulated using Western caregiver-infant interaction as the guide for characterizing attachment (and which, in fact, has been conducted primarily in Western societies).

An interesting question arose that we are unable to answer, due to lack of adequate information: Does the development of an attachment system occur differently in contexts where there is a single primary caregiver compared to contexts involving multiple caregivers? Plural caretaking may lead to earlier social self-regulation or to children becoming more resilient. Because children have to integrate information about different attachment figures into their expectations about their social world and are dependent on more than one person, the working model developed by children with multiple attachment figures may be more complex and flexible.

Another interesting question with no immediate answer is whether proactive systems of care yield different kinds of attachment than the forms of responsive care more typical of the contexts in which attachment theory developed. How important is a caregiver's responsiveness to infant signals if the caregiver usually intervenes before such signals occur? Does infants' understanding that caregivers are continuously attentive (and therefore feeling that there is no need to attract and sustain attention of attachment figures) lead to distinct types of attachment behavior? Perhaps this pattern of proactive care changes the nature of exploration, or perhaps it changes the use of and dependence on social referencing. Answers to such interesting questions await further research.

Finally, we recognize that the concept of "psychobiological regulation" is, to some extent, culturally relative because the circumstances requiring a caregiver's support necessarily vary. How a young child responds to strangers is one example of potential stress, and this response has been assumed to be universal and to require caregiver support. There is, however, wide variation, both within and across cultures, not only in how often and under what circumstances young children are exposed to strangers, but also in how they react to them, and what their reaction should be to meet cultural expectations (Gaskins 2013; for an example of cultural differences in emotion and emotional expression, see Keller 2013a for a description of early socialization for emotional control among the Cameroonian Nso). During our discussion at the Forum, James Chisholm described an intracultural difference in fear of strangers among Navajo babies between those living in camps with extended families (who demonstrated less fear of strangers) and those living in nuclear family camps (who demonstrated more fear of strangers). Tom Weisner offered the example that young children among the Abaluyia and other communities in Kenya and elsewhere in Africa observe their parents and older children going up to a stranger and shaking hands (the culturally appropriate adult response to meeting a stranger), and come to do so themselves with a calm, solemn, respectful demeanor. In addition to the fact that strangers do not have the same cultural meaning for children in different cultures, it appears that the children's responses to strangers may be difficult to interpret without the benefit of significant cultural understanding. For instance, in Weisner's example above, is the young child's handshaking a straightforward imitation of a behavior seen many times, an enactment of a learned, socially appropriate script, or

a way of managing fear? While it is worth exploring candidates for a universal stress-producing interaction, this can be done most appropriately by looking for culturally meaningful examples of such interactions in individual cultures and then evaluating whether there appear to be similarities across cultures that could be used as a point of comparison.

This culturally grounded theoretical reconceptualization of attachment will serve as the conceptual foundation for the rest of the chapter, as we consider how to study the context of attachment in a culturally meaningful way, how to assess individual differences within a particular cultural system, and what kinds of tools could be used to study attachment in cultural context.

### **Measuring Attachment in Different Cultural and Ecological Contexts**

For some time, anthropologists, cultural psychologists, and others who study children and their development in a variety of cultures have argued that traditional and contemporary approaches to attachment have studied the phenomenon of early attachment without knowing enough about the variation that exists across cultural environments and ecologies (Harwood et al. 1995; LeVine and Norman 2001; Gaskins 2013; Quinn and Mageo 2013; Otto and Keller 2014). Practitioners looking to base their interventions on evidence have argued the same (Pence 2013). Here we describe what cultural information should be known and considered to understand how attachments form, what they look like, and what their outcomes are. A wealth of information already exists about how different cultures understand birth, infancy, and childhood (e.g., Hewlett and Lamb 2005; Keller 2007; Konner 2010; Lancy 2015). These resources can inform our evaluation of the cultural appropriateness of any claims about attachment systems. Often, they provide evidence that characteristics of children, attachment figures, social interaction practices, or everyday environments assumed to be universal do not actually exist (Gaskins 2017). This is what LeVine has called anthropologists exercising “their veto with evidence from non-Western cultures” (LeVine 2007:250).

It is, however, necessary to go beyond this reality check on assumptions about the universality of human development, and to do so we need more specific information about how attachment systems work in different settings. To pose these types of questions, we need to know more about the larger cultural system that supports attachment figures and provides the underlying rationale for the patterns of social behavior that children experience in their daily lives. Finding one or a small number of communities which do not fit a general pattern that has been thought to be “universal” serves as a starting point for the formulation of research questions, but the process does not end there. What are the patterns of variation around the world that do exist, and what might be contributing to that variation? While a number of reports about attachment

systems are already available for consideration (e.g., Quinn and Mageo 2013; Otto and Keller 2014), more detailed and systematic data from a wide range of cultures, in more direct conversation with existing attachment research, is needed. Only after the range of attachment systems and behaviors across cultures is examined can we discover to what extent similar patterns of attachment behavior exist across cultures and identify potential candidates for the universal characteristics of attachment.

Likewise, studying urban populations in a number of countries and finding that they fit the proposed universal pattern does not end the research process. Most nations are not single, homogenous cultures; often, multiple well-formed cultures coexist within a single country. Thus, cross-national research is not necessarily cross-cultural (Keller and Kärtner 2013). Increasingly, urban populations, especially relatively wealthy and educated ones, are likely to demonstrate ways of thinking and behavior that are similar to Western ways. For example, Mesman et al. (2015) found some consistency across nations in urban, literate mothers' responses to what behaviors characterized an ideal mother. However, their three samples from rural populations (presumably representing distinct cultural groups with traditional belief systems intact) did not show much agreement with the other samples, nor with each other. Mesman et al. (2015:10) conclude:

Across 26 cultural groups from across the globe, mothers' ideas about the ideal mother were found to overlap substantially with the notion of the highly sensitive mother, pointing toward a universal appreciation of the importance of contingent responsiveness in parenting young children.... On the other hand, we also found a significant effect of cultural group on sensitivity beliefs that was largely, but not entirely, due to sociodemographic factors, and especially rural versus urban residence.

From their point of view, it appears that each national sample represented a "culture," and the significant difference they found across samples within a nation (samples which may in fact represent distinct cultures) was interpreted only in terms of how urban they were. In our proposals here as well as in Chapter 13 (this volume), we are not discussing cross-national research, but rather research that focuses on intact cultures, where members share a system of beliefs and practices that inform their caregiving.

There are five major categories of information that one would want to know about a cultural system or ecological context when trying to observe and interpret attachment. Listed below, we include a range of questions about specific topics that fall within each category. For some cultures, there may be enough ethnographic information to be able to find answers for many, if not all, of the questions. If there are important relevant questions for which the answers are unknown, then more ethnographic work is needed before trying to identify attachment systems or describing and interpreting the behavior of children and their attachment figure(s).

One caveat is that ethnographic research offers useful information about normative cultural beliefs and practices, but it often offers less information about intra-cultural variation. If a belief is reported, is it central to the group's cultural understanding about the world? Is there evidence of whether a belief is widely held and reliably instantiated in behavior and everyday practices? Because one of the potential outcomes of studying attachment systems is to understand the impact that systems with different qualities have on children's development, it is important to study not only the normative beliefs and practices but also individual differences. It is also important to understand whether attachment practices and beliefs are conservative and resistant to change in the face of cultural change or upheaval (e.g., immigration, war, catastrophic illness).

We believe these five categories of information support a culturally (or cross-species) informed understanding of attachment systems and behavior.<sup>1</sup> Equally, they would inform understanding in other areas of children's lives and development. It is a long list and thus unrealistic to imagine that any one study of attachment would be able to address every single item. Its intent, however, is to provide suggestions for topics to consider when studying attachment and security within any particular community context in a way that would ensure cultural validity. Many items, but not all, would be appropriate to the study of attachment systems in other species as well. We offer the full list of suggestions that emerged from our extensive and animated discussions to guide further enquiry:

1. Morbidity, mortality, risk of death/illness (emic/etic perspectives): The most basic factor in a culture or ecology that organizes caregiver beliefs and behavior is infant survival rate (LeVine 1980). When infants face high risk of death or impairment from threats (e.g., serious illness, physical dangers, and malnutrition), caregivers must prioritize decisions that ensure survival over other goals for their children:
  - Infant morbidity and mortality rates: How likely are children to get seriously ill or die?
  - Predictability and scarcity of resources: Are the resources relevant to infant survival regularly available?
  - Danger in environment and the risks and concerns about dangers that adults perceive: How likely are children to get hurt or have harm done to them in their daily lives? What risks are recognized as significant by caregivers?

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<sup>1</sup> Our categories have a strong resemblance to the cultural learning environment model (Whiting and Edwards 1988; Edwards and Bloch 2010), which proposed three levels, of which we are discussing the first two in this section: (a) ecology, resources, risks; (b) parental cultural beliefs, practices/routines, people; and (c) child development. This tradition could be used to refine and expand this categorical framework. Also relevant are other existing ecocultural models of development (Super and Harkness 1986; Weisner 2002; Worthman 2010; Weisner 2011a) in establishing a conceptual framework for context measures.

2. Ecology, resources, and impediments (environmental, social, institutional): The everyday experiences of infants and children are strongly affected by more general aspects of the cultural environment, including how people obtain basic resources such as food and shelter, what levels of wealth or poverty exist, how society is governed, how public or shared resources are distributed, and how political events are shaping their lives:
  - Ecology: How hard is it to get resources of various kinds?
  - Subsistence: What are the demands and patterns of work?
  - Political and legal resources: Are caregivers supported by their community's structure and practices (e.g., stability of leadership)?
  - Institutional resources: Do health and social services use social models that are in harmony with the families they are designed to serve, or do they use models in conflict with those families?
  - Pressures for cultural change in a given community: What are the current challenges to the continuity that provides safety and well-being to families (e.g., immigration, war)?
  
3. Parental ethnotheories (shared cultural beliefs) and other parental beliefs: All caregivers socialize with and provide care to their children informed by their worldviews about children's development and learning, appropriate cultural roles for children, and their goals for what their children should be able to do by the time they are adults. They may also hold specific ideas and expectations about individual children. Caregivers are aware of some of their beliefs and values and can articulate them clearly, but many are implicit and unarticulated, making it harder for a researcher to learn about them:
  - What kind of person do parents want their children to become?
  - What makes a good caregiver?
  - What capacities does an infant have?
  - What is a competent child?
  - What social roles and relationships are recognized for young children?
  - What hopes, goals, expectations do adults have for the child?
  - What are the cultural beliefs about socialization and development and learning?
  - What are the cultural challenges and expectations for the child (e.g., autonomy, codependence)?
  - What are the beliefs regarding personhood and self (e.g., cultural conceptions of who children are now, and how they will change over time)?
  - Is there a cultural model of something similar to attachment?
  - What kind of language is used to talk about children, and what terms are used to describe early relationships?

- What social groups does the child belong to and what are adults' special understandings about those groups? Are such groups based, for example, on age, gender, social class, or caste?
  - Is the child perceived as having important individual characteristics (e.g., temperament, competencies, deficiencies)?
  - Do adults have ideas about how the child understands the world, and do those ideas change for children of different ages?
4. People, household (or for other species, conspecifics), and local group: Children's everyday experiences, including interactions with attachment figures, are structured not only by cultural beliefs and values, but also by the particular local environment in which they live:
- What is the social structure in the community?
  - What are the norm and range for household size and family composition (and socioeconomic markers like education, class)?
  - Who are the people that are physically around the child?
  - Who are the people considered important to the child, even if not present (including ancestors)?
  - Who is interacting with and observing the child?
  - Who has preferential interactions with the child?
  - What are the characteristics of children's social partners (e.g., age, gender, kinship)?
  - What roles do children's social partners play, and what activities do they engage in with children?
5. Social and caregiving practices and routines, as well as consistency in everyday experience: General cultural systems, caregiver beliefs and values, and a household's local characteristics combine to produce the everyday environments of children. These everyday experiences serve as a powerful socialization tool, especially when there is structure to and repetition of events:
- Is the structure of the family's day predictable from one day to the next?
  - Is the structure of the child's day predictable from one day to the next?
  - What goes on in caregiver/child interaction? How does this vary across contexts?
  - Who feeds, dresses, bathes, soothes, sleeps with, and plays with the child (and any other daily activities)?
  - Who is responsible for the well-being of the infant?
  - Are there identifiable teaching styles among caregivers?
  - Who plays social games with babies, and what is the nature of those games?
  - Who provides the objects used by the child (e.g., toys), and are the objects simply provided or also mediated?

Beyond the particular items, this extensive list is useful in its entirety as it indicates which issues are judged to be central by anthropologists, cultural psychologists, and other researchers for the ecological validity of studies of attachment systems. Many, perhaps most, of the items listed here have not been addressed in traditional and contemporary studies of attachment, even those which aim to study attachment from a cultural perspective (e.g., Mesman et al. 2016b). To study the cultural organization of attachment, serious attention must be given to cultural beliefs and practices as well as to the ecological context of everyday behavior. To date, however, most attachment studies which focus on cultures outside the West usually have either no, or very little, cultural or contextual evidence; they do not factor in the socioeconomic circumstances of the communities studied and often have not contextualized the measures used. We argue that conducting studies in other cultures using traditional methods of measuring attachment in isolation from studying the context is not sufficient to understand attachment from a cultural perspective. Yet studies done in other cultures are often accepted uncritically as evidence for universality and for the normativity of specific behaviors as indicators of sensitivity and competence. In the end, one needs to be able to answer “why” caregivers and infants do what they do; that is, one needs to know about caregivers’ cultural beliefs and values that lie behind their motivations and actions.

### **Measuring Individual Differences in Attachment**

In the attachment tradition, one might argue that Bowlby (1969) focused on normative attachment, describing how the system worked at the level of humans and related species. Building on this tradition, Ainsworth and her colleagues, especially with the development of and commitment to the Strange Situation Procedure, changed the focus to one of individual differences in attachment systems and how they might predict individual outcomes of well-being and mental health (Ainsworth et al. 1978). Although we think the primary focus of culturally informed attachment research, at least at the outset, should be the description of normative characteristics of different cultural systems of attachment that are shared across individuals (or at least most individuals) in a given culture, we believe that it is also important to address the issue of qualitative differences within cultural groups. Individual differences in attachment have traditionally been a large part of the research on attachment. From the perspective of cultural differences, however, they are also one of the most controversial characteristics of traditional research on attachment.

We fully expect there to be within-individual differences in any cultural group. For a given infant, there may be differences in how the child relates to different attachment figures. In studies of WEIRD (i.e., western, educated, industrialized, rich, and democratic) cultures (Henrich et al. 2010), infants have been found to form different qualities of attachment with different social

partners (e.g., fathers versus mothers) (Thompson 2013b). There may also be within-individual differences across time, as the nature of attachment can also change over time with any partner.

In addition, there may be discernible differences across individuals. Although normative attachment systems are likely to exist in all cultures (even as their characteristics differ from one culture to another), there is also likely to be variation with any cultural system around that norm. Here we explore the research implications for two related issues: In a given culture, does the quality of attachments differ (across individual children, multiple caregivers, contexts, and time)? If so, how does it differ?

One fundamental question that arises at the outset is whether it is more productive to consider such qualitative differences within and across individuals using the infant or the attachment system as the unit of analysis. While attachment security has been conceptualized as relationship-specific in infancy and childhood (i.e., infants can be “secure” with one person and “insecure” with another based on the quality of relationship the child experiences with that person), over time, attachment is characterized as being increasingly person-specific, so that by adulthood, people are sometimes characterized as being secure or insecure (Thompson 2013b). Since the quality of attachment is typically assigned to the individual rather than to the dyadic relationship, and correlates and outcomes of the security of attachment are also focused on the individual in analyses (Sroufe et al. 2010), there is often an implication that attachment is a characteristic of the child from early in life. (Assigning these characteristics to the individual-in-a-cultural-setting would be a further step.) Conventionally, however, attachment researchers believe that these associations occur because aspects of the dyadic relationship have become internalized by the child in the form of “internal working models” (mental representations) based on the child’s experiences over time in an attachment relationship (Carlson and Egeland 2004; Weinfield et al. 2008). It is these working models that become more elaborated, complex, and consolidated to characterize individuals eventually as secure or insecure by the time they reach adulthood (Bretherton and Munholland 2008; Dykas and Cassidy 2011).

From the perspective of understanding normative attachment in context, looking more consistently at attachment systems and characterizing their differences may be especially productive for understanding young children’s experience, assuming there are consistent differences in the categories of people who function as attachment figures. In particular, studying attachment systems rather than individuals may be a more productive unit of analysis for understanding how variation in multiple caregivers across families influences attachment. We want to understand if the characteristics of attachment systems vary in interesting ways, depending on who participates in an individual system. A child who has two attachment figures (e.g., mother and father) may differ from another child who has five (e.g., mother, father, sister, mother’s sister, grandmother). Alternatively, the experiences of children who are attached to

child caregivers (e.g., older siblings or cousins) may differ from experiences with solely adult attachment figures (e.g., mothers, fathers, grandmothers). In addition, such co-regulatory systems with multiparty actors need to address not only who takes responsibility for what, but also what happens when one or more parts of the system fail. With the recognition that many children worldwide have multiple attachment figures, and that there likely is variation in how attachment systems are organized, we have introduced not only new sources of individual differences, but also the potential for “subgroup” variation based on the makeup of the attachment system that falls in between individual variation and group variation.

Beyond these issues about unit of analysis and capturing qualitative differences in different configurations of attachment systems, a second fundamental question is how individual differences in quality of attachment can and should be conceptualized and evaluated in a way that respects cultural differences in attachment systems. The current vocabulary for individual differences in attachment uses the basic distinction between secure and insecure, which can be elaborated into a four-way category system (secure, avoidant, ambivalent, and disorganized). This system of categorization has strong inherent traction in current research on attachment, even when looking at cultural differences (e.g., Mesman et al. 2016b) because of the long history of research connected to it (Cassidy and Shaver 2016). However, we feel strongly that these terms are fundamentally inappropriate because they imply a built-in value system imposed on complex patterns of behavior by the judgments of one particular (i.e., Western) culture. When the four-part attachment categories are used in any other culture, their meaning becomes difficult to understand (Gaskins 2013). In addition, these categories are inherently value laden: they are identified by terms that unfortunately present one pattern of behavior as desirable and three patterns of behavior as less desirable. Although we recognize that systematic differences across individual children or across attachment systems may indeed exist (and be describable in culturally meaningful terms), these differences should not be judged *a priori* as being either desirable or undesirable. Thus, contextualizing attachment may require dropping these categories altogether.

Despite our deep concerns with the current system of characterizing individual differences in attachment, we recognize that there is dysfunction and even pathology in the world (indeed, in every culture), and that the full range of attachment relationships observed in a given culture may not be equally adaptive in promoting children’s well-being or ensuring their survival. There is value in capturing such individual variation within a culture along with describing culturally normative patterns. There could be a number of sources of this mismatch: children whose temperament does not fit with the expectations laid out by their particular social world; attachment figures who are inconsistent or even deficient in providing support for safety and psychobiological regulation and entry into social learning, either because of their own psychological

problems or because of living with personal stressors from their environment; and families or communities that are under great stress (e.g., poverty, illness, social conflict). When caregivers face significant personal, family, or community problems, they must often direct their attention to solving those problems first and, as a consequence, may fail to invest in their relationships with their infants (Scheper-Hughes 1985). Even for a particular child, there could be wide variability in the social ecologies inhabited by different attachment figures (e.g., parent vs. grandparent or home vs. childcare center), which could contribute to important differences in how adaptive each relationship is.

One set of new vocabulary we considered are the terms “culturally adaptive” and “culturally nonadaptive,” which we conceptualize as opposite ends of a continuum. Judging whether a given attachment system (or the relationship between a child and a particular attachment figure) is adaptive would include considering some basic concepts consistent with current attachment research: whether there are consistent responses to the needs and concerns of the infant which keep the infant safe and content, whether the attachment figures help a child achieve a culturally desirable affective state, and whether the coordinated actions within the relationship of attachment figures and child are well regulated and predictable. To this list we would add whether an attachment figure and infant are operating together in a manner consistent with the expectations of the cultural community and whether the attachment figure is serving as an effective entry point for the infant’s culturally appropriate social engagement.

While this terminology has clear advantages over the four-part categorical system currently in use, some potentially problematic issues arise as well. For example, who can serve as a legitimate judge of the evidence for whether a system is adaptive or not, and on whose terms? Can there be more than one adaptive pattern of interaction in a given culture, and is it important to capture those differences? How can researchers (and practitioners) accurately observe and evaluate a relationship in cultures that are proactive about attending to children’s needs so there are many fewer and less extreme displays of distress? Is “adaptivity” the right term or would “well-being,” “social trust,” or “social competence” be better choices? How can reasons that stand outside the nature of the relationship (e.g., endemic malnutrition causing parental or child unresponsiveness) be best addressed? Also, to return to a fundamental issue of unit of analysis discussed above, does “adaptation” characterize the individual child, the dyadic relationship, a particular social setting or activity, or the entire attachment system provided by the child’s social community?

These questions are fundamental and should shape how we think about individual differences in attachment systems across cultures. Although we could not resolve all issues, we did agree that for outsiders to make any valid judgment about adaptivity for an individual infant, they would have to understand, at a minimum, what the cultural norms are for social relationships between infants and caregivers and the indigenous ways by which children are assessed (by their attachment figures and others). They would also need to understand

the cultural beliefs about relationships, distress, and security, as well as the terms that are used in that community to define and describe the “attachment system.” Outsiders would then need to reflect on how they are judging the adaptivity of the attachment system, relying on both their own conceptualizations about attachment and those of the social group they are studying. To make a judgment about a particular child, an outsider would want to know what that child’s attachment figures think and what they value (to be able to understand what they are doing and why) and perhaps consult with local informants about their judgments about the functioning of the infant’s social world as well.

Some of the central conceptualizations from current approaches to attachment that are candidates for use in other cultures include proximity seeking, exploration, and stress regulation, all standard measures of attachment-related behavior used in European and American cultures (Ainsworth et al. 1978). We have already discussed some of our concerns about using stress regulation as a measure across cultures. There are also reasons to be concerned about the paired measures of proximity seeking and exploration. According to Ainsworth and her colleagues, in a secure infant, the balance between the attachment and exploratory behavioral systems tips toward the attachment system in the presence of threat or danger, leading the infant to seek out the caregiver for protection and reassurance. Once the infant is comforted and the event that activated the attachment system is no longer perceived as threatening, the balance tips back toward the exploratory system, whereby the infant feels comfortable exploring their surroundings in the presence of her/his attachment figure, who serves as the infant’s secure base. Ainsworth argued that this kind of dynamic interplay between attachment and exploration, in which infants can rely on their caregivers for protection and comfort when needed and as a base to engage in competent exploration of their environment, is seen as highly adaptive and conducive, in an evolutionary sense, to individual and species survival (Ainsworth et al. 1978).

In Ainsworth’s model, “insecure” infants are similarly defined in terms of a balance between attachment and exploration, but for such infants, this dynamic balance is not seen as adaptive. Infants deemed “insecure-avoidant,” for example, are likely to explore new territory in their caregivers’ presence in an almost compulsory fashion, tend not to respond to or look toward their caregivers when called, and tend not to seek out their caregivers at times when doing so would afford the infants needed protection and security from threat or potential danger. In such infants, the attachment-exploration balance is tipped predominantly toward the exploratory system and appears to do so at the expense of the infant’s safety. “Insecure-resistant/ambivalent” infants, by contrast, often appear to have difficulty separating from their caregivers, with the attachment-exploration balance tipped toward attachment at the expense of exploration (Ainsworth et al. 1978).

We believe that significant cultural issues affect the conception of attachment as a balance between proximity seeking and exploration and how that

balance might be organized in everyday activities. For instance, in cultures where children are carried by caregivers, even as they reach their first birthday and beyond (e.g., Konner 1976), proximity seeking, in a physical sense, is limited by the culture's childcare practices. More fundamentally, the concept of "security" and the attachment-exploration balance presume that children are expected to be independent actors that modulate their movements toward and away from their caregivers. Exploration appears to have very different characteristics across cultures: in many cultures, young children do not rely as much on social referencing and are not used to organizing social interactions with others around objects (Gaskins 2006). Moreover, as stated before, stress regulation is much less visible in cultures that proactively adjust circumstances to avoid displays of stress (Keller and Otto 2009). Emotional display rules are socialized differently across cultures, just as are other behaviors, including in infancy (Ainsworth 1967; Otto 2014). Additionally, the coordination of caregiver-infant behavior could be based on other models. The concept of accommodation and responding to the needs of others as an integrated social unit could provide a more useful framework for describing the shared goals of an attachment dyad across cultures than the concepts of stress regulation, security or proximity/exploration. Kochanska (2002:192), for example, describes the parent-child relationship in dyadic terms, as a "mutually responsive orientation" between parent and infant, and Tronick and Beeghly (2011) describe this relationship as a dynamic open system.

In studies with older children in WEIRD cultures, the attachment-exploration balance is assessed in a manner very different than in infancy (Solomon and George 2008). In contrast to a focus on proximity seeking in infancy, researchers of attachment in older children focus instead on the quality of verbal discourse between caregiver and child: essentially, do children seek or regain psychological closeness to caregivers by sharing what the child was doing when the caregiver was out of the room, or in other ways, for instance, talking about personal matters (e.g., how the child was feeling) rather than other topics (e.g., admiring a wall decoration)? The quality of verbal discourse could be characterized as a kind of representational proximity seeking rather than physical proximity seeking. Although this example is based on attachment constructs of WEIRD families, we suggest that this approach be explored to see whether it could be adapted for thinking about proximity seeking in diverse cultural contexts as well.

Despite their limitations, there may be value in keeping the traditional behaviors in mind when studying attachment in other cultures as long as researchers are open minded about the cultural relevance of such behaviors, which need to be considered in the context of understanding beliefs, values, and behaviors that are locally relevant. Research balanced between the "insider" and "outsider" perspectives would gradually produce a list of potential attachment behaviors that might not all be seen in any one culture but which, as a whole, would provide guidance for how to recognize attachment behavior

in any culture and how to judge whether or not it is well organized and serves the needs of the individuals in the attachment system.

There are many difficulties in shifting gears to begin a study of attachment grounded within the cultural meanings for the groups being studied, as we advocate here. These difficulties are illustrated by the mixed messages found in the study by Mesman et al. (2016b), in which they review studies of individual differences in attachment in several cultures. In their introduction, they echo many of our concerns about the need for more of a cultural balance in attachment research, a greater recognition of the reality and importance of multiple caregivers (including siblings) in children's lives, and acknowledgment that there is cultural variation in how "sensitive caregiving" is understood and expressed (including rates of contingent responding and modalities of responsiveness) in diverse groups. Thereafter, however, they proceed to conduct a meta-analysis on existing studies of attachment in other cultures based on Western concepts of individual differences and rely on measures of individual differences (the Strange Situation or the Attachment Q-Set) that have many cultural assumptions built into them. Unfortunately, many of the studies included in their review were informed by only minimal information about cultural beliefs and practices; linkages between caregiving behaviors and secure attachment were frequently indirect and inferred. The measures themselves were at best only slightly modified to ensure cultural validity. Moreover, most made little attempt to link attachment classifications to child competencies in the wider world. Despite the inadequacies of the available data, Mesmen et al. conclude with confidence 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" (Mesman et al. 2016b:809). We suggest that this conclusion is premature for the reasons outlined above.

Measuring individual differences in attachment figure behaviors across cultures raises the same issues of cultural appropriateness as measuring infant behaviors. Traditionally, maternal sensitivity and responsiveness (and effectiveness) have been used to evaluate the quality of the attachment figure's behavior (Ainsworth et al. 1974). "Responsiveness" means different things in contexts in which caregivers are in continuous physical contact with infants compared to contexts in which caregivers and infants are physically separate. It also means different things in contexts where there are multiple caregivers present to anticipate or respond to infants' needs compared to contexts in which a single caregiver has primary responsibility. Similarly, some in the group felt that it was important to employ conventional measures of attachment figures' behavior (after adapting them as much as possible for culturally variable contexts) (e.g., Mesman et al. 2015) as a reasonable first step, while

others stressed that such an approach should be balanced by a careful reflection on what those measures mean in the particular culture in question while at the same time working to develop additional culturally specific measures that may be more meaningful for capturing the characteristics of caregiver behavior (e.g., Harwood et al. 1995; Yovsi et al. 2009).

Procuring certain kinds of additional information about cultural beliefs and practices would support the ability to judge the validity of measures of individual differences in infant and caregiver attachment behaviors and therefore the confidence in the interpretation of research findings. Cultural beliefs about age-salient child stages, competence, interdependence, trust, and security need to be gathered from key informants in a community and selected sample members in a study. The type of family system in which the child and caretakers are embedded also needs to be specified (e.g., joint, extended, single mother, conjugal, commuting, child sharing/lending practices). In general, the insights gained about a specific culture's beliefs, values and practices that we discussed above would all be crucial for identifying appropriate dimensions of behavior to use to evaluate individual differences, both those that fall within the cultural norms and those that fall outside them.

### **A Methodological Tool Kit**

To understand attachment in context, a suite of new methods is needed to investigate how attachment systems function in the daily lives of human infants and young children, as well as in infants and young juveniles from other primate groups, when they interact with those around them. To enable comprehensive study, both qualitative and quantitative methods are needed (Table 8.1). Rather than proposing a fixed research agenda, we favor a methods tool kit to direct enquiry into attachment within particular cultural contexts.

We contend that using mixed methods is essential. The epistemological assumption underlying the use of mixed methods is that in scientific endeavors, the world can be represented through both numbers and words, and that numbers and words (as well as photos and videos) should be given equal status in developmental science (Yoshikawa et al. 2008). Behaviors or contexts relevant to human development are not inherently qualitative or quantitative, but the methods of representation through which behaviors or contexts are recorded in research are. It is important to remember that these can be complementary, and at times even overlapping, methodologies. In their study of six European and U.S. communities that compared four major daily routine activities (meals, family time, play, and school- or developmentally related activities), Harkness et al. (2011:811) state that "qualities can be counted, and quantities can be described."

The world in which young children and caregivers maintain safety, manage psychobiological regulation, and engage in social learning is complex; it

**Table 8.1** Overview of a tool kit designed to aid in understanding attachment in context.

|  | Type of Data   | Specific Methods  |
|--|--|---|
| To assess cultural context and cultural interpretation of behavior | Observe the everyday life of children                  | Participant observation<br>Ethological observation<br>Videotaping and subsequent coding |
|  | Talk about beliefs and behaviors                       | Focused interviews<br>Elicitations (pictures, stories, videos)                          |
| To assess individual behavior                                      | Systematically code attachment behavior in individuals | Generic coding systems<br>Culturally specific coding systems                            |
|  | Characterize psychobiological functioning              | Genetics<br>Physiological assessments   |
|  | Assess attachment outcomes in children                 | Ensure measures are culturally valid<br>Redefine level of outcome measures              |

certainly is not linear, decontextualized, nor additive (Weisner and Duncan 2014). Families, the central contexts for the development of attachment systems, “are not frozen dioramas: they are alive, active and changing.” An intensive repeated-measures approach reaches beyond static representations of the family toward more dynamic models that depict “life as it is lived” (Repetti et al. 2015:126). Of course, at the same time, the world of attachment systems and their contexts can be represented *as if it were* linear, additive, and decontextualized. Thus, for very good *analytic* reasons, we need both numbers and text, both algorithms and photos or videos, whenever possible.

Qualitative and quantitative measures have different strengths and weaknesses. For instance, although quantitative methods are easier to analyze, they often require a commitment to predetermined categories. For quantitative methods, it is important to have a way of factoring in cultural differences in the interpretation of results. Qualitative methods often produce a very rich understanding, but it can be difficult to make comparisons across contexts or cultural groups. In addition, many people who come from one discipline may find it difficult to understand and value methods from other disciplines.

For these reasons, to study the cultural nature of attachment systems, our tool kit aims to balance qualitative and quantitative methods, including methods that emphasize a culturally derived, emic perspective as well as normed assessments that emphasize an etic perspective. For researchers who are less familiar with qualitative methods, useful criteria are available to assess qualitative and mixed methods work (Creswell and Plano-Clark 2007; Weisner and Fiese 2011). Partnerships and team research can make a multi-methods

approach easier; this can and should include community members where appropriate and possible.

The research practice we advocate for developmental scientists interested in studying attachment in cultural context is one that relies on this multi-method approach. Below, we describe a suite of measurement tools that we believe will produce more useful information about cultural beliefs and practices, and thus provide a meaningful context for the interpretation of observed behavior. For any given study, researchers could select from among these tools—the measures of context, the assessments of attachment behavior, and the description of outcomes—that they judge to be appropriate and feasible given the resources, sample, and time available.

### **Tools for Understanding Cultural Context and Cultural Interpretation of Behavior**

#### *Observing the Everyday Lives of Children*

Observations of infants in their everyday contexts are a good place to start in understanding the cultural organization of their interactions with attachment figures. Observing a particular infant across a number of events in typical daily life ensures a sampling of behavior from which to draw generalities. The particular events may differ across cultures or species, but their choice should be informed by the contextual issues listed above. A range of events could include potentially caregiving-rich occurrences (e.g., bathing, eating, nursing, and sleeping; opportunities for body contact; exploration of the environment; intentional social engagement) and other occasions when the functions of attachment (e.g., safety, psychobiological regulation, and privileged entry into the social world) are likely to be activated.

The age of the infant should also factor into deciding who, and when, to observe. Typically, research indicates that attachment systems develop in the first year of life in humans and great apes; thus, assessments often occur around an infant's first birthday. Clear-cut attachment could, in principle, occur between nine and 12 months of age (or during an equivalent infancy period in other species). It is also possible that cultural differences in age (in terms of achieving developmental milestones) might affect the trajectory of the attachment systems. For instance, there are theoretical reasons to believe that attachment may be linked to the onset of locomotion (Campos et al. 1992), which is known to vary across cultures (Adolph et al. 2010). There also may be cultural differences in the perception of the age at which attachment systems develop or the range of ages for which attachment behavior is considered appropriate; for instance, parental beliefs about infant recognition and memory of relationships may be related to lay perspectives on attachment and be the basis for organizing children's social worlds (Liu et al., this volume). Different attachment behaviors might also be expressed at different ages; for example, among the

Yucatec Maya, seeking comfort from an attachment figure is usually expressed by the infant's first birthday (if not before), but it is not until around the second birthday that fear is expressed when a stranger arrives at the infant's home. For each culture (or species) under study, the ages of observation of a sample should be set only after preliminary observations have allowed exploration of the normative ages of expression of attachment systems through observable behavior. Thus, one might choose a broader age range (e.g., three months to two years) to include early attachment behaviors and more sophisticated examples of the systems in practice.

*Participant observation.* Participant observation occurs while the researcher engages in the activities being observed, as part of the group. This is a central tool in basic ethnographic research (Dewalt and DeWalt 2010). The researcher may record entries about ongoing behavior if the activity allows it, or entries may be made soon after the events when there is time. Informal questions can be asked during the observed activity for clarification purposes. This kind of data tends to be qualitative, open-ended narrative descriptions rather than recording of specific behaviors. However, as with all observation, it is guided by research questions and interests. When partnered with other data, it may be the first data collected (along with open-ended interviews) because it does not impose a pre-conceived structure on the type and range of information that can be recorded. Once this type of research has been conducted for a given culture, it can be used as the foundation for the development of future research tools (bearing in mind that cultural change may make it necessary to repeat this step).

*Ethological techniques for observation in naturalistic environments.* Similar to, but distinct from, participant observation are ethological methods of observation (Lehner 1998). Both techniques observe and record ongoing behavior in everyday contexts. An important difference between the two is whether the observer participates while observing or is an external observer to the event. Many ethological methods are designed to quantify either the frequency or duration of specific behaviors. The data collected with this kind of observation is often organized by predetermined categories. There are a variety of ethological/observational methods that can be used to obtain samples and arrive at an overview of a "typical" day: spot observations, diary methods, time sampling, and all-day observations. Selection of length and frequency of observations may vary but should be broadly similar for all infants who are the focus of observation in a specific study of attachment and should represent the full range of children's experiences in their daily lives. As with participant observation, it is important to collect observations surrounding different kinds of events in the children's lives that are relevant for attachment.

*Videotaping child interactions with caregivers and others, and subsequent coding of behaviors.* While participant observation and ethological methods

provide valuable insights into children's everyday experiences through the observation of live behavior, video recording of naturalistically occurring behavior allows a wider range of methods to be used to describe the interactions. Videos can be analyzed using quantitative and qualitative procedures that might be used in other types of observation. Analysis of sequences of behavior is also a powerful tool for understanding how behaviors are related (Bakeman and Quera 2011). Capturing behavior on video means that it can be viewed multiple times and analyzed frame-by-frame. This also allows a focused microanalysis of interaction behavior between child and caregiver or others, including talk, which is difficult to observe and capture in real time (Erickson 1995). Because of the time-consuming nature of analyzing behavior at this level, it is used primarily for targeted examples of behaviors of interest. Sometimes, these examples are identified after a longer session, by identifying behavior that signals the beginning of an event of interest to the researcher. Other times, videotaping is done to capture short segments of behavior that is structured or elicited at the time it occurs. For quantitative measures, coding for occurrences of behavior, including inter-observer reliability, can be done at a time and place outside the context of the behavior occurring. In addition, unlike live ethnological observations, the system of categories of codes can be developed or revised post hoc if new distinctions come to light.

### *Talking about Beliefs and Behaviors*

Once observations have been conducted to learn about everyday activities, researchers can move on to asking for information directly from participants. In addition to interviews that seek to shed light on general cultural practices, there are a number of tools that can be used to talk about children's everyday worlds and their social interactions. Interviews may be profitably used to learn about the culturally specific meaning of attachment systems, figures, and behaviors.

*Focused interviews.* Interviews are a basic tool of the ethnographer (Spradley 1979), and there are many types of interviews (e.g., open-ended or structured). Just as with observations, minimal structure is often the best place to start for learning about a new culture, because as an outsider, one might not even know the important questions to ask. A significant advantage to focused interviews which hone in on details of children's everyday lives is that they can produce responses that are more comparable across respondents and across cultural groups. (The same issues discussed for observations should be considered when deciding what age range of infant to include in the research sample or in the materials to be used in the elicitations.) The ecocultural family interview (Weisner 2011b, c, 2016a) is a good example of a more focused interview for learning about young children's everyday lives and the cultural context of attachment. It utilizes a daily routine of activities as a universal frame for beginning a conversational interview with caretakers about their child's activities

and socially significant caregivers and others. The interview provides a conversational framework: “Walk us through your day. From the time you get up, what are the first activities for the day? And then the next activities...?” With this framework, the topics of focus depend on the study. For attachment, one might focus on identifying significant caretakers, distress, and experiences with multiple caregivers and strangers, as well as related topics. Common features of activities and settings can be identified that can then be explored across the day and compared across families, communities, and cultures, such as the ones we have proposed earlier.

*Elicitations.* Many of the beliefs and practices relevant for attachment are not explicit types of knowledge that can be easily accessed by asking direct questions about children’s behavior and its cultural context. In contrast to interviews, elicitations can support conversations that tap into implicit knowledge which may not emerge in a straightforward interview. Since attachment systems often operate below the surface of caregiver awareness, this method is a particularly important tool for learning about attachment. Elicitations can either be done with individual respondents or focus groups. Typically, they use some type of prop to introduce a concrete behavior or event into the interview so as to elicit information and opinions about it. The targeted behaviors and events may be drawn from the variation observed in the specific culture under study or from variation across cultures. When drawn from a specific culture, individuals represented in the stimuli should be unknown as individuals to the respondents but recognizably members of the same culture. When drawn from a range of cultures (chosen for their diversity in geographic location, economic system, etc., to provide some representativeness), elicitations are a promising cross-cultural tool that can be used to assess meaningful across-group comparisons. Below we describe three types of elicitations that can be useful for learning information about beliefs and practices surrounding attachment systems. A partial list of potential events/sequences might include nursing/feeding, response to infant crying, approach of caregiver(s) to infant (or initiation of social interaction), approach of toddler to caregiver(s) (or initiation of social interaction), putting a child to sleep, bathing, playing a social game, demonstration of affection, demonstration of anger/rejection, reaction to stranger, and reaction to attachment figure leaving child:

1. **Picture Cards:** To draw the attention of the participants to specific topics of behaviors and to elicit answers more easily, a semi-structured procedure using picture cards which depict caregivers (from the sociocultural community or outside of it) interacting with children is a helpful tool (Keller et al. 2004a). These picture cards may represent diverse child states (e.g., distress) and typical responses from others, or they may depict diverse contexts for children’s everyday behavior (e.g., where and how children sleep). Respondents are invited to describe what they see, and their interpretation of it: What would you

think about this? What would you do? Why is it important for the child? Responses can be analyzed qualitatively or coded by categories and analyzed quantitatively.

2. Vignettes and story stems: Short vignettes can be developed to illustrate a variety of circumstances that are likely to produce insight into the beliefs, motivations, behaviors of subjects being interviewed (Finch 1987). Like pictures, vignettes should capture context and behavior that produce opinions reflecting cultural values and practices. Likewise, the interviewer can initiate a story, providing context, characters, and circumstances in a story stem (Emde et al. 2003), but stop at some point of tension to ask the respondent to complete the story.
3. Videos of children's social interaction with attachment figures: These can be used to ask respondents to describe, interpret, and comment on what they perceive is happening in the video. Respondents can be shown videos of their own behavior, of others who are unknown to them but from the same cultural group, or of people outside their cultural group. This method, developed by Tobin et al. (1989), has been particularly successful in producing illuminating conversations where participants analyze the meaning and value of complex behavior such as that found in attachment systems.

### **Developing New Measures of Individual Behavior**

Past attachment research has not inspired cultural confidence in its ability to identify which specific behaviors should be observed and used to measure individual differences in adaptiveness. As a result, we cannot advocate for Western-based, structured observations of attachment, such as the Strange Situation, for at least two reasons. First, the empirical base of the Strange Situation derives primarily from Western, industrialized cultures. It is unclear to what extent the psychological experience of such a structured observation, and the classifications derived from it, are valid in non-WEIRD cultures, especially when multiple caregivers are involved. Second, even in WEIRD cultures, the caregiving antecedent of Strange Situation classifications (i.e., parental sensitivity) is, at best, controversial, both in infancy and during the preschool period (Cassidy et al. 2005; Verhage et al. 2015). We believe that using naturalistic observations to examine how children and their caregivers direct their attachment behaviors to each other will reveal more useful information about the nature and quality of attachments in a given culture than a structured observation. We propose the following methods for characterizing the quality of interaction.

#### *Generic Coding System for Individual Attachment Behavior*

We are optimistic that the Attachment Q-Set (AQS)—a 90-item q-sort procedure developed by Waters (1995) to assess quality of attachment behavior in

the home—could be adapted for use across a broad range of cultures. Although this assessment was developed for and used primarily in Western cultures, we discuss it as a general methodology that could be adapted for a particular culture or even for cross-cultural comparison. We also note that a q-sort has been developed for rhesus monkeys (Kondo-Ikemura and Waters 1995).<sup>2</sup>

AQS measures quality of attachment by rating observed behavior along a continuous security dimension, rather than classifying behaviors into specific categories. In the current measure, individual AQS items are pre-rated by attachment experts along a security dimension ranging from “very much like a secure child” to “very much unlike a secure child.” As discussed above, we would propose that the dimension should be modified to reflect a more general concept such as “adaptiveness,” “regulation,” or “well-being,” rather than “security.” The individual items would have to be rated on this new dimension according to cultural understandings of what the concept means and what behaviors reflect it.

In the current measure, the evaluation of a particular child consists of sorting these items in order of how much they characterize the behavior observed, and then using the ratings to determine where on the continuum of attachment security the child falls. AQS has been used to assess quality of attachment with nonmaternal attachment figures and in environments external to the home (e.g., in daycare environments) to examine secure base behavior to a daycare provider (Waters et al. 2017). It also provides flexibility in terms of examining specific child behaviors (with specific items), and thus enables a derivation of a specific attachment profile per child, rather than just a simple “score.”

To be adapted for use in other cultures, such an approach would need to articulate clearly what a hypothetical child, at both ends of the continuum, would look like in a given culture, based on a strong working knowledge of core attachment constructs and on how attachment behavior is manifested in the specific culture. Based on this cultural understanding of normative behavior, specific items could be developed for rating individual children. Part of this process would involve determining to which degree and in what ways a criterion sort for a specific culture is similar to or deviates from the Western criterion sort that is currently available.<sup>3</sup> We anticipate that there will be significant differences for cultures that limit infant exploration, that have ways of demonstrating affection and closeness that differ from the West, that rely more on close body contact and less on distal face-to-face contact, or that have multiple caregivers with highly differentiated functions. For example, there may be a need to include items related to concepts other than secure base, because that concept may put too much

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<sup>2</sup> Although the Strange Situation Procedure is not appropriate for use across cultures, it may be appropriate for assessing attachment in nonhuman primates, but only in certain settings, such as human-based laboratory nurseries set in WEIRD cultures (e.g., van IJzendoorn et al. 2009).

<sup>3</sup> Since this measure was developed for use in WEIRD cultures, our discussion is phrased in terms of how it might differ if redeveloped for use in other cultures. This is not to assert that the WEIRD characteristics and behaviors captured in the AQS should serve as a standard for use in other cultures, merely that it is by default the starting point for redesigning this measure.

emphasis on the child as an individual (being primarily characterized as seeking distance and returning when there is need). Here, one could look for other systems in which social trust is displayed (e.g., co-participation and collaboration), and items describing these systems could then be developed. To achieve a level of confidence in the ratings of the items, one could ask members of the culture to rank the items according to an idealized concept of adaptiveness (or regulation or well-being) in attachment relationships.

Classifying the current items in the AQS in terms of the constructs to which they refer is an important step toward illuminating the cultural organization of the measure. This step would also potentially facilitate the development of a new rating system for another culture, by allowing the developers to identify existing constructs that might be similar to constructs in the culture being studied. Where a construct is found that is similar for the two groups, the items that represent that construct would become candidates for being appropriate for the non-Western culture. For example, if “reaction to strangers” is a culturally appropriate construct, then the items related to the infant’s response to strangers could be included in those that are considered for use, either as is or modified to reflect cultural practices. If it is not an appropriate concept, they could be dropped altogether. We also envision that such an approach could be used to assess children’s attachment quality to an overall caregiving system, not just to specific individuals. If it turns out that there is a subset of items that apply equally well across a range of cultures, then it could become a valid tool for comparison.

To ensure that the full range of attachment behaviors in a given culture is being measured, any significant constructs that are not represented in the Western-based measure would need to be identified. Items based on these constructs would also need to be developed. These items could then become a resource for working in yet another culture, along with the current types of behavior measured in the AQS. They could also, in fact, be used to enlarge the range of constructs studied in WEIRD populations.

For those not familiar with the AQS, we list below a few examples of current items (both high and low on the security dimension) that may be found to have relevance for understanding attachment systems across a range of cultures, even if they need to be modified in their particulars. AQS items that are high on the security dimension it is designed to measure include:

- Child often hugs or cuddles against caregiver, without the caregiver asking or inviting the child to do so.
- When caregiver says to follow, the child does so. (Do not count refusals or delays that are playful or part of a game unless the child clearly becomes disobedient.)
- Child recognizes when caregiver is upset, becomes quiet or upset, and tries to comfort the caregiver.
- If held in caregiver’s arms, the child stops crying and quickly recovers after being frightened or upset.

AQS items low on the security dimension include:

- Child often cries or resists when caregiver puts the child to bed for naps or at night.
- When child is upset about caregiver leaving him, the child sits right where he is and cries. Doesn't go after the caregiver.
- Child is easily upset when caregiver makes the child change from one activity to another, even if the new activity is something that the child often enjoys.
- When something upsets the child, the child stays put and cries.

### *Culturally Specific Coding Systems for Individual Attachment Behavior*

Capturing the meaning of ethnic and cultural differences in caregiver-child interactions may be subtle, yet significant. For instance, in a large multiethnic sampling of preschoolers and their primary caregivers, factor scores for caregiver and child behavioral ratings exhibited different patterns of correlations, with independent measures of family environment and child social behavior. This suggests that existing measures may not capture parent-child interaction patterns across different groups (Bernstein et al. 2005). Culturally specific tools provide an important balance to more general ones, such as the AQS, to ensure that cultural patterns of behavior are adequately represented. Constructing a tool from the bottom up increases the chances that the tool is culturally appropriate and that unrecognized cultural biases in terms of values or priorities have not been imported into the study through the measure. These culturally specific rating tools can be used to characterize children's behavior, caregiver behavior, or the attachment system as a whole. By providing a different perspective, they can be used to inform the process of developing tools that could be used across cultures.

A good example of such a measure has been reported by Yovsi et al. (2009). They study caregiver-infant interaction in two cultural groups, Cameroonian Nso and German middle class, using one measure constructed on the Western concept of sensitivity (Ainsworth et al. 1974) and another based on the Nso concept of responsive control (defined by emotional involvement and bodily closeness in interactions with a goal of obedience and responsibility). Perhaps not surprisingly, Yovsi et al. found that each group scores higher than the other on their own culture's measure of interaction style. The Nso measure is not only a useful tool for highlighting the cultural values of that group in contrast to other groups—that is, it measures behaviors that the caregivers of that culture value, not those valued by Western culture—but it also could be used to identify caregiving behavior that would be considered maladaptive for children forming healthy attachments in that culture.

*Distinguishing between Generic and Culturally Specific Coding Systems*

At face value, these two types of methods may appear similar. Both methods can be used to characterize children's behavior, caregiver behavior, or the attachment system as a whole. Both are intended to be culturally sensitive, but they differ in one very significant way: the culturally specific observational tool is informed initially by the understanding of cultural meaning that organizes the infant's social world and the model of caregiving. Only secondarily is it concerned with comparison across cultures.

In contrast, a sorting tool based on the AQS would begin from the current Western model of attachment and work toward a more inclusive characterization of other cultural models by filtering out or modifying inappropriate items. Culturally specific rating systems are inherently less likely to be biased, whereas the AQS is more likely to be able to be used across cultures for comparison. The goal for both approaches ideally would be to end up with measures that are culturally valid in a single culture, but also allow legitimate comparison across cultures. If thoughtfully designed and evaluated, they produce very similar methods. A culturally modified AQS can represent a culture's perspective quite accurately, and culturally specific rating tools can be developed that allow generalizations so that they can be meaningfully used across cultures. Both could focus on behaviors that reflect the two functions of attachment proposed in this chapter.

### **Characterizing Psychobiological Functioning**

In our reconceptualization of the functions of attachment, the first function concerns the regulation of psychobiological functioning. To assess an infant's more biologically based functioning, we include here tools that measure aspects of physiology and/or genetics.

Gene-environment interactions are associated with cognitive, affective, and behavioral outcomes in humans and other animals (e.g., Coll et al. 2004), and there is every reason to think that they also are related to the development of attachment systems (e.g., Bakermans-Kranenburg and van IJzendoorn 2006). DNA samples can easily (albeit perhaps somewhat expensively) be obtained from saliva using cheek swabs (e.g., Cicchetti and Rogosch 2012), from which genotypes, the presence of risk alleles (e.g., for neurotransmitters such as serotonin or dopamine), and neuropeptides (e.g., oxytocin) relevant to attachment can be obtained. In studies where such genetic analyses have provided evidence for differential susceptibility among infants based on their unique physiological or genetic profiles, some infants may be more reactive to environmental variables than others; that is, they may be more likely to show negative outcomes in adverse environments and positive outcomes in good environments (e.g., Bakermans-Kranenburg and van IJzendoorn 2007). It appears,

however, that few of these genetic studies of attachment have included non-WEIRD samples.

Physiological assessments of stress reactivity (e.g., salivary cortisol) may be useful in a tool kit. Evaluating changes in cortisol before and after exposure to stressful events could be used to evaluate how the attachment system functions to regulate stress in different cultures. Individual differences in stress reactivity via the functioning of the autonomic nervous system could also be measured, by using cardiac measures such as heart rate or heart rate variability. This requires that individuals be fitted with heart rate and respiration rate monitors. Other related cardiac measures include vagal tone and respiratory sinus arrhythmia. Feldman et al. (2014) demonstrated that early synchrony in mother-infant interactions, including skin-to-skin contact, facilitates infants' biobehavioral regulation with long-term consequences. Other studies have even administered small "doses" of oxytocin to ascertain the effect of this hormone on attachment-relevant behaviors, such as trust (e.g., Kosfeld et al. 2005).

### **Assessing Attachment Outcomes in Children**

Outcome variables are measures of behavior or capacities in behavioral systems that one might expect to be related to the quality of attachment. These outcomes could be conceptualized as cross-cultural differences based on normative patterns of attachment in two or more cultures. Alternatively, they could be conceptualized as within-culture differences based on individual patterns of attachment. We would not expect all behaviors to be influenced by the quality of attachment systems' functioning. We do, however, have some confidence in choosing a set of behaviors that appear to be closely related to attachment in WEIRD groups as potential candidates of where there might be important outcomes based on the qualities of attachment in other cultures (either at the cultural group or individual level). The following outcome domains are identified as being potentially related to differences in infant attachment systems:

- The quality of children's other relationships (e.g., other family members, other children).
- A child's socioemotional and sociocognitive competence (e.g., empathy and prosocial behavior).
- Cognitive competence (and relatedly, language competence).
- A child's level of competence with emotional regulation and adjustment. Problems in this area have been categorized by psychologists as consisting of both internalizing (e.g., depression, anxiety) and externalizing (e.g., disruptive behavior) problems.
- Substance and patterns in children's play.

There are a number of measures of specific variables for each of these outcome domains that exist for use with small children in Western cultures. The problem

with almost all of the existing measures is that they have been conceived from and developed to work in one particular (WEIRD) culture. All of the concerns expressed above about using standardized measures of attachment in other cultures apply equally to all of these measures of behaviors in these five outcome domains. For each measure, the cultural values and practices would have to be understood before the measure could be adapted to reflect them. To be useful in a culturally informed study of the outcomes of attachment, measures would need to be examined for their cultural appropriateness and validity, building on the cultural knowledge that was produced in the service of studying attachment itself.

At a practical level, to achieve cultural validity in terms of the meaning of the activities involved, each measure would have to be piloted on children in each particular culture and adjusted or redesigned to ensure that the social assumptions of engagement in the activity and the domains of responses are appropriate. For instance, in some cultures, it would be inappropriate for a child to play “a game” with an adult. In others, expecting a child to provide a fluid verbal answer to an adult might be inappropriate. As we have suggested for attachment itself, it would be methodologically less problematic if these abilities could be observed in more naturalistic settings, by defining everyday behaviors that would be evidence of the same constructs that are usually measured in an assessment activity. If naturalistic observation is not feasible, the next best option would be to develop new assessments (e.g., based on observing and analyzing relevant naturalistic behavior) that would be more appropriate (in setting and activity) than many laboratory tasks.

More centrally, in addition to the methods being culturally appropriate, the constructs being measured need to be culturally meaningful. What it means to negotiate a social relationship, to be competent in the areas of socioemotional or sociocognitive functioning, to engage in specific kinds of problem solving or other cognitive behavior, to regulate emotions, or to participate in social play are all highly culturally specific (Gaskins 2017). The problem is more complex than merely developing tools that rely on culturally appropriate rules of engagement. The concepts themselves and their categories also need to be locally grounded for each culture to ensure that they are meaningful and representative. This issue makes comparison across cultures particularly difficult to obtain.

Another strategy that avoids problems, which occur when one culture’s concepts and measures are used to assess and evaluate individuals from other cultures, is to define the outcome of attachment at a more abstract level—one that is less culturally specific in terms of its meaning. For example, one candidate could be the claim that certain qualities of attachment enhance the child’s psychological well-being. To evaluate this claim, one could define well-being as the engaged participation of the child in the activities deemed desirable by the child’s and family’s cultural communities. Such an approach puts competence, initiative, and social trust in context by basing their meanings on the

psychological experiences of children as they engage in meaningful cultural activities, leaving the specific measures to be tailored for each culture. In this model, the goal of research on outcomes in any culture would be to discover how the qualities of attachment systems are related to young children's psychological well-being.

An important caveat is that outcomes should only be measured after the age when attachment systems are established, and we do not know if the timing of the development of attachment systems is the same across cultures (or across contexts in other species). If we assume that developmental timing is the same and that attachment systems develop in the months surrounding the first birthday (or equivalent life stage), then measuring outcomes in the second year of life would be an appropriate time frame (for human infants). However, as argued above for observations and interviews, the assessment time points are best informed not only by evidence of attachment systems in the infants' and caregivers' behavior, but also by the culture's beliefs regarding the development of attachment behaviors. Cultural practices about changing children's caregiving arrangements suggest that some cultures recognize flexibility and adaptiveness in the attachment system far into early childhood (Lancy 2014).

One potentially interesting research question is whether attachment systems come online at more or less the same age, regardless of cultural understandings about such systems, or do they become observable in behavior in accordance with cultural expectations? If there are differences in the developmental timeline of attachment across cultures, then we must ask: Are there also differences in how attachment is related to other developmental milestones and abilities? From research in European and American contexts, stronger relationships are found with attachment at a more proximal age; over time, predictive power weakens (United Nations 1989; Thompson 2008b). These relationships may also vary across cultures.

## Summary

As originally conceived and still practiced today, traditional attachment theory does not recognize and is unable to describe adequately, or account for, significant variations in attachment systems across cultures and across species. In this chapter, we have proposed ways to theorize and measure attachment systems that will respect and be informed by cross-cultural and cross-species perspectives. By necessity, the complex and often obscure nature of the cultural and ecological contexts that organize attachment systems must be studied in detail if we are to understand and describe accurately the group specific nature of healthy attachment systems around the world. At the same time, we recognize the importance of measuring individual differences within a culture and have suggested specific research strategies to permit them to be measured, evaluated and compared in culturally valid ways.

To enable effective research, different tools are needed to studying attachment systems within and across diverse cultures as well as in other primates. We have proposed tools that focus on understanding the cultural context and the cultural interpretation of behavior, including various kinds of observations and interview methods. Such methods are often missing in cross-cultural studies of attachment, but we feel they are essential in providing an accurate and informative context for understanding attachment systems and their meanings. We have also proposed a number of measures of individual behavior, including the qualities of interactions between infants and their attachment figures, psychobiological functioning, and outcomes in multiple domains of children's development that might be related to the qualities of their attachment systems. For all of these, we have emphasized the importance of using culturally informed, appropriate measures, even while recognizing the value of measures that permit valid comparisons across groups.

As a whole, the list of research tools presented here exceeds the capacity of any one research project, let alone any one researcher. We have thus used the model of a tool box to refer to a wide range of approaches to measure the meaning and behavior involved in the cultural organization of attachment systems. We hope that this will inspire researchers to think more broadly about the limitation of traditional approaches, to consider what new approaches are needed to study attachment systems across cultures and species, and to seek cross-disciplinary resources to conduct their investigations using multiple kind of methods. We firmly believe that by widening the lens, theoretically and methodologically, researchers will come to a richer and more accurate understanding of attachment, both as a universal system structuring human infants' experience (and the experience of infants in related species) and as culturally and contextually organized systems that demonstrate attachment's variation and flexibility.

Finally, our discussions included attention to real-world applications in the areas of policy and practice. This discussion is presented separately in Chapter 13 (this volume).