

Development

The Cultural Solution of Universal Developmental Tasks

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Abstract

This chapter proposes a unified framework based on evolutionary theorizing and cross-cultural and cultural anthropological approaches that may serve as a guideline for the systematic integration of the concepts of culture and development. The basic idea of the ecosocial model of development is that cultural milieus (i.e., culture-specific patterns of socialization goals, ethnotheories, and parenting styles) have evolved as adaptations to specific ecosocial contexts. *Development* is the culture-specific solution of universal developmental tasks that lays the ground for gradually diverging developmental pathways. Cultural self-ways based on specific conceptions of autonomy and relatedness provide structural continuity across ontogenetic development and influence the timing, stability, dynamics, and gestalts of developmental processes. Examples from the authors' multicultural research program highlight the systematic nature of cultural developmental pathways.

Keywords: developmental pathways, autonomy, relatedness, developmental tasks, parenting, socialization strategies

I. INTRODUCTION

The role of culture in understanding human psychology has an ancient origin but a relatively short modern history and is still frequently subject to neglect. The idea that there is a continuous interaction between humans and their environments dates back to ancient Greek philosophers and historians, who

believed that ecology leads to reciprocal relationships among personality, culture, and social institutions (Triandis, 2007; for historical analysis see also Jahoda & Krewer, 1997).

Despite these early origins, theories regarding culture's influence on psychology formally began with Moritz (Moses) Lazarus (1824–1903). He applied the laws of individual psychology to nations and humankind, establishing a new branch of research called *Völkerpsychologie* (folk psychology). Lazarus, along with his brother-in-law, Heymann Steinthal, conceived of *Volksggeist* (folk consciousness) as the structure of congruent, historically emerged values. *Völkerpsychologie* as a science, however, became popular in psychology only much later and mainly with reference to Wilhelm Wundt's (1832–1920) 10-volume edition of *Völkerpsychologie*. Based on Lazarus' and Steinthal's ideas, Wundt conceptualized *Völkerpsychologie* as the cultural-historical analysis of the *Volksggeist*, especially language, art, myth, and customs. He understood human psychology and psychological development as determined, not by sensation alone, but also by the meaningful influences of the individual's spiritual and mental [*geistig*] environment—in other words, its culture.

The early recognition of the constitutive role of culture in psychology has not become incorporated into mainstream psychology to date despite claims, like those of Joan Miller (1999), that psychology is and always has been cultural. Instead, culture has been compartmentalized into disciplines, such as cross-cultural psychology, cultural psychology, and indigenous psychology, that incorporate different conceptual ideologies and methodological approaches (Greenfield & Keller, 2004; Triandis, 2007). In order to develop a comprehensive theoretical framework, findings from these disciplines must be systematically integrated into a broader theory regarding the mutual constitution of culture and psychology. In this chapter, we develop such an integrative theoretical approach, one that allows the description, explanation, and prediction of cross-cultural similarities and differences in psychological processes and their ontogenetic development.

This conceptual framework is based on a multicultural, longitudinal research program. As change is the essence of development, change also characterizes our research program. Our studies began in the 1980s with an ethological perspective that was aimed at demonstrating the universal nature of developmental phenomena across different cultures (e.g., Keller, Schölmerich, & Eibl-Eibesfeldt, 1988). In line with the dominant view that is still popular today, we equated culture with country or ethnic group. We noticed tremendous quantitative differences between samples (for example,

in duration of eye contact) but at that time were focused on universal occurrence. After we became acquainted with evolutionary theory, these quantitative differences became our focal interest, because it did not make sense, evolutionarily, to assume that people living in extremely diverse ecosocial environments should favor the same behavioral patterns. On these grounds, the differentiation between universal predispositions (e.g., parenting systems in the component model of parenting, discussed later) and their actual manifestations in parenting styles became conceptualized (e.g. Keller, Yovsi, & Völker, 2002). Cultural anthropological and cultural psychological research programs such as the famous six-culture study set up by John and Beatrice Whiting from Harvard university in the 1950ies, as well as the work of Robert LeVine, Patricia Greenfield, and others, stimulated reflection about the meaning of behavioral differences and the cultural meaning systems that are associated with and inform different behavioral strategies. Looking for overarching cultural meaning systems that provide a theme for structural continuity across ontogeny, we became fascinated by the conceptions of independence, interdependence, and autonomy or relatedness and their associated self-ways as expounded by authors such as Markus and Kitayama (1991) and Çiğdem Kağıtçıbaşı (2005). In line with our approach being in a state of flux, we have also modified and reconceptualized these basic themes so that they better fit the developmental perspective and thus realities of socialization strategies in the diverse ecosocial contexts we studied. Based on the concepts of biological and cultural adaptation and the literature on social change (especially the role of formal schooling), we developed a conception of culture as the representation of ecosocial contexts that allows the comparison of similar and different cultural milieus. What did not change over these different phases of theory development is the fascination with infancy and its constitutive role for shaping diverging developmental pathways.

In the next part of this chapter, we present and discuss our conceptual framework that synthesizes evolutionary theory with cultural, cross-cultural, and cultural anthropological approaches. The basic assumption is that development is the interface between culture and biology (Keller, Poortinga, & Schölmerich, 2002) and that developmental processes embody the culture-specific manifestations of universal behavioral predispositions. In the third part of the chapter, we present empirical evidence for multiple cultural pathways. In the final part, we draw some conclusions and present an outlook for the future.

II. THE ECOCULTURAL MODEL OF DEVELOPMENT

A. Human Development as a Process of Adaptation to Contextual Demands

Human behavior and experience are profoundly influenced by species-specific, panhuman psychological mechanisms that evolved as adaptations to solve particular challenges faced by our ancestors (Tooby & Cosmides, 1992). This evolved psychological architecture does not lead to universal outcomes; instead, it allows humans to flexibly cope with their environmental challenges and constraints. Building on this inherited architecture, a behavioral repertoire emerges in interaction with environmental demands. For instance, infants can distinguish different languages shortly after birth. Exposure to a particular language environment during the first months of life restricts this general ability to the environmental input (Falk, 2009; Mehler, Jusczyk, Lambertz, Halsted, Bertonicini, & Amiel-Tison, 1988).

From this perspective, the genetic endowment cannot be understood as expressing fixed, deterministic relationships between genes and behaviors or between genotype and phenotype (cf. Plomin, 1994). Instead, the conception of *genetic preparedness* conveys the idea that behavioral acquisition (i.e., learning) is organized along biologically determined time windows that allow for the low-cost acquisition (i.e., phase-sensitive or “easy” learning) of specific skills and information. Importantly, these learning processes critically depend on environmental input and therefore are context sensitive (Boyd & Richerson, 1985; Draper & Harpending, 1982). However, learning is not infinite. Rather, the inherited genotype defines a phenotypical reaction norm that influences the behavioral expressions; (for example, the perception of sounds is restricted to a particular spectral frame).

The biological foundation of human psychology is based on two types of genetic programs: fixed genetic programs and open genetic programs (Mayr, 1974; see also the discussions of environmentally stable or labile genetic programs by Hinde [1999] and of stable and closed programs by Chisholm [1999]). These two types of programs constitute continua across the life cycle, influencing not only static characteristics but also change. Fixed programs translate directly into behavior and other developmental outcomes (e.g., morphology, physiology). Although these processes necessarily depend on environmental input, environmental input does not act differentially on them (cf. Nelson, 1999). Open genetic programs are environmentally sensitive and produce differential effects depending on differential environmental conditions

(Mayr, 1988). Open programs are part of the environmental malleability that allows context-sensitive learning and differential development to occur. Proponents of interpersonal neurobiology argue that the structure and function of the developing brain are determined by how experiences, especially within interpersonal relationships, shape the genetically programmed maturation of the nervous system (Schore, 1994; Siegel, 1999).

As a result of these complex processes, human infants are genetically predisposed to acquire the environmental information that is necessary for neurophysiological and psychological development. These processes are key to understanding human development.

1. Infants' Learning Environment: Learning as the Human Mode of Development

A conception of learning based on open genetic programs cannot be understood as a general learning mechanism with universal properties. Rather, "the more we have studied learning abilities, the more impressed we have become with their specificity" (Trivers, 1985, p. 102). Learning is specific to the content that is to be learned and the timing when it is learned. This interplay between content specificity and timing is regarded as an "epigenetic rule" (Wilson, 1975) or "central tendency" (MacDonald, 1988) that directs attention to specific (environmental) cues at specific times.

During the first year of life, interpersonal experiences are embedded in caregiving systems that have evolved as co-designs to infant's neotony, mainly entailing the regulation of physiological and behavioral functioning (Hofer, 1987), protection from predators (Bowlby, 1969), development of group cohesion (Dunbar, 1996), and the emergence of a sense of self (Keller, 2002). In general, caregiving systems can be seen as sets of evolved behavioral propensities that are activated to meet the demands of particular environmental conditions.

We conceive of behavioral systems as relatively independent functional units that regulate social interaction (Bowlby, 1969; Hinde, 1982). These parenting systems are activated and terminated by endogenous cues (e.g., the behavioral and motivational inclination to closely hold an infant) and environmental cues (e.g., infants' fussiness). Behavioral regulation of these systems occurs intuitively and unintentionally, as shown, for example, by very fast responses to infants' communicative cues (see Heyes & Dickinson, 1993; Keller, Lohaus, Völker, Cappenberg, & Chasiotis, 1999; Papousek & Papousek, 1991).

The context-sensitive manifestations of these parenting systems and associated interactional mechanisms compose specific parenting styles that have evolved as adaptive solutions to specific recurrent problems. The flexible organization of parenting allows adaptations to a wide variety of potential environments (cf. Keller, 2000; Keller, Lohaus et al., 1999; Rothbaum, Pott, Azuma, Miyake, & Weisz, 2000; Rothbaum, Weisz, Pott, Miyke, & Morelli, 2000). The component model of parenting differentiates six parenting systems and four interactional mechanisms that are universal predispositions; these systems and mechanisms are activated to different degrees depending on the ecosocial context and, in that way, constitute context-specific styles of parenting (Figure 2.1). The parenting systems are modulated and shaped by the interactional mechanisms of warmth, contingency, mode of attention, and sensitivity to positive or negative emotionality. The six parenting systems are described in more detail as follows.

1. Primary care: This parenting system is defined by providing primary care for infants in terms of food, shelter, and hygiene. Primary care characterizes any parenting effort and certainly represents the phylogenetically oldest parenting system. Primary care nurtures and maintains survival directly. Reliable attention to needs in terms of primary care reduces distress (Hitchcock & Minturn, 1963) and can be regarded as the basis of the sense of security and trust (Bischof, 1985; Bowlby, 1969; Erikson, 1950).

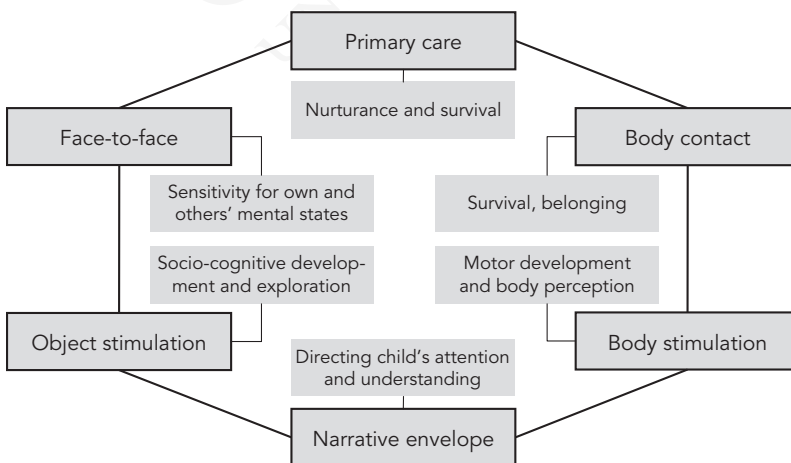


FIGURE 2.1: The component model of parenting: functions of the different parenting systems.

2. **Body contact:** A second system of parenting is defined by bodily proximity through holding and carrying. Body contact may serve survival functions, because carrying a baby protects the child from exposure to life-threatening dangers. Body contact in primates can be seen in carrying, clinging, and grooming behaviors, which support mother–infant bonding as well as group coherence (Dunbar, 1996; Harlow & Harlow, 1962). The psychological function of body contact may encourage togetherness and belonging and is related to later norm internalization and compliance (Keller, Yovsi, Borke, Kärtner, Jensen, & Papaligoura, 2004; MacDonald, 1992; see later discussion).
3. **Body stimulation:** A third system of parenting is also based in body communication. Caregivers stimulate their infants by providing them with motor challenges through touch and movement (Keller, Schölmerich, & Eibl-Eibesfeldt, 1988). Body stimulation can be functionally related to motor development (see later discussion). The psychological function of body stimulation may generally consist of intensifying body perception, which, in turn, supports action planning and execution.
4. **Object stimulation:** This fourth parenting system links the infant to the nonpersonal world of objects and the physical environment in general. It focuses on extradyadic attentional processes. The psychological function of early object stimulation consists in nurturing sociocognitive development and infants' exploratory activities (Keller, 1992).
5. **Face-to-face:** The fifth parenting system consists of face-to-face exchange and emphasizes mutual eye contact (Keller, Chasiotis, & Runde, 1992). The psychological function of mutual gaze consists in sensitizing infants for others' and their own psychological states and supporting infants' awareness of self-efficacy through facial imitation and visually contingent responses (Gergely & Watson, 1999; Kärtner, Holodynski, & Wörmann, in press; see later discussion).
6. **Language and the narrative envelope:** The sixth parenting system is constituted by the frequency, structure and content of language use in early caregiver–infant interaction. Parents and

other caregivers use verbal and vocal behavior in communicating with infants on a routine basis. Language may have evolved in the context of early child–caregiver interaction (Falk, 2009). The psychological function of language and the narrative envelope is to direct the child’s attention and understanding, and language is the primary tool for transgenerational transmission and cultural learning.

Four types of interactional mechanisms—namely attention, warmth, contingency, and responsiveness to the expression of emotions—are also universal behavioral endowments; they modulate these parenting systems (Keller, 2003) and can occur in manifold manifestations. For example, attention can be exclusive and dyadic or co-occurring and distributed, depending on the resources for infant care in terms of time and energy. Warmth can be transmitted emotionally through smiling (i.e., facial distal), or physically (i.e., bodily proximal), or as a combination of these two modes. Contingency represents the fast, intuitive reaction to infants’ cues, which can also occur in facial-distal or bodily-proximal modes. In the literature, warmth and contingency are usually treated as a unified conception, as in the definition of sensitivity in attachment theory (Ainsworth, Blehar, Waters, & Wall, 1978) or in the conception of intuitive parenting (Papousek & Papousek, 1987). However, following MacDonald’s (1992) analysis and empirical evidence that we collected (Keller, Lohaus, et al., 1999; Keller, Völker, & Yovsi, 2005), we conceive of warmth and contingency as two distinct mechanisms. We further define differential responsiveness to positive and negative emotions as interactional mechanisms that modulate parenting behaviors and strategies (Davidson & Fox, 1982). Although they are basically independent from each other, there are different probabilities of co-occurrence within and across the parenting systems and interactional mechanisms. The resulting configurations represent adaptive strategies in particular contexts. These strategies are highlighted later in this chapter.

2. Humans as a Cultural Species

Culture can be regarded as the human mode of coping with the environment, and humans, as a species, must be biologically prepared to acquire, create, and transmit culture (Laland, Odling-Smee, & Feldman, 2000; Tomasello, 1999). Although there are certainly hundreds of definitions of culture in the literature (for a famous summary, see Kroeber & Kluckhohn [1952] listing already

more than 150 different definitions), there seems to be a general consensus that culture consists of shared meanings and shared activities that are generated and transmitted through social encounters and interactions with the environment. One important mechanism in this process is the human tendency to interact with and share experiences with others. This tendency dramatically affects the ability to adapt to local conditions (Tomasello, 2008). Humans inherit niches that are composed of material and social resources that ancestral generations have accumulated.

Although development and learning are lifelong processes, infancy and childhood play a special role in setting the stage for acquisition of environmental competence. Humans have a life history in which they spend a disproportionate amount of time in a pre-reproductive phase (Bjorklund, 1997). During this phase, cultural meanings and practices are acquired in the particular environment in which they function through processes of active participation and reconstruction. Before we discuss ontogenetic pathways in more detail, we introduce in the next two sections our conception of culture and the biological predispositions necessary to acquire it.

B. The Conception of Culture

We understand culture as a socially interactive process with two main components: shared systems of activity (cultural practices) and shared systems of meaning (cultural interpretations). According to this model, culture is situated in everyday contexts and behaviors (Greenfield & Keller, 2004; Keller, 2007). It is primarily through repeated everyday practices within the family that children gradually acquire intersubjective knowledge about themselves, their caregivers, their social environment, and the role they play in this environment (Crossley, 2000; Miller & Hoogstra, 1992). By co-constructing everyday interactions, caregivers provide the child with a framework for making sense of these experiences; they also provide the child with resources for constructing social meaning, laying the pathway for culture-specific self-ways. Because caregivers' communicative practices are themselves embedded in broader cultural models, they function as mediators of culturally appropriate ways of self-construction (Demuth, Keller & Yovsi, 2012).

It is obvious that there are tremendous differences in everyday practices and beliefs across different ecosocial contexts. However, there seem to be certain sociodemographic characteristics that lead to systematic similarities in cultural practices and meaning systems across countries and societies. Here, we have to come back to the role of adaptation. With their model of psychocul-

tural research, Beatrice and John Whiting (1975) linked human psychology, human culture, symbols, and artifacts directly to the ecosocial environment, which is composed of physical parameters (e.g., climate, geography), history (including migration), maintenance systems (including economic parameters), settlement patterns, and family structure (e.g., household composition, family type). This model, developed from cultural-psychological and anthropological perspectives, has much in common with the evolutionary view of human psychology in that it relates human behavior and psychology to contextual demands and the resources of the environment (Keller, 2010). Building on these two research traditions (i.e., evolutionary psychology and the psychocultural model of development), we developed the ecocultural model that is elaborated in the following section.

1. The Ecocultural Model: Adaptive Systems of Shared Meanings and Behaviors

The ecocultural model of development frames the study of developmental pathways within a nested framework of ecosocial conditions, cultural models plus associated socialization strategies, and child development (Figure 2.2).

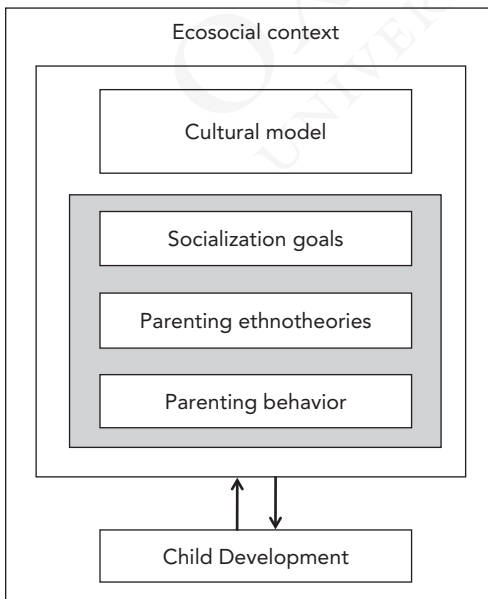


FIGURE 2.2: The ecocultural model of development.

The model starts at the population level, which is shaped according to the allowances and affordances of the physical environment. These are, in turn, the determining factors of a population's socioeconomic structure, which consists of the economic system and modes of subsistence (e.g., free market economy or subsistence economy), family structure (e.g., number of children, maternal age at birth), and household type (e.g., extended or nuclear family). Together, these dimensions constitute specific ecosocial contexts. Key socio-demographic characteristics of these ecosocial contexts include mothers' age at first birth, number of children, family size, and family composition. Of these characteristics, parents' level of formal education plays a critical role for infants' formative social experiences for two major reasons. First, the level of formal education is structurally related to some other key characteristics. For example, higher levels of formal education are correlated with later parenthood and less offspring, irrespective of country or society (as well as mortality and economy in the Whiting model; e.g., Deutsche Stiftung Weltbevölkerung, 1999; Martin & Juarez, 1995). Second, the experience of formal schooling has an impact on specific forms of parenting. Findings from multiple, very different cultural environments demonstrate that the experience of formal schooling is associated with increased face-to-face contact in parenting and increased use of language and object stimulation during interactional situations. Greenfield and Childs (1991) have observed this pattern in Zinacanteco Indians, as have Richman, Miller, and LeVine (1992) in Mexico and Nsamenang and Lamb (1994) in Cameroonian Nso families (for a summary, see Greenfield & Cocking, 1994; Keller, 2007). Changes in lifestyle such as those created by formal schooling can lead to the emergence of previously uncommon styles of parenting that cannot be attributed to imitation (there are no role models available) or to instruction (parenting is not part of the school curriculum).

In this sense, formal education, family size, family type, and family composition are central constituents of specific ecosocial contexts that have a correspondence at the psychological level, which we generally refer to as the cultural model. In a similar vein, LeVine and collaborators argued that "it is through the enactment of these population-specific codes of conduct in locally organized practices that human adaptation occurs" (LeVine, Dixon, LeVine, Richman, Leiderman, Keefer, & Brazelton, 1994, p. 12). In this sense, the cultural model is defined as a specific and adaptive mindset that aligns universal and basic human needs (especially autonomy and relatedness, as discussed earlier) to the structure of the broader ecosocial context. As a consequence, specific ecosocial contexts lead to different manifestations of the cultural

model, or cultural milieus, which are associated with specific socialization strategies, and finally to different culture-specific developmental pathways.

In this sense, cultural models provide implicit as well as explicit guidelines for parenting strategies. As presented in Figure 2.2, parenting strategies can be differentiated into several different, hierarchically interrelated levels of representational and behavioral domains. The most abstract level is formed by socialization goals that translate the cultural milieus into particular goals that caregivers want to achieve. Furthermore, socialization goals are translated into parenting ethnotheories, or belief systems, that exemplify the means by which the goals can be reached on a more concrete level. Finally, parenting ethnotheories influence parenting behavior and the provision of specific contexts (e.g., carrying the baby in a sling or pushing the baby in a baby carrier). Although all levels are hierarchically organized and oriented toward the prevailing cultural milieu, they are underdetermining influences that provide capacities and constraints without compelling a specific outcome in parental ethnotheories or behavior (see also LeVine et al., 1994).

Taking this theoretical account seriously has important implications for sample selection and data analysis in empirical analyses. Concerning sample selection, there are two major implications. First, this definition of ecosocial contexts and cultural models makes countries or societies obsolete as units of analysis. Within the border of every country are multiple ecosocial contexts and, according to our approach, multiple cultural milieus that form the relevant units of analysis. Second, sample selection for the study of cultural pathways of development has to be guided by careful consideration of relevant ecosocial contexts. The definition of ecosocial contexts is mainly based on three specific clusters of sociodemographic variables, namely (1) middle-class to upper-middle-class mothers who have high degrees of formal education and live in urban cities of postindustrial, Western societies; (2) middle-class to upper-middle-class mothers who have high degrees of formal education and live in urban cities of non-Western societies; and (3) mothers with low levels of formal education who live in rural, subsistence-based agrarian ecologies. Data analysis following this approach implies that these sociodemographic variables are not controlled for statistically, because they are constitutive of what we understand as culture.

In the following section, we discuss two central constituents of the world-views as expressed in the cultural models, namely autonomy and relatedness (Deci & Ryan, 2000; Kağitçibaşı, 2007).

2. *Autonomy and Relatedness*

Regardless of the cultural context in which a person grows up and lives, there is the need for belongingness and relating to others, and there is the need for agency and having control over one's life (Bakan, 1966; Maslow, 1968; Ryan & Deci, 2000). Although some authors argue that autonomy and relatedness are valued and develop to different degrees depending on the cultural context (e.g., Kağıtçıbaşı, 2005), we argue that these needs are equally important in all cultures, yet may manifest differently depending on the cultural context in which humans grow and live. They strongly influence and coherently organize motivational tendencies, emotional experience, and behavioral inclinations throughout development. During ontogenetic development, caregivers emphasize different modes of autonomy and relatedness in a culture-specific way, in that they differently sensitize children to specific elements of their social and nonsocial environment (such as others' expectations or inner experience). Humans are equally amenable to and biologically prepared for all modes of autonomy and relatedness, but their relevance for behavior and experience critically depends on recurrent modes and styles of social interaction. In the long run, these emphases on specific aspects of human experience define children's self-ways—their sense of themselves as a person and as a person-in-relation-to-others.

Our definitions of the different modes of autonomy and relatedness are described according to the two prototypically different cultural milieus outlined earlier. In Western urban middle-class families, human behavior and experience can best be characterized by modes of autonomy and relatedness that stem from two principles deeply routed in Western philosophical tradition. First, modes are based on the assumption that human behavior and experience rely on personal preferences and choice (i.e., the individual rights of freedom, self-realization, self-determination, and self-governance) (Deci & Ryan, 2000; Iyengar & Lepper, 1999; Snibbe & Markus, 2005). Second, they are based on the assumption that human behavior and inner experience are primarily driven by mental states that are intrinsic, autonomous, and independent. This emphasis on personal preferences and independent mental states leads to prototypical modes of autonomy and relatedness that can best be characterized as *psychological autonomy* and *psychological relatedness*. *Psychological autonomy* refers to mental processes that are based on self-reflective ways of being. It centers on the exploration and reflective awareness of personal desires, wishes, and intentions. This conception represents what is usually defined as "autonomy" or "agency" in the present literature.

Psychological relatedness means that separate, self-contained individuals establish self-selected relations to others that are defined and negotiated from the point of view of individual autonomy. This conception of relatedness is in the service of psychological autonomy. Because psychological autonomy is the leading principle for the embodiment of relatedness, we call this the prototypical *psychological-autonomous cultural milieu*.

With socialization strategies oriented toward psychological autonomy, children become well prepared to function competently in environments that necessitate high degrees of cognitive flexibility and regional mobility and are characterized by rapid technological and societal change. These environments, however, characterize the life and associated self-ways of only about 5% of the world population. Human behavior and experience can be framed very differently, and this must have profound implications for the ways in which both autonomy and relatedness are embodied in everyday life. In describing alternative environments and associated modes of autonomy and relatedness, four principles emerge: personal preferences/choice, communal goals, mental states, and behavioral obligations. Human experience and behavior are influenced by all four of these principles: (1) personal preferences and choice (*doing what I want to do*); (2) goals, desires, and needs that are shared with others (*doing what we want to do*); (3) represented intentional mental states (*doing what I/we intend to do*); and (4) situational demands that are prescribed by role obligations and responsibilities (*doing what needs to be done/what one is supposed to do*). Although these principles are conceptually independent, they co-occur in specific configurations. As argued earlier, the configuration of personal preferences/choice with mental states in Western urban middle-class families leads to *psychological autonomy* and *psychological relatedness*. In subsistence-based farming ecologies, another prototypical ecosocial context, human behavior and experience are framed by communal goals that are realized through behavioral obligations associated with specific social roles. This emphasis leads to the primacy of *action autonomy* and *hierarchical relatedness* and their manifestations in socialization goals, parenting ethnotheories, and behavior. Accordingly, from their first day of life, infants are exposed to learning environments that are characterized by a dense network of social obligations and an emphasis on early action competence. *Action autonomy* is defined as the individual's self-regulated capacity to perform complex behavioral necessities, including setting goals, planning, and executing actions independently. In this sense, autonomy emphasizes self-regulated accomplishment of role-based obligations and responsibilities, whereas internal mental states

may play a minor and subordinate role for human behavior and experience (for more detailed discussions, see Keller, 2011; Keller & Otto, 2011). For example, anthropologists have described other states of mind using terms such as “opacity of mind” to describe the South Sea Kaluli people; these rain-forest dwellers assert that they do not know what others think or feel or what is in the minds of others (Schieffelin & Ochs, 1986). Similarly, Daniel Everett (2009), in his observations of the Amazonian Piraha Indians, describes a principle of “immediacy of experience” that excludes reference to experiences beyond the here and now. Nevertheless, it cannot be denied that the South Sea Kaluli people and Amazonian Piraha Indians exert agency and autonomy in their lives; otherwise, they could not survive in harsh and demanding environments. *Hierarchical relatedness* is defined as a network of obligatory relationships based on ranked and interdependent roles that are mandatory. There is no room and also no wish for individual negotiation of expectations and obligations related to (family) relationships (Keller, 2007; Keller & Otto, 2011). In this sense, hierarchical relatedness is the leading principle for (action) autonomy. Therefore, we call this the prototypical *hierarchical-relational cultural milieu*. *Action autonomy* and *hierarchical relatedness* are highly adaptive for developmental outcomes in the life of subsistence-based farming ecologies. Based on these modes of autonomy and relatedness, children are well prepared to function competently in environments in which it is imperative that they comply with the social group’s expectations and learn to constructively contribute to the family system as early as possible.

Prototypical means that the respective modes of autonomy and relatedness can be found in relatively pure forms that immerse most if not all spheres of life. In part, comparing the two prototypical ecosocial contexts and associated cultural milieus implies contrasting mutually exclusive views on human behavior and experience. Exclusivity, however, does not mean that these concepts are one-dimensional, bipolar, or monolithic. Beyond the two prototypical cultural contexts, many other configurations are possible.

Non-Western, highly educated, urban middle-class families are an especially well-studied group of ecosocial contexts. As one of the first researchers in this area, Kağitçibaşı (1996, 2007) emphasized that, in these ecosocial contexts, the self and the self-in-relation-to-others can best be characterized as what she called “autonomous relatedness.” Kağitçibaşı (1996, 2005) described autonomous relatedness as emotional interdependence without economic interdependence. According to her conception, this cultural model reflects adaptive changes given a global pattern of urbanization and socioeconomic

development (Kağıtçıbaşı, 1990, 1996, 2007). High levels of formal education and participation in modern market economy have led these families to adopt autonomous values and associated systems of shared meanings and practices. At the same time, strong social cohesion and family orientation clearly organize and dominate most spheres of life. This model is considered adaptive for educated, non-Western, middle-class families, for whom the economic value of children is no longer required for family survival and functioning. Whereas Kağıtçıbaşı's model did not specify different forms of autonomy and defined the social dimension as interpersonal distance reaching from separateness to relatedness, we propose the combination of different modes of autonomy and relatedness outlined as follows.

Human behavior and experience in non-Western, urban middle-class contexts can be characterized by a specific configuration of two of principles outlined earlier. First, both self and others are made meaningful through the coordinated network of goals, desires, and needs of different individuals in a relationship. Second, the resulting communal goals that people strive for are conceived as subjectively represented mental states. Communal goals, unlike subsistence-based goals, are not represented and experienced as unquestionable behavioral obligations. Instead, they are experienced as internal values to which one is dedicated and as intrinsic motivations that inform one's behavior. This specific configuration leads to a mode of autonomy that Keller and Otto (2011) described as *communal psychological autonomy*. Correspondingly, relatedness manifests as *communal psychological relatedness*.

In contrast to autonomy and relatedness in the two prototypical cultural milieus, communal psychological autonomy and relatedness does not seem to coherently organize all spheres of life. Rather, life may be more heterogeneous in that different configurations of principles may dominate different spheres of life (e.g., relational and achievement-oriented domains).

C. Developmental as the Interface Between Biology and Culture

1. *The Conception of Developmental Tasks*

In line with life history theory, we assume that life stages have evolved as evolutionary adaptations to solve particular problems. The developmental phase of infancy is an evolutionary universal of primates (Bogin, 1999). However, the length and the pace of development differ tremendously across primate species. Human infants are the most helpless at birth and are the last to take

their first steps of independence. As Bjorklund and Pellegrini (2000) argued, neotony has been selected for during evolution. They argued that some immature forms and behaviors have been selected in evolution for either their immediate or their facultative adaptive value. In this sense, the adult individual is not the end product of evolution; rather, the whole life span and its patterning is a result of selective forces and thus evolutionarily shaped. Neurophysiological research indicates that the neonatal period is the brain-imprinting period. Accordingly, the neonatal environment has major and lasting consequences for development (Storfer, 1999) and is therefore constitutive for cultural development. Infancy can be said to constitute a lens through which to understand critical cultural decisions and orientations (Gottlieb, 2004; Keller, 2007).

Nevertheless, ontogenetic development is organized on the basis of the experience of continuity in terms of an autobiographical identity as well as a structural coherence between developmental achievements across life stages (i.e., earlier achievements predict the form and mode of later ones). Developmental tasks, which organize this structural coherence, can be interpreted as themes or challenges that humans all over the world have to face at specific points in ontogenetic development (see also Erickson, 1950; Havighurst, 1948/1972). According to our approach, these challenges have evolved in order to adapt developmental processes and outcomes. Thus, developmental tasks set the stage for differential developmental pathways that are adaptive to specific ecosocial contexts. The idea of how culture-specific developmental pathways emerge during ontogeny is illustrated in Figure 2.3. In this figure, universal developmental tasks are symbolized by prisms, whose combined effect on biological predispositions leads to increasingly accentuated

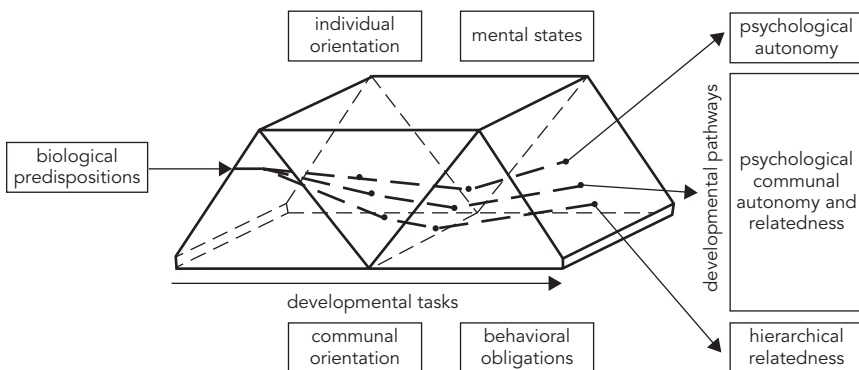


FIGURE 2.3: The emergence of culture-specific developmental pathways.

and diverging developmental pathways. Depending on the relative emphasis on individual goals and preferences, communal goals and preferences, internal mental states, and behavioral obligations in a given cultural milieu, the developmental pathways might lead to developmental outcomes that are associated with what we have called psychological autonomy, hierarchical relatedness, or psychological communal autonomy and relatedness.

In our empirical work (discussed earlier), we focused on specific universal developmental tasks during infancy and toddlerhood that are, broadly speaking, associated with infants' and toddlers' self-ways (i.e., sense of self and self-in-relation-to-others) and the age-dependent manifestations of autonomy and relatedness. In infancy, the key developmental task is the acquisition of a social matrix (i.e., formation of relationships through social interaction). In toddlerhood, we focused on behavioral indicators of an early self-concept (especially self-recognition and self-regulation) in the second year and its verbal manifestations in autobiographical memory in the third and fourth years.

By thematically focusing on different manifestations of autonomy and relatedness and their implications for the self-concept across different ages, we are able to examine the structural coherence of self-development during infancy and toddlerhood and to describe development as the culture-specific solution of universal developmental tasks leading to culture-specific developmental pathways.

2. Prototypical Learning Environments

Based on the ecocultural model introduced in earlier, we argue that psychological autonomy and hierarchical relatedness are the organizers of socialization strategies and developmental processes in the two prototypical ecosocial contexts, namely educated Western urban middle-class families and families with a basic level of formal education living in subsistence-based farming ecologies. In the following discussion, we summarize empirical evidence on how psychological autonomy and hierarchical relatedness coherently organize caregivers' socialization goals, ethnotheories, and parenting behavior, thereby constituting infants' culture-specific learning environments.

3. Autonomy and Relatedness as Expressed in Socialization Goals

In a series of studies, we have confirmed that mothers from Western urban middle-class samples emphasize socialization goals associated with psychological

autonomy (e.g., independence, assertiveness) significantly more strongly and socialization goals associated with hierarchical relatedness (e.g., obedience, care for others) significantly less strongly than mothers from rural subsistence-based ecosocial contexts (Kärtner, Keller, Lamm, Abels, Yovsi, Chaudhary, & Yanjie, 2008; Keller, 2007). In these studies, mothers from non-Western urban middle-class families that have been characterized by what we call communal psychological autonomy and relatedness were either more similar to mothers in one of the two prototypical ecosocial contexts or had scores somewhere between those of the prototypical contexts. Figure 2.4 shows the relative ranks of eight socialization goals for four samples representing the different ecosocial contexts. These rankings resulted from a pairwise comparison procedure in which each socialization goal was compared with all others. Primary caregivers had to indicate which one of the pair was more important or whether the goals were equally important. In support of our model, Western middle-class mothers from Osnabrück, Germany, rated socialization goals associated with psychological autonomy (those in the upper half of Figure 2.4, such as “develop personal interests and talents”) as more important and socialization goals associated with

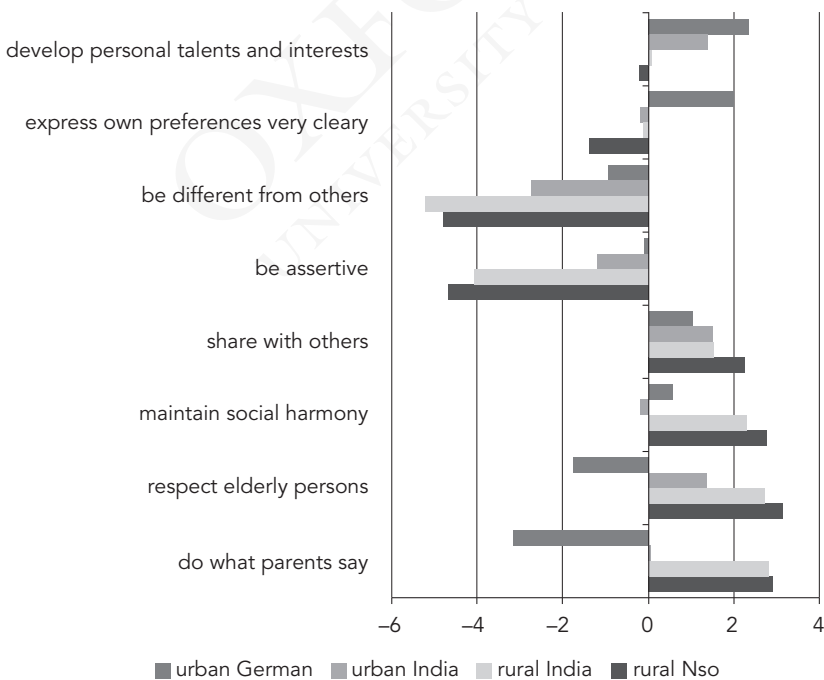


FIGURE 2.4: Relative ranks of eight focal socialization goals in different ecosocial contexts.

hierarchical relatedness (those in the lower half of Figure 2.4, such as “do what parents say”) as less important than did rural Indian or rural Nso mothers, who had low levels of formal education and lived within extended family networks in subsistence-based farming ecologies (Kärtner, Keller, Chaudhary, & Yovsi, in press). All differences were significant (simple main effects with Bonferroni adjustment), except for one socialization goal (“share with others”), which did not differ between the Osnabrück and the rural Indian sample.

The scores of the non-Western urban middle-class mothers from Delhi, India, were intermediate to the scores of the urban German and rural samples. Specifically, urban Indian mothers valued some items to the same degree as did urban German mothers (i.e., “develop personal talents and interests,” “be assertive,” “share with others,” “maintain social harmony”) and valued other items to the same degree as did rural Indian and rural Nso mothers (i.e., “express own preferences very clearly,” “share with others”). Urban Indian mothers valued several other items to intermediate degrees (i.e., “be different from others,” “respect elderly persons,” “do what parents say”). Taken together, these results support the assumption that socialization goals are primarily informed by psychological autonomy in the urban German sample, hierarchical relatedness in the rural Nso and rural Indian samples, and what we call communal psychological autonomy and relatedness in the urban Indian sample. As outlined in the following sections, these findings have important implications for caregivers’ ethnotheories and parenting practices in the different ecosocial contexts.

4. The Prototype of Psychological Autonomy

Prototypically psychological-autonomous mothers value exclusive dyadic interactions and believe that children need to spend time on their own in order to become more independent (Keller, Hentschel, Yovsi, Abels, Lamm, & Haas, 2004; Keller, Völker, & Yovsi, 2005). As one middle-class mother from Los Angeles explained in an interview:

Mother: And they don’t require having someone there constantly. Cause sometimes they get so clingy and whiny, and that’s just cause they don’t know how to be alone. And it’s important for kids, for humans to having a relationship with themselves that they can be alone.

Interviewer: Mhm. When they are older?

Mother: Uhm—even when they are babies, they need to be able to just not have constant—constantly somebody there.

Interviewer: Mhm.

Mother: Helps them develop some self-identity.

Western middle-class families use the interactional mechanism of exclusive dyadic orientation to regulate infant behavior: One caregiver, usually the mother, directs her undivided attention to the child. The most sensitive mothers are constantly accessible to their infants and aware of subtle communications, signals, wishes, and moods (Ainsworth, Blehar, et al., 1978). As illustrated in Figure 2.5, these signals are mainly read from the infant's face, so that face-to-face communication is considered the main channel of communication (Keller, 2007). Accordingly, looking, smiling, and vocalizing are in the center of attention while the baby takes the lead and the mother responds contingently and sensitively (Kärtner, Holodyski, et al., in press). The parenting system "language" (narrative envelope) also plays an important role. Most caregiving activities are embedded in a model of quasi-equal communication with a dialogical structure. The mother verbalizes the infant's inner states and anticipated wishes, intentions, emotions, and cognitions. Thus, parents prepare their children for adulthood by accepting their infants' own wishes and will (Ainsworth, Blehar, et al., 1978), treating the infants as intentional agents (Meins, Fernyhough, Wainwright, Das Gupta, Fradley, & Tuckey, 2002) and their needs as those of an autonomous person (Ainsworth, 1967).

Breastfeeding, diaper changing, and playing are all situations that are structured *en face* and embodied as dyadic, emotional conversations. For example, as one mother explained: "I think it's just very intimate. And she's (a mother on a picture) able to give the baby a good start. . . . Uhm, I think it's the bond. The baby can use the feeling of the mother" (Keller & Demuth, 2007). On the other hand, children of this prototype spend large amounts of time alone, lying on their backs and entertaining themselves alone or with toys, which are behaviors assumed to be equally as important as the short and intensive conversations.

Individuals in psychological-autonomous cultural milieus highlight and emphasize their individual emotions because such feelings are self-defining (Markus & Kitayama, 1994). Knowing that one feels, what one feels, and that one can instrumentally control one's emotions is extremely important in psychological-autonomous cultural milieus (Wierzbicka, 1999). Especially smiling, positive self-feelings, and self-esteem are the basis of all good feelings and are stressed as indicators of the adequacy and integrity of the self (Markus & Kitayama, 1994).

Caregivers are frequently mind-minded, which refers to the inclination to explore their infants' communicative signals in terms of underlying preferences, emotions, desires, or intentions (Meins et al., 2002). Combined, caregivers' mind-mindedness and sensitivity help create a parenting style that supports the development of infants' sense of themselves as autonomous intentional agents who have a unique self with a specific configuration of internal attributes (e.g., traits, personal preferences, emotions) according to which they learn to behave.

5. The Prototype of Hierarchical Relatedness

A central ethnotheory in samples of subsistence-based farmer families is that childcare, especially during infancy and toddlerhood, is a socially shared and co-occurring activity. Most childcare activities are simply included as part of women's ongoing life and performed while they cook, weave, do laundry, chat, and so on (Riesman, 1992). As a Nso farmer woman explained in an interview (Otto, 2008): "At times she [another mother] wanted to prepare something and eat and the child was disturbing her, when she was already anxious to prepare something quickly, then she is selling potatoes and breastfeeding the child at the same time." As a further consequence of this organization of everyday life, it is important to socialize the infant, beginning at birth, to a dense network of relationships with multiple caregivers: "I force him to go to other people. When I see any person, I would like to force the child to go to them, so that I should not be the one who is taking care of the child alone. Because it is not possible that I can be taking care of him alone. He would be disturbing me most often. It means I will not be able to do any other thing" (Otto, 2008). As a consequence, caregiving is not monotropic (i.e., centered to one person) but is distributed among different caregivers (Weisner, 2005). Infants' caretakers are mainly older siblings and other relatives or neighbors (see Figure 2.5). For instance, it was found that other children care for 96% of West African Nso farmer children during the first year of life (Teiser, 2010). These children are, on average, 8 years old, with the youngest caretaker being 2 years old. Approximately 50% of Nso children have two adults and two children as permanent caretakers.

From early on, caregivers start a deliberate training in respect and obedience, which manifests, for instance, in the prevalence of commands in infant-directed speech (LeVine et al., 1994; Ogunnaike & Houser, 2002). This strategy is deemed important because parents want children who are easy to manage as infants and who participate in domestic work during childhood.



FIGURE 2.5: Prototypically different learning environments: Examples of a rural Nso family (left) and a Berlin family (right).

From early on, caregivers foster infants' and toddlers' social orientation and responsiveness. As one Cameroonian Nso farmer woman told us in an interview: "If there are many siblings that he has, you cannot allow him do such a thing. . . . Because there are many of them. He cannot just be doing his things alone and only thinking about himself, what will then others do? They have to share from there equally. If you see a child doing that way and being selfish, you only have to be teaching him slowly so that it should not be part of him" (Otto, 2008).

In these ecosocial contexts, children are regarded as apprentices and mothers know what is best for a baby. Good parenting requires parents to control and train their infants (Keller, 2007). According to the ethnotheories of the Nso, this parenting strategy puts into practice the most central socialization goal: the infant's obedience and responsibility (Yovsi, 2003). Based on this work, which included case studies, ethnotheoretical accounts, behavioral observations, and ethnographic reports, we developed a scale that captures the essence of good parenting leading to optimal development according to Nso mothers' ethnotheories, namely *responsive control*. Its defining constituents, emotional involvement and bodily closeness in caretaker–child interactions, are designed to monitor, instruct, train, and direct the infant's activities. In a recent longitudinal study, we used the responsive control scale to evaluate mother–infant free play, with the potential score ranging from 1 (poor: lack of body contact, training, and stimulation; leaving child alone without controlling activities) to 9 (optimal: mother takes the lead and controls and directs infant activities while having close body contact or providing vestibular and kinesthetic stimulation), in two ecosocial contexts, namely rural Nso families

and middle-class families from Münster, Germany, with infants aged 4, 8, and 12 weeks (Yovsi, Kärtner, Keller, & Lohaus, 2009). As expected, rural Nso mothers scored significantly higher (all mean scores greater than 7) than mothers from Münster (all means less than 5).

Parenting in these contexts can best be described as proximal parenting with an emphasis on body contact and body stimulation (Keller, 2007). According to rural Nso ethnotheories, these parenting strategies instill a sense of community that is characterized by obedience, deference, collective responsibility, and sharing (Goheen, 1996; Nsamenang & Lamb, 1994). Supporting this characterization, there is empirical evidence that body contact and interactional warmth facilitate acceptance of the families' norms and values and encourage compliance (Keller, Yovsi, et al., 2004; MacDonald, 1992). For instance, Keller's group found that 19-month-old toddlers from a hierarchical-relational cultural milieu (rural Nso) showed significantly higher levels of compliance to requests (e.g., repeatedly bringing different objects to different places or people) and to prohibitions (e.g., not eating something before being allowed to do so) than did toddlers from communal psychological (San Jose, Costa Rica) or psychological-autonomous (Athens, Greece) cultural milieus. Furthermore, Keller et al. showed that levels of compliance were associated with early socialization experiences related to proximal parenting (i.e., body contact and stimulation) when infants were 3 months old. The mean scores for body contact and body stimulation followed the same pattern on the cultural level (i.e., significantly higher scores for rural Nso than for Athens dyads, with Costa Rican dyads falling in between), and body contact significantly predicted both types of compliance.

Stimulation is mainly motor and vestibular, because early motor coordination and growth are important milestones for caregiving (Lohaus et al., 2011). Nso farmer women have very precise ideas regarding what this motor stimulation should look like and what it is good for (Keller, 2007; Keller, Yovsi, & Völker, 2002). Infant-directed language is often rhythmical and synchronized with movement (Demuth, 2008), so that the baby is socialized into a social unit instead of learning early lessons of independence.

Keller and Otto (2009) described a pattern of emotion socialization for the Nso that is very similar to that of the Gusii described by LeVine et al. (1994). Based on individual and group interviews with Nso caregivers, Keller and Otto described the cultural norm concerning emotional expressivity during infancy as that of nonexpressivity: A well-developing child is emotionally neutral. As in LeVine's pediatric model, the mothers' main role concerning

their children's emotion regulation is that of preventing negative emotions to occur. Infants' negative states are often obviated by anticipatory breastfeeding. Furthermore, mothers use directives and prompts to suppress displays of negative emotionality (Demuth, 2008).

6. Cultural Models Characterized by Communal Psychological Autonomy and Relatedness

Educated, non-Western urban middle-class families place a great deal of emphasis on social relationships and interpersonal responsibilities (Chaudhary, 2004; Miller & Bersoff, 1992; Miller, Bersoff, & Harwood, 1990; Miller & Luthar, 1989; Wang & Chaudhary, 2005). In a number of cross-cultural studies, Miller and her colleagues (Miller et al., 1990; Miller & Luthar, 1989) showed that, for instance, Hindu Indians view interpersonal relations and helping others in fully moral terms; there is both a sense of objective obligation and a sense of being within the scope of legitimate regulation. They argued that this differential emphasis results from an intrinsic and obligatory perspective on relationships that is stressed in Hindu Indian culture, in contrast with the voluntary approach to social relationships that is stressed in Western urban middle-class contexts. At the same time, however, Indian middle-class families place much more emphasis on psychological autonomy than do lower-class families or families from subsistence-based backgrounds. This is attributable to their high level of education and the fact that their occupations require flexibility and self-determination (Raman, 2003; Sinha & Tripathi, 1994; Verma & Saraswathi, 2002). Thus, children are encouraged to be independent and assertive as well as respectful and sensitive to others.

III. IMPLICATIONS FOR DEVELOPMENTAL PATHWAYS

The considerations presented so far have important implications for developmental processes. Specifically, the ecocultural model of development predicts that children's learning environments influence developmental pathways. Cross-cultural differences regarding the timing of developmental achievements have generally been reported. For instance, there are studies on cross-cultural variation in the timing of motor development (Konner, 1991; Super, 1976), theory of mind (Symons, 2004; Vinden, 1999, 2002; Wellman, Cross, & Watson, 2001), and autobiographical memory (Schröder, Kärtner,

Keller, & Chaudhary, in press). However, it can be assumed that children's learning environments affect not only the timing of specific developmental achievements but also developmental processes more generally. We are concerned with the prevalent developmental processes that relate to the modes of autonomy and relatedness in a given ecosocial context and that can be considered basic constituents of culture-specific self-conception. In this sense, we would expect cross-cultural differences to exist in the stability and the dynamics of developmental achievements and in the gestalts. In other words, the developmental outcomes that characterize the solution of the developmental task should also differ across cultural milieus. In the following paragraphs, we discuss these topics and present empirical evidence from our research program, comprising longitudinal as well as cross-sectional studies of families representing the different cultural milieus using quantitative as well as qualitative methodologies (for more details of the methodology of our research program, see Keller, 2011).

A. Timing

One of the basic assumptions in cross-cultural developmental psychology is that cultural priorities, and hence socialization strategies, accelerate the development of particular domains more than they do others. This assumption is generally referred to as the "cultural precocity"¹ assumption (LeVine et al., 1994), and it should have important implications for the onset of specific developmental processes, the associated developmental trajectories, and the sequence of specific developmental achievements within a specific domain.

1. Development of Gross Motor Milestones and Preverbal Communication in the First Year

Cultural practices regarding gross motor development differ widely across different ecosocial contexts. Whereas in some environmental contexts infants are swaddled or carried for substantial parts of infancy (e.g., Hopi Indians, Dennis & Dennis, 1940; Aché Indians, Hill & Hurtado, 1996), early independent sitting and walking are encouraged through socialization strategies in other environmental contexts. The "motor precocity" of sub-Saharan African infants has been widely documented by anthropologists and psychologists for many decades. Achievement of early gross motor milestones is encouraged through specific practices, mainly holding the infants in an upright position and moving them vertically up and down. This motor stimulation pattern is

practiced by numerous sub-Saharan villagers such as the Kipsigis and !Kung San (Harkness & Super, 2001), the Gusii (LeVine & LeVine, 1963), the Wolof (Faladé, 1960), the Bambora (Bril & Sabatier, 1986), and the Nso (Keller, Yovsi, & Völker, 2002). These social interactional practices are supplemented through specific training—for example, training the sitting position by using holes or containers (Konner, 1977; Super, 1976; Keller, Yovsi, & Völker, 2002).

In a systematic longitudinal and cross-cultural comparison, Lohaus et al. (2011) analyzed gross motor behavior as assessed with the Bayley scales of infant development (Bayley, 2006) in German middle-class infants ($N = 222$) and Cameroonian Nso farmer infants ($N = 72$) who ranged in age from 3 to 6 months. Overall, there were substantial differences between the samples, with the Nso infants having significantly higher gross motor scores compared with German middle-class infants at both ages. The 3-month-old Nso infants had higher scores for all gross-motor Bayley items than did German infants of the same age—possibly indicating a domain-general “motor precocity”; however, the results were more variable when infants were 6 months old. More specifically, whereas Cameroonian Nso 6-month-olds were advanced in sitting and standing, German 6-month-olds performed better at rolling from their backs onto their sides and stomachs and at grasping their feet with their hands (Lohaus et al., 2011). From our point of view, this difference directly reflects the experiences of German infants, who spend substantial parts of the day lying, mainly on their backs, and those of Nso infants, who receive regular motor stimulation and training. Because there are more sitting and standing items than rolling items on the Bayley scale, the overall scale scores were generally higher for the Nso infants than for the German infants. However, these results underscore the need for a more differentiated view, particularly because infants’ achievements of gross motor milestones seems to reflect socialization practices and experiences that are aimed at the pervasive developmental goals of the environment. Early motor independence is certainly a goal in the Nso farmer families, where children are expected to be helpers in the family as early as possible, but it is not so important in German middle-class families, where children’s psychological autonomy is more important than their action autonomy (Keller, 2007).

In the same study, the Bayley data on language development pointed to another interesting cross-cultural difference. Already at 3 months of age, German middle-class infants scored significantly higher on expressive communication, and this difference further increased with age (Lohaus et al., 2011). Broken down to significantly different Bayley items, 3-month-old

German middle-class infants produce more undifferentiated nasal sounds, produced two vowel and two consonant sounds, and were better at getting attention than the Nso farmer infants. By 6 months of age, these differences had further increased. These results are plausible, because German middle-class infants are exposed to infant-directed speech to a larger extent than the Nso farmer infants in their daily environment (Demuth, 2008). However, one has to acknowledge that these precursors are derived from Western studies of Western language development. Languages can be regarded as cultural products (Everett, 2009), so their precursors might also differ.

2. Self-Regulation and Self-Recognition in the Second Year

In line with the different cultural socialization emphases, studies have revealed that sub-Saharan toddlers comply more readily with maternal requests than do toddlers in Euro-American middle-class families, in which early responsibility is deemed less important (Keller, Yovsi, et al., 2004; Munroe & Munroe, 1975; Whiting & Whiting, 1975). In contrast, in Western middle-class families, children's psychological separateness and independence are emphasized. In line with these assumptions, Kärtner, Keller, Chaudhary, et al. (in press) showed that cultural contexts differ greatly regarding the age (during the second year of life) at which toddlers develop mirror self-recognition, the first indicator of a sense of self as an autonomous intentional agent (Figure 2.6). The *rouge test* is the standard procedure for assessing mirror self-recognition

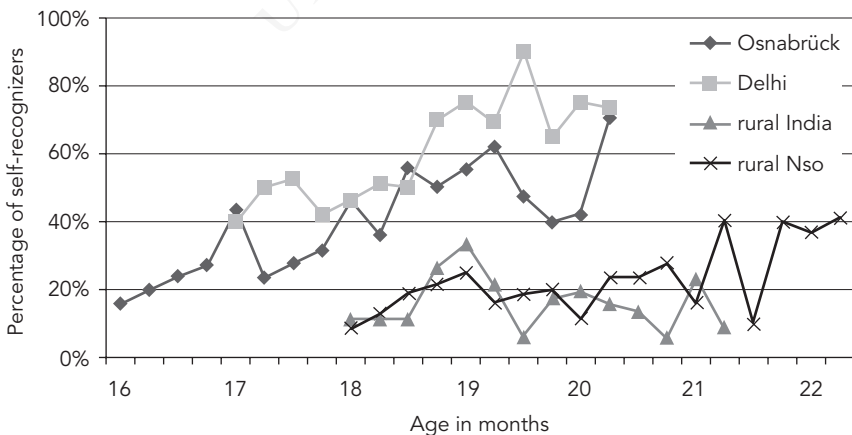


FIGURE 2.6: Percentage of toddlers who recognized themselves in a mirror by showing mark-directed behavior at various ages in four different ecosocial contexts.

(Amsterdam, 1972). A colored mark is surreptitiously placed on the child's face before he or she is shown a mirror. Self-recognition is conceded if the toddler shows clear mark-directed behavior (e.g., by touching the mark).

Furthermore, there is a marked difference in self-recognition across cultural milieus. More specifically, the ability to identify one's mirror image develops earlier in urban middle-class contexts that emphasize the development of psychological autonomy (e.g., families from Osnabrück, Germany, or Delhi, India) compared with hierarchical-relational cultural milieus (e.g., Nso farmer families and families living about 100 km out of Delhi in subsistence-based farming ecologies) (Figure 2.7; see Figure 2.6). At the age of 18 months, 46.2% of the urban German and Indian toddlers recognized themselves in the mirror, but only 11.1% of the rural Indian and 8.7% of the rural Nso sample did so. Therefore, culture-specific emphases on psychological autonomy influence the onset and further development of mirror self-recognition. Concerning the culture-specific developmental trajectories, the data presented in Figure 2.6 show that the percentage of toddlers who recognize themselves in the mirror generally increases with age. However, there is a steeper increase for this attainment in the psychological autonomy-supporting cultural milieu; toddlers in these cultural contexts develop mirror self-recognition faster.

Kärtner, Keller, Chaudhary, et al. (in press) argued that mirror self-recognition reflects a representation of the self as an autonomous intentional agent that is based on subjective self-awareness. Not only do toddlers need to possess the ability for secondary representation, but they also need a specific object or state to represent, in this case their own mental states (intentional



FIGURE 2.7: Assessing mirror self-recognition (bottom) in a typical rural Indian homestead (top).

and affective). In this sense, it is not necessarily toddlers' general representational capacity that differs across cultures but toddlers' awareness of themselves, especially self-awareness of their internal states. This specific type of self-awareness seems to be the result of socialization experiences, which enable toddlers to conceive of themselves as selves in the minds of others (Rochat & Zahavi, 2011).

In a different set of studies, we tested this assumption longitudinally (Keller, Yovsi, et al. (2004). Among 19-month-old toddlers, higher percentages of those from a psychological-autonomous cultural milieu (Athens, Greece: 68%) or a communal psychological cultural milieu (San Jose, Costa Rica: 50%) passed the mirror self-recognition test, compared with same-aged toddlers from a hierarchical-relational cultural milieu (rural Nso, Cameroon: 3%). Keller et al. suggested that early socialization experiences (e.g., amount of face-to-face contact and object stimulation) provides a possible explanation for these cultural differences. These early socialization experiences followed the same pattern on the cultural level: The more face-to-face contact and object stimulation the children experienced during mother-infant interaction at 3 months of age on average in a specific sociocultural context, the higher the percentage of toddlers who recognized themselves in a mirror at 19 months of age. In another study, Keller, Kärtner, Borke, Yovsi, and Kleis. (2005) found that mothers' level of visual contingent responsiveness during interactions with their 3-month-olds was higher in the urban German middle-class sample than in the sample of rural Nso families and again predicted toddlers' mirror self-recognition at 19 months. They suggested that the distal parenting style, with its focus on visual contingent responsiveness, face-to-face interactions, and object stimulation, supports infants' self-awareness and, hence, their development of a separate self as indexed by mirror self-recognition.

What seems to be critical in this regard is the degree to which caretakers direct their infants' attention to their own internal states (discussed earlier) as part of the distal socialization strategy. During the first months of life, this is primarily realized through caregivers' affect mirroring, which sensitizes toddlers to their intentional and affective self-states, of which they consequently become increasingly aware (see, for example, the social biofeedback model of Gergely & Watson, 1996, 1999).

B. Stability of Emerging Developments

The stability of developing achievements is another important factor during the development of cultural pathways. Comparison of mirror self-recognition

across cultures reveals interesting data concerning the stability of self-recognition across time. Based on a cross-sequential study design, toddlers from each age cohort (initially 16, 17, 18, 19, 20, or 21-month-olds) completed weekly mirror self-recognition assessments over a period of 6 weeks. Overall, mirror self-recognition was relatively stable during the study period, but it was least stable in the rural Nso sample (Kärtner, Keller, Chaudhary, et al., in press). Based on these findings, one could argue from a theoretical perspective that every developmental achievement necessarily oscillates before it stabilizes. From this dynamic systems perspective, variability is a fundamental property of development, and there is empirical evidence that stable advances in performance are preceded by periods of instability and variability (Courage, Edison, & Howe, 2004; Thelen & Smith, 1994; van Geert, 1991; van Geert & van Dijk, 2002). This interpretation of intra-individual variability as a fundamental property of development is further supported by the work of Courage et al., who assessed toddlers' mirror self-recognition biweekly from 15 to 23 months of age and found that toddlers started as stable nonrecognizers, underwent a phase of instable mirror self-recognition, and finally emerged as stable self-recognizers.

From a dynamic systems perspective, one could further argue that there is less intra-individual stability and more oscillation occurs between developmental statuses (self-recognizer vs. nonrecognizer) in contexts that have less external or environmental support for mirror self-recognition development. By interpreting mirror self-recognition as a behavioral index of self-awareness and an understanding of the self as an autonomous mental agent, one could argue that the reason for the unstable mirror self-recognition rates in the rural Nso sample is that there is much less socialization pressure on the toddler. In the psychological autonomy-supporting contexts, on the other hand, caretakers invest much more effort into socializing their children toward psychological autonomy and provide more experiences that are critical for developing such an understanding, and this is conducive to the emergence and stabilization of these developmental attainments. For example, mothers in these latter sociocultural contexts often refer to their children's mental states. If the toddlers' social environment does not provide such experiences (or only infrequently provides them), the development of a sense of self as an autonomous mental agent occurs only gradually, and the transitory phase shows a more erratic pattern. These children, of course, also develop a sense of self. In line with the hierarchical-relational orientation, their sense of self needs to be differently organized, especially centering on the communal understanding of

self as part of a system and focusing on roles and duties instead of self-actualization.

C. Dynamics

Concerning the dynamics underlying developmental processes, we hypothesize that similar developmental outcomes might exist in different cultures, but that the processes and mechanisms underlying these developmental outcomes may differ. This hypothesis is supported by empirical evidence from studies on emotion-related prosocial behavior during the second year of life (Kärtner, Keller, & Chaudhary, 2010) and on autobiographical remembering by 3-year-olds during joint reminiscing with their mothers (Schröder, Keller, et al., 2011).

Most theoretical approaches assume that toddlers necessarily have to distinguish between own and others' inner experience (also called self-other differentiation as assessed by mirror self-recognition) in order to feel concern for needy others, which motivates comforting behavior (Bischof-Köhler, 1989; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). The latter part of this assumption requires qualification, however. In a recent cross-cultural study, Kärtner, Keller, and Chaudhary, (2010) showed that comforting others was associated with self-other differentiation (assessed by mirror self-recognition) only in a psychological-autonomous cultural milieu (Berlin middle-class families) and not in a communal psychological cultural milieu (Delhi middle-class families). In our view, it seems unlikely that emotion-related helping behavior depends on self-other differentiation as a universal social-cognitive precondition. Instead, we propose that situational prosocial behavior based on shared intentional relations (Barresi & Moore, 1996) is an alternative developmental pathway along which toddlers' prosocial behavior can develop.

Based on theoretical approaches that explain how toddlers may understand the intentionality of an action without attributing mental states to the self or to another (e.g., Barresi & Moore, 1996; Gergely, 2002; Moore, 2007; Reddy, 2008), we argue that there may be an alternative mechanism underlying early helping behavior that is based on emotional contagion instead of empathic concern. According to Barresi and Moore (1996), toddlers come to understand mental states by integrating first-person information (i.e., inner experience) with third-person information (i.e., the agent's observable behavior). Barresi and Moore proposed that there is a developmental stage that precedes toddlers' ability to habitually complement others' behavior by ascribing subjective experience to the other person. This developmental stage is referred to as "shared

intentional relations”: Toddlers come to understand mental states by matching the intentional activities of the self and others while engaging in the same object-directed activity. In situations in which a toddler engages in object-directed imitation or triadic interaction, he or she has direct access to information concerning the inner experience of the same psychological or mental state that underlies the observable behavior in the other person. As a consequence, the toddler’s understanding is situation-specific and spans the self and other. Barresi and Moore’s basic argument is that toddlers understand intentional actions by experiencing and sharing the same psychological or mental state as the other person. Hence, toddlers understand the intentionality of an observed action without ascribing their own independent experience to the other person.

This principle can similarly be applied to early prosocial behavior in a situation in which another person is distressed: If toddlers observe the emotional expression of another person, this induces—via emotional contagion—a similar emotion in them. As a result, toddlers experience the situation as sad or painful while the other person’s object-directed behavior indicates a possible reason for the distress. This experience-bound understanding allows toddlers to help the distressed other. Therefore, we propose that *situational* helping behavior is an alternative to empathically motivated helping behavior in emotion-laden situations with a needy or distressed other.

As a consequence of the shared intentional relations principle, self-other differentiation would be, by definition, a precondition of empathically motivated helping behavior in this situation, but it would not be a precondition for helping behavior in all situations with a distressed person. Therefore, in our view, situational helping behavior is not a developmentally earlier form of prosocial behavior; rather, it is an equal alternative. In other words, toddlers may develop the competence to act prosocially via different developmental pathways (e.g., empathically motivated versus situational helping behavior). Common to both pathways, prosocial behavior (1) is initiated by emotional contagion while observing another person in distress and (2) requires some form of responsiveness that motivates prosocial behavior.

Concerning the development of autobiographical memory in 3-year-olds, we found that children’s memory contributions during joint reminiscing were differentially predicted by maternal and child responsiveness when the children were 19 months old in samples from Berlin and from Delhi (Schröder, Kärtner, et al., in press). Whereas the mothers’ responsiveness to play initiatives by 19-month-olds was the best predictor of children’s memory elaborations over and above maternal elaborations during joint reminiscing in the

urban middle-class families from Berlin, it was the 19-month-olds' responsiveness to maternal requests that was the best predictor in the Delhi sample. These results support the interpretation that 3-year-olds' memory contributions have different functions during joint reminiscing. Whereas in the Berlin sample the initiative for joint reminiscing is given to the child and the mother confines herself to assisting the child in recollecting the specific event under question, mothers in Delhi take the lead and expect their children to remember the specific event as well as possible.

These studies illustrate that even if, on a surface level, toddlers' development looks similar in two ecosocial contexts, the underlying dynamic might differ, because the developmental processes are embedded in a wider context of culture-specific meanings and interaction formats.

D. Developmental Gestalts

In addition to its influences on timing, stability, and dynamics of developmental processes, the interaction between culture and development has implications for the gestalts of developmental achievements. By this, we mean not only that culture and development interact in ways that influence the emergence of specific developmental achievements but also that the interaction between culture and development may lead to qualitatively different patterns or configurations of developmental phenomena. To illustrate this point, we present data from two fields of research: the culture specificity of the so-called 2-month shift (i.e., a qualitative shift in the way in which infants interact with social partners and express themselves) and stranger anxiety and emotion regulation at about 12 months of age.

1. Culture Specificity of the 2-Month Shift

A study by Kärtner, Keller, and Yovsi (2010) illustrates some of the developmental consequences of culture-specific emphases on face-to-face interaction. Applying a longitudinal study design, we analyzed video-recorded mother--infant interaction episodes from 20 highly educated urban middle-class families living in Münster, Germany, and 30 rural Nso families. For postnatal weeks 4, 6, 8, 10, and 12, we analyzed the percentage of interaction time in which (1) mothers provided face-to-face context, (2) infants were alert, and (3) infants gazed at their mothers' faces.

The results revealed an age-dependent increase in the percentage of infant alertness time in both samples. There was also an age-dependent increase in

the percentage of infant gazing time during episodes in which mothers established face-to-face context, but only for caregiver–infant dyads from the psychological-autonomous cultural milieu. In this milieu, caregivers’ provision of face-to-face context also showed a linear increase, from 75% to 92%, between postnatal weeks 4 and 12. As a consequence, the duration of mutual gaze, a factor influenced by both caregiver provision of face-to-face context and infant interest, exhibited an abrupt increase from weeks 4 and 6 (16% of interaction time) to weeks 8, 10, and 12 (between 34% and 39% of interaction time). This sharp increase in the duration of mutual gaze, together with the sharp increase in alertness in the prototypically autonomous cultural milieu (illustrated in Figure 2.8), can be taken as evidence of the 2-month shift (Kärtner, Keller, & Yovsi, 2010; Lavelli & Fogel, 2002, 2005).

The 2-month shift describes a qualitative shift in the way infants interact with their social environment at about the age of 2 months: They become more attentive, look longer at others’ faces, and start smiling socially. Whereas some have argued that the 2-month shift is mainly caused by maturational processes of the central nervous system (Wolff, 1987), co-constructive theories acknowledge the importance of specific social interactions and experiences that are critical for this development (Holodynski & Friedlmeier, 2006; Messinger & Fogel, 2007). However, these theories assume that, universally, exclusive face-to-face interaction is the dominant and preferred mode of mother–infant interaction.

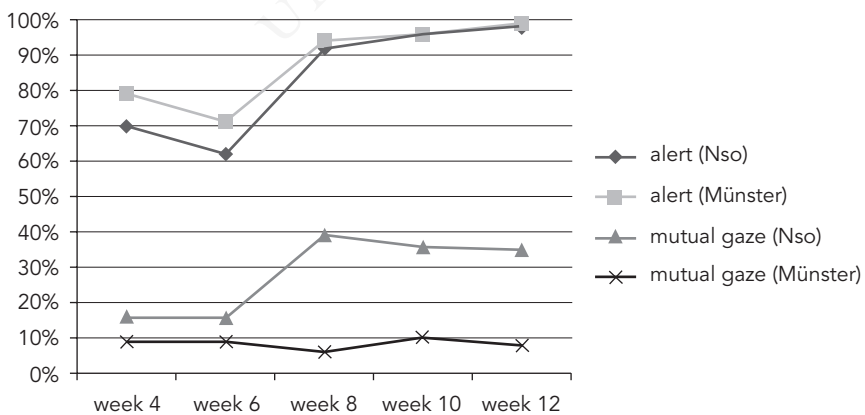


FIGURE 2.8: The 2-month shift and interactional regulation in the two prototypical cultural environments.

The pattern looks very different for rural Nso infants. There, the 2-month shift took a different shape: The Nso infants exhibited a similar sharp increase in awake alertness between weeks 6 and 8, but the mothers' provision of face-to-face interaction as well as the Nso infants' interest in their mothers' faces (i.e., gazing behavior), was significantly less pronounced and did not change with age (Kärtner, Keller, & Yovsi, 2010). As a consequence, the duration of mutual gaze was continuous at a rather low level (6% to 8% of interaction time) across postnatal weeks 4 to 12 (see Figure 2.8).

Overall, these results support the assumption that culture-specific scripts and behavioral standards of the mothers interact with emerging behavioral potentials associated with maturational processes. In ecosocial contexts that favor face-to-face communication, mothers may enthusiastically promote mutual gaze and face-to-face interaction with their infants. The more the mother establishes face-to-face context, the more probable it is that the infant will engage in mutual gaze if he or she is looking at the mother, and this may be rewarding because of the stimulation that mothers provide during face-to-face interaction. These experiences are also rewarding for mothers because of the ethnotheoretical perspective that mutual gaze and face-to-face interaction is a desirable way of interacting with infants. If this ethnotheoretical underpinning is missing or different, as in the Nso sample, no development concerning the duration of mutual gaze seems to be the consequence.

A further consequence of the culture-specific 2-month shift is the emergence of culture-specific contingency patterns during the second and third months of life: Caregivers from the autonomous sociocultural context gradually shifted from proximal (e.g., touching) to visual (e.g., smiling) modalities in their contingent responses to infants' vocalizations (Kärtner, Keller, & Yovsi, 2010). Because the development of social smiling occurs within face-to-face interaction and visual contingent responsiveness is conceded a critical role in this development, these findings also have important implications for the emergence and further development of social smiling during the first months of life. A reanalysis of this longitudinal sample shows that developmental trajectories for social smiling mirror those for mutual gaze in the two cultural milieus (see Kärtner, Holodynski, & Wörmann, in press; Wörmann, Holodynski, Kärtner, & Keller, 2012).

2. Stranger Anxiety and Emotion Regulation

Part of the socialization effort of caregivers is the transmission of social conventions regarding how to behave properly, an important part of which

concerns the display rules for the expression of emotions. Although basic emotions such as interest, joy, sadness, anger, disgust, and fear are assumed to be inborn and part of the evolved behavioral dispositions (Izard, 2009), the expression of emotions nevertheless differs substantially across ecosocial environments (Matsumoto & Hwang, 2011).

Stranger anxiety, as a case in point, demonstrates socialization-based differences in display rules of emotional expressions. Stranger anxiety is assumed to occur by approximately 8 months of life (termed 8-month anxiety by Spitz, 1965; Sroufe, 1977) as the child perceives an unfamiliar person as being different and therefore fear arousing (Ainsworth, Bell, & Stayton, 1974; Ainsworth, Blehar, et al., 1978). It is regarded as a part of a universal behavioral system that evolved to protect the infant from environmental hazards such as dangerous predators in the environment of evolutionary adaptedness (EEA), to which our genes are assumed to be adapted (Daly & Wilson, 1988; Hrdy, 2001; Marks & Nesse, 1994). The onset of stranger anxiety coincides with the ability to discriminate familiar and unfamiliar people as a necessary prerequisite (Ainsworth, Blehar, et al., 1978; Kagan, 1966). Stranger anxiety is expressed as fearful crying and by physiological reactions such as accelerated heart rate or an increase in the hormone cortisol (Spangler & Grossmann, 1993).

Hiltrud Otto (2008) studied stranger anxiety of 1-year-old rural Nso infants in their home compounds with a mixed-method design. The basic assumption was that Nso children would not openly express distress, because Nso families do not value the expression of emotions in children and take measures to actively prevent it (Keller & Otto, 2011). For instance, caregiving strategies such as anticipatory nursing prevent crying, corresponding to the cultural belief that a calm child is a healthy child. The desire for quiet and easily manageable infants and the disapproval of negative emotional expressiveness has also been observed in other sub-Saharan African communities, including the Gusii in Kenya (LeVine & LeVine, 1966; LeVine & LeVine, 1988; Richman, LeVine, Staples New, Howrigan, Welles-Nystron, & LeVine, 1988) or the Beng in Cote d'Ivoire (Gottlieb, 2004). Based on an analysis of Nso mothers' discourse styles during early mother-infant interaction, Demuth (2008) inferred that crying is a socially unacceptable behavior in Nso culture and that even infants need to learn to behave well in public and to suppress their negative emotions. For example, Nso mother may command her 3-month-old baby: "Don't cry again!" "We don't cry in Mbah!" (the name of the village) (Demuth, 2008, p. 104). This admonishment exemplifies how Nso mothers refer to social conventions

and convey what is expected from a member of the social community, even a small baby.

The disregard and counter-regulation of emotional displays begins early and continues throughout childhood; therefore, it should have a more general effect on the child's emotional expressiveness (LeVine & LeVine, 1966, p. 195). Otto (2008) observed a female adult stranger approaching 1-year-old children in their natural environment when they were close to their mothers. In line with Nso social conduct, the stranger greeted the mother, then turned to the infant, clapped her hand, and picked up the child, turning away from the mother. Most of the children did not express any emotion during this approach situation and moreover showed a decrease in the stress hormone cortisol. These results underline the notion that stranger anxiety as well as other evolved behavioral dispositions do not occur necessarily in children's behavior. Rather, expressions are always bound to contextual demands, and for the Nso mothers it is of crucial importance that their children easily adapt to other potential caregivers, because their workload does not allow exclusive care or exclusive parent–infant bonds.

Alma Gottlieb (2004) reported similar strategies and similar reasons for the Beng in Cote d'Ivoire. Beng mothers socialize their infants to be minimally attached to the mothers; instead, they provide a dense social network with many caretakers so that infants show not anxiety but, on the contrary, high levels of comfort when confronted with a stranger: "The babies I observed went willingly to their new temporary caretakers, and it was rare for them to cry or otherwise express regret, fear, anxiety or anger when their mothers disappeared from view" (Gottlieb, 2004, p. 160). These and other findings have substantial consequences for the conception and the development of attachment. There is no doubt that there is a basic human need for the development of attachment relationships, but the gestalts that emerge in particular contexts may differ substantially.

IV. CONCLUSION

In this article, we have presented a conception of development as the cultural solution of universal developmental tasks by integrating and synthesizing theoretical approaches and empirical evidence on panhuman biological predispositions and the constitutive influence of cultural models on developmental processes. We have presented empirical evidence that illuminates the complexity of the interplay between culture and biology. Depending on the

prevailing conceptions of autonomy and relatedness, caregivers foster development in domains that are important within their cultural model. In this sense, caregivers follow particular socialization strategies that are instrumental for the development of “cultural precocity” in focal domains. We have demonstrated cultural precocity in different cultural milieus with respect to gross motor and preverbal language development in the first year of life and the development of self-recognition and self-regulation during the second year.

Cultural precocity furthermore affects the stability of developmental outcomes and the dynamics underlying specific developmental processes. Concerning the development of mirror self-recognition, there is evidence that it is most stable in those cultural contexts that emphasize the development of an independent self and, as a consequence, put more socialization effort toward that purpose.

With regard to culture-specific differences in the dynamic processes underlying developmental achievements, we showed that both early prosocial behavior and autobiographical memory are associated with different concepts or precursors in different cultural milieus. Whereas self–other differentiation was strongly related to comforting behavior in a psychological-autonomous cultural context, it was unrelated to comforting in a communal-autonomous cultural context. Concerning autobiographical memory, mothers’ responsiveness to child initiatives was longitudinally related to children’s memory contributions in a psychological-autonomous cultural context, whereas children’s responsiveness to maternal requests was longitudinally related to children’s memory contributions in a communal-autonomous cultural context. Our conclusion from these findings is that, even if developmental outcomes look similar in two different cultural milieus, the underlying dynamics and functional relations to other developmental processes may be very different.

Finally, developmental gestalts also differ depending on culturally mediated display rules and children’s experience during social interaction. The two findings concerning the so-called 2-month shift and emotion regulation with the first year of life are particularly challenging for developmental science because they fundamentally question the course and outcome of developmental pathways as reported in the literature. These findings also underline the necessity for a substantial revision of common theoretical approaches in developmental science, because the developmental trajectories and their outcomes are usually assumed to be universal, although their conception is generalized from a very specific set of samples coming from

psychological-autonomous cultural milieus. As a consequence, these unjustified generalizations are wrongfully associated with normative evaluations such of “suboptimal,” “abnormal,” or even “pathological” development.

As Alma Gottlieb (2004) concluded from her anthropological study of infancy and child development among the Beng people of Cote d’Ivoire: “Some babies who would be categorized as emotionally healthy by psychologists would be categorized by Beng mothers as . . . emotionally unhealthy as well as socially problematic” (p. 157).

Our major conclusion here is that there is no single “normal” or “healthy” developmental trajectory or pathway, nor are “abnormal,” “pathological,” or “at-risk” deviations necessarily similar across different environments. The concepts of health, normality, and well-being can be defined only from a within-culture perspective. The consequence of this conclusion is that our knowledge about development is rather limited despite an abundance of textbooks, handbooks, encyclopedias, and journals. Our existing knowledge and expertise solely concern development in Western middle-class families. The limited accounts of and knowledge about development in non-Western families is usually presented as interesting add-ons or excursions demonstrating human variability. From our point of view, this approach is inappropriate, because the acknowledgement of culture does not just mean variability but necessitates an accounting for culture as a systematic influence. Importantly, future research should identify focal cultural principles that serve as developmental organizers; as we have suggested, these may include psychological autonomy or hierarchical relatedness.

The accumulation of knowledge of this kind necessitates particular research strategies. With our research program, we have tried to develop such a strategy. The starting point is the assumption that parenting is a cultural activity and that cultural norms, values, and goals are expressed through specific socialization strategies. The assessment of socialization strategies necessitates a multimethod approach that allows identification of the behavioral as well as the representational part of culture and includes qualitative as well as quantitative methodology. The basis for the comparison of children’s development is the identification of universal developmental tasks, which need to be assessed longitudinally if we want to explain developmental pathways. However, this does not exclude cross-sectional analysis and combined cross-sequential designs. The realization of such a research program faces multiple challenges in different domains, including communication between researcher and participants: Even if the researcher is an indigenous person, he

or she has a high degree of formal education and thus belongs to a different cultural group. There are numerous challenges of equivalence of meaning, method, measures, and procedure (Abukabar et al., 2007; Keller, 2011; Lamm & Keller, 2011). Even more serious is the lack of local indigenous knowledge concerning norms and values of development (Chaudhary, 2004; Nsamenang, 1992; Saraswathi & Pai, 1997). This necessitates, before everything else, better integration of indigenous researchers in the international community.

This plurality of problems may seem devastating, but there is hope: Until the 1950s, infancy was regarded as a blooming, buzzing confusion (James, 1890) or as a foggy state of mind (Stern, 1914/1923), and in only 60 years, research has accumulated a tremendous wealth of knowledge, although mainly about Western middle-class infants. Systematic observational studies like those of Wolff (1987) and Prechtel (1984) have demonstrated the social competence of infants from birth on, and systematic studies like those of Fantz (1963) and others have revealed substantial insights into their information-processing capacities. Knowledge about infants' inborn concepts and their sociocognitive capacities has exploded (e.g., Spelke, 2000). The same enthusiasm should now be directed to the study of cultural pathways. This field of study does not begin at zero, because there already are many accounts of cultures of infancy (Gottlieb, 2004; Greenfield, 2004; Keller, 2007; Konner, 1977, 1991; Lancy, 2008; LeVine et al., 1994; Nsamenang, 1992; Saraswathi & Pai, 1997; Shostak, 1981). However, there are also many white spots on the map—geographically and culturally. And systematic studies are rare.

The systematic inclusion of culture and biology into developmental psychology is not only necessary for the understanding of development on a pan-human scale; it is also important for the development of applied programs. Worldwide operating agencies such as the World Health Organization (WHO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) try to promote important issues, for instance prolonging breastfeeding, in rural, non-Western environments. Although breastfeeding is generally acknowledged as the most nutritious method of feeding an infant by healthcare professionals and by mothers in both Western urban and village farming families, its duration is often too short to develop its benefits for the infant's immune system. Most promoted programs focus on interactional formats such as face-to-face situation, undivided attention, and psychological intimacy. This focus clearly reflects a normative bias toward distal parenting strategies that are functionally related to the development of psychological autonomy. Farmer women, however, have other goals; with breastfeeding,

health and the physical aspects are central. According to this cultural milieu, breastfeeding is important for distress regulation and can be done simultaneously with other activities. Emphasizing distal and exclusive strategies of breastfeeding does not fit the reality of village women and explains the failure of many of these programs.

But it is not only public health programs that need culture-sensitive approaches. Family support programs, transition to parenthood programs, and counseling practices are mainly based on attachment theory, which embodies a prototypical psychological-autonomous orientation, including the conception of the centrality of the mother (the monotropy assumption), the exclusiveness of the infant–parent relationship, and the credo of sensitivity and mind-mindedness (Meins et al., 2002). The nonacceptance of these programs by families from lower socioeconomic backgrounds and families who have migrated from rural areas may be rooted in clashes of cultural milieus that have different philosophies of child rearing.

Another important arena of application is early childhood education as practiced in daycare and kindergarten programs. These institutions also are oriented toward psychological autonomy, which often dramatically contradicts the educational theories and practices of migrant families coming from rural villages and embodying the cultural model of hierarchical relatedness (Gonzalez-Mena, 2008; Greenfield, 2004). The withdrawal of these families from public early education reduces the children's chances for successful participation in learning and literacy as preparation for schooling.

Studying developmental pathways as the cultural solution of universal developmental tasks is thus an exciting basic research agenda as well as a most important field of application.

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NOTE

1. The term is put in quotation marks because the formulation is seldom based in the cultural precocity hypothesis as formulated by LeVine and colleagues (1994) but often refers to the developmental pace of Western infants as “normal” and that of others (e.g., those in sub-Saharan Africa) as “deviant,” reflecting an ethnocentric bias that still remains prevalent.

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