The Autonomous Developmental Pathway: The Primacy of Subjective Mental States for Human Behavior and Experience

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This review focuses on infants' emerging awareness of mental states and demonstrates how cultural models—consisting of parenting beliefs and practices—interact dynamically with biologically prepared developmental potentialities in shaping infant behavior and development. Contrasting very different cultural contexts, it is suggested that caregivers' visual contingent responsiveness and associated processes are key features of early mother–infant interaction. They (a) are informed by intuitive parenting and culture-specific ethnotheories that, as a consequence, (b) differentially sensitize infants for internal mental states in the 1st year and beyond, and thereby (c) provide mechanisms that specify how culture not only shapes human behavior and experience but also produces culture-specific developmental pathways.

In cultural anthropology, one basic assumption is that human behavior and experience differ tremendously across sociocultural contexts (e.g., Lancy, 2008). However, in psychology, many if not most theoretical approaches claim a universality that is very frequently based on extremely narrow samples of Western urban middle-class families or university students (Henrich, Heine, & Norenzayan, 2010). Nonetheless, there is now abundant evidence of cross-cultural variation in the developmental processes to be found in many different domains such as spatial cognition (egocentric and geocentric; see Haun, Rapold, Janzen, & Levinson, 2011), analytic and holistic reasoning and perception (Masuda & Nisbett, 2001; Nisbett & Masuda, 2003), person perception (trait-based and situational explanations; see Miller, 1984, 1987), or moral development (personal moral value and interpersonal obligation; see Miller & Bersoff, 1992, 1998). These cross-cultural differences can be viewed as manifestations of culture-specific emphases that can be subsumed under the conceptual umbrella of cultural models—a term from Keller and Kärtner's (2013) ecocultural model of development.

The Ecocultural Model of Development

The ecocultural model starts from the basic assumption that parenting behavior is composed of universal and biologically prepared behavioral inclinations designed to meet the infant's basic needs and coregulate the infant's behavioral repertoire. Furthermore, the model predicts systematic cross-cultural differences in how these predispositions manifest in parenting and infant development. Importantly, the composition of and relative emphases on different parenting systems (e.g., exclusive face-to-face interaction or body contact) depend on the ecosocial context and its affordances. In this sense, parenting and—as a consequence—infant and child development are culture specific and have evolved as adaptations to specific ecosocial environments (Greenfield, Keller, Fuligni, & Maynard, 2003; Keller, 2007; Whiting & Whiting, 1975).

Key characteristics of the ecosocial environment are the economic system (e.g., market economy or subsistence-based ecologies) and formal schooling. These have direct consequences for family composition, especially for the mother's age at birth of the first child, the number of children, and the family type (e.g., nuclear or extended; see Deutsche Stiftung Weltbevölkerung, 1999; Martin & Juarez, 1995). And these consequences, in turn, have important implications for the social settings and everyday routines in which children engage (see Lancy, 2008, for an overview of the anthropological literature and the sharp contrast between rural subsistence-based and fast-paced, urban, technologically dynamic, and information-charged societies).

These ecosocial contexts and the associated structures of everyday life have a correspondence at the psychological level known as the cultural model. In this sense, the cultural model is defined as a specific and adaptive mind-set that aligns universal and basic human needs to the structure of the broader ecosocial context (see also D'Andrade, 1992, 1995; Quinn & Holland, 1987, in cognitive anthropology; the developmental niche in Super & Harkness, 1986, 2002; Weisner, 2002, ecocultural theory in developmental psychology). The cultural model contains three hierarchically organized levels that provide capacities and constraints for subsequent levels (see also LeVine et al., 1994). These levels range from, first, abstract socialization goals; over, second, more specific ethnotheories, that is, cultural belief systems regarding children, their development and appropriate parenting; to, third, observable parenting behavior (see Keller & Kärtner, 2013, for a more elaborate description). Drawing on evolutionary theory, I take a functionally adaptive perspective in a double sense: First, caregivers' cultural models are adaptations to their ecosocial context; second, and more important for my focus, child development is adaptive to the ecosocial context as mediated by the caregivers' cultural model.

Two universal human needs occur very early in life and are key elements of any cultural model. Regardless of the culture of birth, every infant has the need for autonomy and the need for relatedness, that is, a desire to relate to and feel connected to others (Maslow, 1968; Ryan & Deci, 2000). These needs strongly influence and coherently organize motivational tendencies, emotional experience, and behavioral inclinations throughout development. Although both these needs are equally important in all cultures, they may manifest very differently depending on the cultural context in which humans grow up and live their lives. During ontogenetic development, caregivers emphasize autonomy and relatedness in culture-specific ways, and this differentially sensitizes children to specific elements of their social and nonsocial environment.

In the following, I describe and compare two specific cultural milieus, that is, two specific ecosocial contexts, their associated cultural models, and their implications for infants' emerging awareness of their own internal mental states in particular and for child development in general. I have chosen this contrastive approach to illustrate how biological predispositions and cultural models interact dynamically in child development, and to explicate one specific mechanism that is effective at a very early stage, namely, visual contingent responsiveness and associated processes. If prioritized by the cultural model, this mechanism lays the foundation for an increased sensitivity to internal mental states, making these the dominant frame of reference for human experience and behavior. Thus, the specific ecosocial contexts presented here should be considered as exemplars of two prototypical cultural milieus, that is, of relatively consistent ideal types geared toward core themes. However, this does not lay claim to either completeness concerning the number of prototypes or to uniformity across exemplars.

Prototypically Autonomous Cultural Milieus: Sensitizing Infants to Subjective Mental States

Following the ecocultural model, representatives of this prototype are highly educated, urban, middle-class families in Western societies (Keller & Kärtner, 2013). Typically, the nuclear family is the dominant family type, and due to role distribution, it is mostly mothers who take care of the infants while fathers go to work (Keller, 2006; Keller, Zach, & Abels, 2005).

Caregivers in prototypically autonomous cultural milieus socialize their children toward individuality, autonomy, and self-reliance (Kärtner, Keller, Chaudhary, & Yovsi, 2012; Keller, 2007; LeVine & Norman, 2001). Social competence and well-functioning social relationships are valued highly as long as they are self-chosen and not enforced by others (Markus & Kitayama, 1994).

Concerning parenting behavior, caregivers value exclusive dyadic interaction with a focus on face-to-face interaction and object stimulation (Keller et al., 2004). During these interactions, caregivers try to elicit smiling in their infants as they experience interactions around infants' smiles as rewarding (Dixon, Tronick, Keefer, & Brazelton, 1981; Kärtner, Holodynski, & Wörmann, 2013; Keller & Otto, 2009). Together with caregivers' mind-mindedness, that is, their inclination to explore and verbalize their infants' communicative signals in terms of underlying preferences, emotions, desires, or intentions (Meins et al., 2002), and their sensitivity (Ainsworth, Blehar, Waters, & Wall, 1978) as another cornerstone of "optimal" parenting, this parenting style sensitizes infants from birth onward to internal intentional and affective states.

These parenting practices are functional in supporting 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, etc.) according to which they learn to behave (Kärtner et al., 2012; Keller, 2007). Thus, being aware of one's own mental states and using these to organize one's own behavior is a first step toward developing individual autonomy, which is highly functional and adaptive in modern, technologically and socially dynamic, and information-charged societies. In the following, this cultural model is contrasted with a very different set of socialization goals, ethnotheories, and social practices: namely, the prototypically relational cultural milieu.

Prototypically Relational Cultural Milieus: Accentuating Social Responsiveness

Following the ecocultural model, representatives of a prototypically relational cultural milieu are families with a very basic level of formal education who live in subsistence-based farming ecologies (Keller, 2007; Keller & Kärtner, 2013). Typically, the extended family is the dominant family type, and infants are socialized in a dense network of social relations including sibling caretakers, grandmothers, and other members of the community (LeVine et al., 1994; Weisner & Gallimore, 1977).

Caregivers in prototypically relational cultural milieus socialize their children toward obedience, respect for elders, cooperation, and social responsibility (Lancy, 2008; LeVine et al., 1994; Nsamenang, 1992). Obligation between kin is an integral and institutionalized part of morality and daily life (Goheen, 1996), and parents foster their children's integration into a hierarchically structured social setting (Nsamenang & Lamb, 1994). Emotions are experienced as primarily intersubjective states (Lutz & White, 1986) and feelings of calmness, modesty, smoothness, and connectedness are seen as positive and desirable precursors of proper demeanor and obedience (Keller & Otto, 2009; LeVine et al., 1994; Markus & Kitayama, 1994).

Looking at parenting behavior, child care often occurs concurrently with other domestic activities, and there is a strong emphasis on body contact and body stimulation (Keller et al., 2004). Another cornerstone of "optimal" parenting is caregivers' responsive control, that is, their control and guidance of infants' behavior and deliberate training in respect and responsibility from an early age. This parenting style sensitizes infants to social responsiveness from birth onward (Demuth, 2008; Ogunnaike & Houser, 2002; Yovsi, Kärtner, Keller, & Lohaus, 2009).

Social responsiveness is functional in supporting the development of infants' sense of themselves as responsible and accountable members of the community. More generally, it is the "self in relation to others" that is focal in individual experience (Keller, 2007; Shweder & Sullivan, 1993).

The Autonomous Developmental Pathway: Sensitivity to Subjective Mental States

Previous research has demonstrated convincingly that caregivers' normative orientation informs parenting behavior and that this, in turn, leads to culture-specific developmental pathways that are consistent with the dominant cultural model (LeVine et al., 1994; Rothbaum, Pott, Azuma, Miyake, & Weisz, 2000; Super & Harkness, 1986).

However, two open questions remain, and these are the main focus in the following sections. The first question concerns the identification of the underlying mechanisms: What exactly might the proximal mechanisms be through which parenting behavior in prototypically autonomous cultural milieus accentuates infants' awareness of their own mental states? The second question concerns specific developmental consequences: Do culture-specific experiences during mother–infant interactions have consequences for children's concurrent and subsequent development that might indicate a differential awareness of own and others' mental states?

Visual Contingent Responsiveness and Emotional-Intentional Scaffolding

One proximal mechanism that may serve this function of sensitizing infants to their internal mental states has been suggested by Gergely and Watson (1996, 1999) in their social biofeedback model. Departing from nativist accounts in which it is assumed that infants have direct access to and are aware of their intentional states (i.e., goals, desires, and feelings) from birth onward (e.g., Bråten, 1992; Meltzoff, 2007; Stern, 1985; Trevarthen, 1993), Gergely and Watson explain richly structured mother–infant interaction more parsimoniously without assuming "primary intersubjectivity" (Trevarthen, 1979). More specifically, they suggest that infants are initially not aware of their own and others' psychological states. Based on innate attentiveness and responsiveness to other human beings together with an innate sensitivity to contingency, infants engage in communicative exchanges with others

(Papoušek & Papoušek, 1987; Watson, 1985). In these interactions, caregivers provide an "emotional-intentional scaffolding environment" by mirroring infants' affect-expressive displays. Through the mechanisms of contingency detection and maximization, this mirroring serves a sensitizing function. The authors' basic idea is that infants are sensitized to their own internal states by caregivers' repeated displays of partially imitative and marked reflections of infants' affective and intentional states. As in biofeedback training procedures, Gergely and Watson assume that these contingent responses sensitize the infant to the set of internal cues that covary with initially automatic state expressions. Thus, caregivers' visual and vocal reflections of infants' emotional and intentional states play a vital role in developing the infant's perceptual sensitivity to and awareness of his or her own internal states. Furthermore, Gergely and Watson argue that, during their 2nd year, infants establish secondary representations of their internal states. These representations are conceived as structures that identify and monitor primary internal states. Thus, they are grounded in infants' heightened sensitivity to mental states and form the basis for the development of self-awareness.

Gergely and Watson's (1996, 1999) model provides a promising causal mechanism that complements the ecocultural model and the findings on culture-specific pathways outlined above. According to Gergely and Watson, the "emotional-intentional scaffolding environment" that caregivers provide serves mainly two functions: (a) to develop infants' sensitivity to subjective mental states and (b) to facilitate infants' experience of themselves as active causal agents. Both functions are central constituents of the autonomous developmental pathway. As a consequence, taking a functional-adaptive perspective, emotional-intentional scaffolding (based mainly on visual contingent responsiveness) should be emphasized more strongly in autonomous compared to relational cultural milieus.

The Emergence of Culture-Specific Contingency Patterns

In a study analyzing similarities and differences in maternal contingent responsiveness toward one hundred and fifty-nine 3-month-olds across six different sociocultural contexts (*n*s between 16 and 38), Kärtner et al. (2008) showed that the cultural model seems to affect some but not all aspects of mothers' contingent responsiveness. In sum, similar overall contingency levels along with the dominance and relative salience of vocalizations and relative signal–response correspondence support the assumption that contingent responsiveness is based on an evolved, intuitive parenting program. However, one can find systematic and predictable modal differences in contingency patterns across cultures. Most importantly, there is evidence that levels of visual contingencies are significantly higher in the prototypically autonomous cultural milieus (Berlin and Los Angeles)—a finding that generally supports the idea of emotional-intentional scaffolding as a mechanism that encourages the sensitivity to internal mental states.

In a more recent study, Kärtner, Keller, and Yovsi (2010) analyzed whether culture-specific modality patterns in maternal responsiveness are based on script-like and stable behavioral responses that are present from birth (Bigelow, 1998; Bigelow & Rochat, 2006; Hsu & Fogel, 2003) or whether they only emerge during the first months (Lavelli & Fogel, 2002, 2005). They analyzed contingent responsiveness in mother–infant interaction at 4, 6, 8, 10, and 12 weeks postnatal in the cultural milieus that a previous study (Kärtner et al., 2008) had shown to be most different: namely, educated, urban, middle-class families in Germany (prototypical autonomous cultural milieu) and rural Nso families living in a subsistence-based farming ecology in Cameroon (prototypical relational cultural milieu).

One straightforward result clearly supports an emergence interpretation. Whereas the pattern of mothers' contingent responsiveness was identical in postnatal Weeks 4 and 6, modal differences started to emerge in Week 8 (significant cross-cultural differences in visual contingent responsiveness in Weeks 8, 10, and 12). In Week 12, mothers from the two cultural milieus showed the same pattern as that reported by Kärtner et al. (2008) with also proximal contingencies (e.g., touching) differing significantly between cultures and rural Nso mothers showing significantly higher levels of proximal contingent responses. Thus, culture-specific contingency patterns emerged during the infants' 2nd and 3rd months of life. Whereas rural Nso mothers showed a continuous pattern across modalities, urban German mothers showed a linear increase in visual contingencies and a linear decrease in proximally contingent responses across the 2nd and 3rd months. Thus, mothers in the prototypically autonomous cultural milieu gradually shifted from proximal to visual (e.g., smiling) modalities in their contingent responses to infants' vocalizations.

Implications for Concurrent Development: The Culture Specificity of the 2-Month Shift

The 2-month shift describes a qualitative change in the way infants interact with their social environment: They become more attentive, look longer at others' faces, and start smiling socially (Emde, 1984). Kärtner et al. (2010) coded two indicators of the 2-month shift, namely, infants' alertness and gazing at their mothers. An inspection of their results reveals an age-dependent sharp increase in the percentage of time that infants are alert in both samples between age 6 and 8 weeks. However, an age-dependent increase in the percentage of time that infants looked back at their mothers during episodes in which mothers had established face-to-face context emerged only in urban German caregiver–infant dyads. In this context, caregivers' provision of face-to-face context also showed a linear increase from 75% to 92% between the ages of 4 and 12 weeks. As a consequence, the duration of mutual gaze, a factor influenced by both the caregivers' provision of face-to-face context and the infants' interest, exhibited an abrupt increase between Weeks 6 and 8 (see Figure 1). This sharp increase in the duration of mutual gaze together with the sharp increase in alertness in the prototypically autonomous cultural milieu can be taken as evidence of the 2-month shift (Kärtner et al., 2010; Lavelli & Fogel, 2002, 2005).

The pattern in the 2-month shift was very different for rural Nso infants. They exhibited a similar sharp increase in awake alertness between the ages of 6 and 8 weeks, but the mothers' provision of face-to-face interaction as well as the Nso infants' interest in their mothers' faces (i.e., their gazing behavior) was significantly less pronounced and did not change with age (Kärtner et al., 2010). As a consequence, the duration of mutual gaze remained stable at a rather low level from Weeks 4 to 12.

Overall, this pattern of results points to the complex and dynamic interplay between cultural models and the biologically prepared developmental potentialities associated with maturational processes. Thus, mothers following cultural models that favor face-to-face communication may enthusiastically promote mutual gaze and face-to-face interaction with their infants. For example, the more mothers establish face-to-face context, the more probable it is that their infants will engage in mutual gaze if they are looking at their mother. This may well be rewarding for the infant because of the stimulation that mothers provide during face-to-face interaction. For mothers, in turn, these experiences are rewarding because of their ethnotheoretical underpinning specifying that mutual gaze and face-to-face interaction are a desirable way of interacting with infants. If this ethnotheoretical underpinning is missing or different, as in the Nso sample, the consequence seems to be no development in the duration of mutual gaze. A further way of looking at this proposal is to analyze the development of social smiling—another important facet of the 2-month shift (see also Kärtner et al., 2013). A number of studies support the argument that the development of social smiling depends crucially on the dynamic relation between infants' and caregivers' communicative behavior. More specifically, findings suggest a socialization of positive emotionality. Lavelli and Fogel (2002, 2005) have shown that giving positive feedback to infant smiling leads to mutual amplification processes through which episodes of joyful interaction emerge. Caregivers' socialization of positive affect is based on modeling, selective mirroring, and mutual amplification of positive emotions and signals, and this makes a critical contribution to the consolidation of emerging behavioral patterns (Malatesta, Grigoryev, Lamb, Albin, & Culver, 1986; Malatesta & Haviland, 1982). Thus, infant smiling is built up in the first months of life by caregivers' investing positive expressive energy that facilitates the emergence and stabilization of complex interactive patterns around smiling. Once the behavioral pattern is consolidated, infants become more active in initiating positive communicative exchanges and show an increasing tendency to engage their mothers dynamically in intensely joyful interactions between 3 and 6 months of age (Messinger & Fogel, 2007). However, what Lavelli and Fogel (2002, 2005) describe as a positive attractor in the dynamic system—namely, cycles of joyful quasidialogical interaction—is only one possible state in which the caregiver–infant communicative system might stabilize. Rather, the attractor state depends critically on culture-specific ethnotheories and social practices concerning emotionality and optimal parenting.

A number of studies have shown that ethnotheories of infants' emotional development and associated parenting styles in many prototypically relational cultural milieus are tailored toward bringing out the calm child (Demuth, 2008; Dixon et al., 1981; Keller & Otto, 2009). For the rural Nso and the Gusii of Western Kenya, the ideal infant is emotionally neutral, and feelings of calmness are regarded as positive and desirable (Keller & Otto, 2009; LeVine et al., 1994). As a consequence, smiling and laughing either pass by unattended or
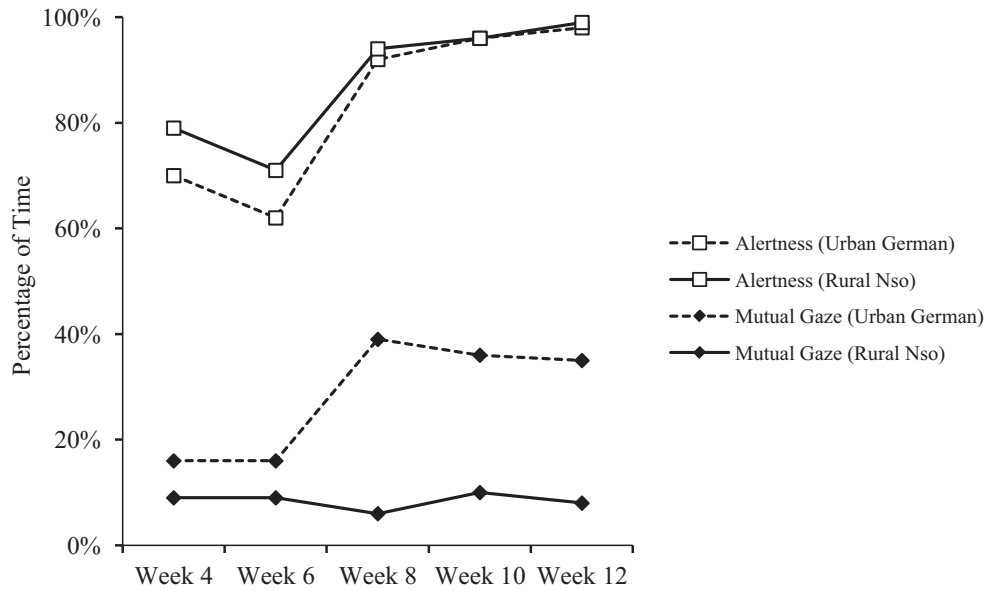
Figure 1. Culture-specific manifestation of the 2-month shift and interactional regulation in two prototypical cultural milieus across postnatal Weeks 4–12. Data reported in Kärtner, Keller, and Yovsi (2010). Significant cross-cultural differences in the duration of mutual gaze from Weeks 8 to 12.

might even be taken as signs of overarousal and of a disruption of the emotional equilibrium. Among the Gusii, associated social practices in the latter case focus on the counterregulation (i.e., preventing or dampening) of positive excitement (Dixon et al., 1981). Thus, depending on what seems desirable in a given sociocultural context, caregivers differentially coregulate the infant's behavior so that the dynamic system will stabilize and consolidate in a desirable state.

A reanalysis of the Nso and urban German mother–infant dyads at 6 and 12 weeks of age (i.e., before and after the 2-month shift) supports this assumption (Wörmann, Holodynski, Kärtner, & Keller, 2012). In sum, results showed that mothers smiled more in the urban German sample than in the rural Nso sample, especially when infants were 12 weeks old. Correspondingly, urban German infants smiled more at their caregivers during mutual gaze episodes at 12 weeks than at 6 weeks, and they smiled more than the Nso infants at both ages. Furthermore, developmental changes in caregivers' affect mirroring and infants' responsive smiling paralleled these changes in maternal and, in particular, infant smiling. More specifically, both affect mirroring and infants' responsive smiling were most pronounced in the urban German sample when infants were 12 weeks old. Thus, both affect mirroring and infants' responsive smiling seem to contribute to the development of social

smiling and might be critical mechanisms underlying the differential development in infant smiling in the two prototypically different sociocultural contexts. Hence, alongside culture-specific differences in ethnotheories and social practices regarding face-to-face interaction and mutual gaze (Kärtner et al., 2010), there are also differences in the dynamic organization of face-to-face interaction (Wörmann et al., 2012) that influence the development of infant smiling.

Based on these results, one must reject purely maturational explanations of the 2-month shift (Wolff, 1987). Furthermore, these data indicate that also coconstructive theories acknowledging that specific social interactions and experiences are critical for the 2-month shift (Holodynski & Friedlmeier, 2006; Messinger & Fogel, 2007) are incomplete, because these theories take it for granted that exclusive face-to-face interaction and the associated dynamic processes are the "natural," universally dominant, and preferred mode of mother–infant interaction. A full account of these developmental processes has to integrate the caregivers' ethnotheories and the parenting behavior that builds on emerging behavioral potentialities and shape the way these behavioral inclinations are implemented in social interaction (Kärtner et al., 2012).

So far, I have argued that visual contingent responsiveness in mother–infant interaction is a concept that helps resolve two important issues.

First, it is a likely candidate for a proximal mechanism to explain how infants, from a very early age, are sensitized to their intentional and emotional psychological states. Second, from a functional-adaptive perspective, it opens a window to synthesize general sociocognitive theories with a culture-sensitive approach. This makes it possible to draw on a rich tradition that may help to explain how culture-specific developmental pathways are constituted in mother–infant interaction: The studies reported above have accumulated the first empirical evidence of systematic cross-cultural differences in visual contingent responsiveness and affect mirroring. Both these behaviors are at the heart of what Gergely and Watson (1996, 1999) have called emotional-intentional scaffolding. Thus, these experiences might lead to accentuated awareness of internal states in the prototypically autonomous cultural milieu. Support for this proposal came from recent findings on the cultural specificity of the 2-month shift, that is, differential developmental trajectories for infants' gazing and smiling behavior (Kärtner et al., 2010; Wörmann et al., 2012).

In the following, this argument is extended beyond infancy by providing first empirical evidence for the continuity of the autonomous developmental pathway across ontogeny. More specifically, recent data suggest that culture-specific differences in the sensitivity to mental states that start to develop within the first months of life find their continuation in culture-specific differences in the development of self-awareness in the 2nd year (Kärtner et al., 2012).

Implications for Subsequent Development: Self-Awareness in the 2nd Year

The standard procedure for assessing mirror self-recognition is the rouge test. A colored mark is placed surreptitiously on infants' faces before they see themselves in a mirror (Amsterdam, 1972). Self-recognition is claimed when toddlers show clear mark-directed behavior by, for example, touching the mark. Mirror self-recognition reflects a representation of the self as an autonomous intentional agent that is based on subjective self-awareness. Thus, it is a further manifestation of an accentuated sensitivity to mental states in the 2nd year of life (see Kärtner et al., 2012, for a more elaborate discussion). Not only do toddlers need to possess the ability of secondary representation, that is, the ability to entertain mental models of imaginary situations (e.g., the "Me") that they connect with the primary reality model, but they also need a specific object or state to represent—in this case, their awareness of themselves (e.g., the "I"). Again, we see a similar idea in Gergely and Watson's (1996, 1999) work on the representation-building function as a long-term consequence of emotional-intentional scaffolding. However, it now takes a functional-adaptive perspective in order to account for cross-cultural variation in the development of self-awareness. In this sense, it is not necessarily toddlers' general representational capacity that differs across cultures but their awareness of themselves, especially their self-awareness of their internal states.

Research by Kärtner et al. (2012) showed that there is a marked difference in self-recognition across cultural milieus. More specifically, the ability to identify one's mirror image develops significantly earlier in urban middle-class contexts that emphasize the development of autonomy—families from Osnabrück, Germany and Delhi, India—compared to prototypically relational cultural milieus—here rural Nso families and families living about 100 km outside of Delhi, both living in subsistence-based farming ecologies. If, as in the two prototypically relational sociocultural contexts, autonomous socialization goals are disregarded, this development emerges only months later.

This specific type of self-awareness seems to be the result of socialization experiences that enable toddlers to conceive of themselves as selves in the minds of others (Rochat & Zahavi, 2011). What seems to be critical in this regard is the degree to which caretakers direct their infants' attention toward their own internal states. During the first months of life, this is realized primarily through caregivers' visual contingent responsiveness and emotional-intentional scaffolding. This sensitizes toddlers to their intentional and affective self-states, and they consequently become increasingly aware of these states.

Thus, cultural models (i.e., ethnotheories and parenting behavior) have substantial developmental consequences that organize culture-specific developmental trajectories of different phenomena across ontogeny. In prototypically autonomous cultural milieus, it is the accentuated sensitivity to subjective mental states that constitutes and lays the groundwork for infants' self-awareness.

Conclusion and Future Perspectives

The main argument proposed in this article is that caretakers' cultural models play a fundamental and constitutive role in infant development from birth

onward. Based on LeVine et al.'s (1994) conclusion that starting at age 3 is definitely too late if one is interested in the origins of culturally constituted developmental processes, my main focus has been on key developmental processes in the 1st and 2nd years. I have suggested that maternal visual contingency and emotional-intentional scaffolding are promising proximal mechanisms that caregivers use to accentuate infants' awareness of own intentional states. This leads to an increased sensitivity to subjective mental states throughout ontogeny that then becomes the dominant point of reference for human behavior and experience. Support for this idea comes from studies illustrating that the 2-month shift in infants is highly culture specific and depends critically on caregivers' cultural models. In the 2nd year, this heightened sensitivity to own and others' mental states manifests in an earlier onset of a specific type of self-awareness indexed by mirror self-recognition.

Perspectives for Future Research

There are at least three promising aspects to address in future research: first, the developmental consequences of culture-specific contingency patterns beyond the sensitivity to mental states, namely, perceiving oneself as an effective causal agent; second, the culture-specific consequences that children's accentuated sensitivity to mental states has for other developmental processes beyond the 2nd year; and, third, the analysis of cultural models and their effect on child development beyond the two prototypical contexts portrayed here.

Perceiving Oneself as an Effective Causal Agent

One further important function of maternal contingent responsiveness is the infants' perception of themselves as effective causal agents who can influence and exert control over their social environment (Tarabulsy, Tessier, & Kappas,1996). As outlined above, results on maternal contingent responsiveness suggest that the overall level of contingent responsiveness is very similar across sociocultural contexts. It is the modal pattern that varies and has implications for infants' self-awareness. An interesting question for future research would be whether different modal patterns have implications for infants' sense of self-efficacy. Theoretically, the assumption that visual contingent responses are especially effective in fostering infants' self-efficacy fits the ecocultural model of development in which it is argued that the sense of having individual

control over one's life and environment is essential for prototypically autonomous cultural milieus and might be not only prepared during but also fostered by early mother–infant interaction.

Accentuated Sensitivity to Mental States: Implications for Other Developmental Processes

There is a large body of research demonstrating that self-construals differ considerably across cultural milieus in adulthood (Henrich et al., 2010; Shweder & Sullivan, 1993). From the perspective of developmental psychology, it is essential to reconstruct the culture-specific pathways that ensure continuity across development and lead to the typical adult sense of self to be found in a specific cultural milieu. Thus, an important question for future research would be to analyze the consequences that an increased sensitivity to subjective mental states has for other developmental processes.

There is empirical evidence that the culture specificity of self-awareness has important implications for other developments such as autobiographical memory or theory of mind (Lillard, 1998; Lu, Su, & Wang, 2008; Miller, Fung, Lin, Chen, & Boldt, 2012; Schröder, Kärtner, Keller, & Chaudhary, 2012; Wang, 2006). Looking at lay theories to explain and predict own and others' behavior later in development, Miller (1984, 1987) has shown that school-aged children in non-Western cultural milieus explain others' behavior more in terms of situational requirements than internal mental states. Conceptually, Wellman and Miller (2008) were thinking along these lines when they called for an obligation–permission perspective to complement the dominant belief–desire psychology in the theory of mind literature. These two perspectives (belief–desire reasoning and obligation–permission reasoning) map nicely onto what was introduced as sensitivity to internal mental states and social responsiveness above. Similarly, Lillard (1998), drawing mainly on anthropological studies of adults' naïve theories of mind in different cultures, made a strong case that by limiting oneself to belief–desire explanations, one runs the risk of missing other important frames of reference that might serve as equally valid alternative explanations and predictions of others' behavior.

Conceptualizing Culture: Two Cultures or Many?

A core assumption in this essay is that child development is adaptive to the ecosocial context as mediated by the caregivers' cultural model. I have

specified and supported this argument by contrasting data from two prototypically different cultural milieus. These two cultural milieus are examples of relatively consistent ideal types that revolve around a common theme at their core. Having said this, it is important to note that there might well be different ways in which autonomy and relatedness manifest in caregivers' ethnotheories and everyday routines across different prototypical ecosocial settings. This is because cultural models depend on many other factors such as history, religion, and the language(s) spoken. Thus, the idea of prototypical cultural milieus is more about functional equivalence and less about uniformity of behavioral phenotypes across cultural milieus that are similar in terms of the key constituents of their ecosocial context. For instance, obedience and social responsiveness should be of major concern in subsistence-based farming ecologies. Nonetheless, how exactly this development is cultivated in the child may take different forms (Super & Harkness, 2002).

Looking beyond the two prototypical cultural milieus described here, one can find innumerable other cultural models and maybe other prototypes as well, such as Lancy's (2008) survivorship model for hunters and gatherers—to mention just one likely candidate. Regardless of whether they are prototypical or not, there are certainly many other ecosocial contexts that afford very different cultural models. These still need to be explored. Important work in this direction comes from studies contrasting Western educated, urban, middle-class participants with participants from non-Western cultures (e.g., Kağitcibaşi, 2007; Keller, 2007) and from intranational studies examining differentiations of cultural models along social class (e.g., Kusserow, 1999, hard and soft individualism).

Related to this issue, many cultures are currently exposed to rapid and fundamental social change. This has a number of implications. For instance, cultural models might lag behind structural changes, or elements of other cultural models (e.g., certain ways and fashions of caring for an infant) might—due to globalization—migrate from one cultural model to another. As a consequence, there are many sociocultural contexts today in which cultural models may well look more like juxtapositions of heterogeneous and in part contradictory elements. In these cases, cultural models can no longer be conceptualized as adaptations to the ecosocial context, and the focus shifts away from viewing shared meanings and parenting practices as adaptations to the ecosocial context and moves toward analyzing the consequences that the cultural models

encountered have for infant and child development (e.g., Super et al., 2008; Weisner, 2002).

To conclude, many developmental processes *must* be analyzed within their cultural context. The types of social experiences that these cultural contexts typically provide in differential ways accentuate two general human experiential processes, namely, the sensitivity to internal mental states and social responsiveness, that is, sensitivity to the social context. This has profound implications for infant and child development in many domains. The findings presented here enhance our current understanding of development in more general terms by adding one more piece of the puzzle to the emerging picture of culture-specific developmental pathways. To understand developmental processes, one must take into account caretakers' cultural models and exercise caution when generalizing beyond the specific sociocultural context at hand. From a developmental perspective, it is one major challenge for future research to reconstruct the culture-specific pathways that infant and child development take, and track the ways in which they revolve around core themes that ensure continuity across development while striving toward the competent adult as specified by the given cultural model.

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