Published in final edited form as:

J Cross Cult Psychol. 2012 February 1; 43(2): 171–197. doi:10.1177/0022022110388563.

Emotional Relationships in Mothers and Infants: Culture-Common and Community-Specific Characteristics of Dyads from Rural and Metropolitan Settings in Argentina, Italy, and the United States

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Abstract

This study uses country and regional contrasts to examine culture-common and community-specific variation in mother-infant emotional relationships. Altogether, 220 Argentine, Italian, and U.S. American mothers and their daughters and sons, living in rural and metropolitan settings, were observed at home at infant age 5 months. Both variable- and person-centered perspectives of dyadic emotional relationships were analyzed. Supporting the notion that adequate emotional relationships are a critical and culture-common characteristic of human infant development, across all samples most dyads scored in the adaptive range in terms of emotional relationships. Giving evidence of community-specific characteristics, Italian mothers were more sensitive, and Italian infants more responsive, than Argentine and U.S. mothers and infants; in addition, rural mothers were more intrusive than metropolitan mothers, and rural dyads more likely than expected to be classified as mid-range in emotional relationships and less likely to be classified as high in emotional relationships. Adaptive emotional relationships appear to be a culture-common characteristic of mother-infant dyads near the beginning of life, but this relational construct is moderated by community-specific (country and regional) context.

Culture-Common and Community-Specific Psychological Processes

This study has as its main goal to evaluate and compare culture-common and community-specific psychological processes in emotional relationships between mothers and their young infants. Theory asserts that establishing adaptive levels of emotional relationships near the beginning of life is requisite to mother-infant dyads everywhere to ensure wholesome child development (Barnard & Solchany, 2002). To test this assertion, we recruited and evaluated emotional relationships in families with young infants in six distinct ecologies: Three were country (Argentina, Italy, and the United States), and two were region within each country (rural and metropolitan). Establishing adaptive emotional relationships may be a universal psychological process, but context can be expected to moderate their level or expression (Bornstein, 1995). Thus, next to the identification of evolutionary and biological determinants of psychological universals (Cooper & Denner, 1998; Norenzayan & Heine, 2005), contemporary cultural theory casts the identification of ecological moderation by physical and social circumstances as essential to developmental study

(Bornstein, 1980, 2009; Bronfenbrenner & Morris, 2006; Cole, 2005; van de Vijver & Leung, 1997).

Human beings inherit both biological evolution and a transmitted culture. These mutually interacting forces shape human psychology. Contemporary evolutionary thinking appeals to the species-common genome, and this theoretical foundation promotes adoption and trust in psychic unity; that is, the biological heritage of some psychological processes presupposes their universality. At the same time, modern cultural psychologists investigate the influences of physical and social environments by exploring variation in core psychological processes.

Can a psychological construct, structure, function, or process be universal and simultaneously reflect contextual moderation? Yes. Examples abound. Consider two, attachment and language. It has been asserted that a universal need for attachment emerged in the environment of evolutionary adaptedness, and the evolutionary roots of attachment suggest strong universality. Parents' sensitive protection of their helpless offspring would have been selected, as inclusive fitness presumably led to a species-common genetic bias to remain close to an attachment figure. Evidence from a variety of cultures attests that attachment is normative and secure attachments represent the majority (van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2006). However, empirical study has also shown that patterns of attachment are sensitive to diverse individual and sociocultural contexts in which attachment takes shape. "From [a] universality thesis, it does not follow ... that the development of attachment is insensitive to culture-specific influences... the evolutionary perspective leaves room for globally adaptive behavioral propensities that become realized in a specific way dependent on the cultural niche in which the child has to survive..." (Van IJzendoorn & Sagi, 1999, p. 714). Culture provides parents with a specific history of attachment experiences and with childrearing cognitions and practices that prepare children for adaptation to a specific niche (Belsky, 1999). Indeed, in an evolutionary framework, infants should not inherit a fixed attachment pattern but, rather, be endowed with flexible ways to adapt to unique or changing circumstances and specifically to conditional parenting strategies (Belsky, 1999). Although attachment promotion may be common across cultures (and the bias to become attached inborn), attachment patterns appear to be specific to community and express flexible adaptations to the setting in which the parent parents and the child has to survive. In an equally illustrative way, language development is simultaneously culturally common and community specific. An evolutionary model posits a language instinct from the perspective of an inborn and universal acquisition device in the Chomskian mode, but specificity of environmental input plays a manifest role in the acquisition of each specific language (e.g., Pinker, 2007).

In a nutshell, evolutionary psychology is concerned with universals, and cultural psychology with diversity. Together, these complementary approaches define conditions under which culturally universal mechanisms are expressed in community-specific ways. Analogous to the attachment and language models, the development of emotional relationships may be best described in terms of the interplay between evolutionarily based, inborn biases that are culture common and environmental input that stimulates the development of community-specific patterns of relationships. Cross-cultural psychological research (like the study presented here) is primarily concerned with the ways by which particular ecological contexts moderate universal psychological tendencies.

Mother-Infant Emotional Relationships

Emotional relationships are a common, central, and critical feature of pan-human interaction. They arise from, and form the foundations for, human attachments, social communication, and prosocial encounters with others (Emde, 1980). As such, emotional relationships constitute a key feature of parenting and child development (Biringen &

Robinson, 1991; Bretherton, 2000). Specifically, maternal emotional displays to infants disclose, engage, and maintain child affection, extend social interaction, and mark important dyadic events. Reciprocally, infants provide multiple cues that communicate their emotional states and needs to their parents. Emotional sharing is central to parent-child interaction and is indispensable to healthy caregiving and optimal child development. Emotional exchanges constitute parents' and children's "first language" and primary mode of communication with one another. On the one hand, then, parent-infant emotional relationships are normative and common across cultures (van IJzendoorn et al., 2006).

On the other hand, norms regarding elicitation, regulation, and manifestation of emotion are acknowledged to vary with ecological and cultural context (e.g., country and region), and expressions of emotion appropriate to context are critical to developing social competence within a context (e.g., Kitayama & Markus, 1994; Saarni, 1999). Thus, the emergence, exhibition, and development of normative, healthy emotional relationships in the mother-infant dyad are likely influenced by many sources including evolutionary mandates, developmental status, task and demands, and parents' and infants' own psychological make-ups as well as ecological and cultural context. Understanding the conditions under which varying emphases of emotional relationships manifest themselves promises to enhance our appreciation of the full range of adaptive human functioning.

In this study, we observed and compared mother-infant emotional relationships when children were still in their first half-year of life. Emotional expression and regulation are evident very early in the life of the child, are central organizing constructs, and develop in conjunction with caregivers who manage infants' affective states (Thompson, 2006). We operationalized four aspects of maternal emotional relationships and two aspects of infant emotional relationships using behavioral scales, specifically the Emotional Availability Scales (EA Scales; Biringen, Robinson, & Emde, 1998). The EA Scales are specifically designed to assess the quality of emotional relationships through observations and ratings of parent-child interaction and are constructed to reflect age-appropriate behaviors in parent-child interactive cycles. Each of the six EA Scales focuses on the behavior of one partner while simultaneously taking the other partner's behavior into account. Thus, the EA Scales assess specific behaviors of individuals but at the same time constitute global ratings of dyads that capture joint emotional interactional style.

For each dimension of emotional relationships, there is a relatively broad behavioral range within which dyadic functioning is conducive to healthy development. It is critical for the survival and thriving of human infants that this be so; the child's emotional relationship with mother needs to fall in this adaptive range, but needs not be perfect. We expected that, on a normative and culture-common interpretation of emotional relationships, the nonclinical diverse community samples we recruited in this study would all score in adaptive ranges on scales of emotional relationships. Insofar as ecological and cultural context moderate the expression of emotional relationships, however, we expected variation primarily within the upper ranges of the Emotional Availability Scales¹. Our principal rationale for undertaking a cross-national, cross-regional study of emotional relationships was to test for both its culture-common expression and community-specific moderation. To do so, we modified the three-cultures (triangulation) approach (Norenzayan & Heine, 2005) that examines the generality of phenomena across defined cultural dimensions. The three-cultures strategy facilitates generalization across different sociocultural contexts or theoretical dimensions that are known to affect psychological processes, and when a cultural difference emerges, the design sheds light on specific population variables that may be implicated in the

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¹By contrast, variation in the lower ranges reflects individual psychopathology that mothers might bring to dyadic interactions with their infants.

psychological difference. The three-cultures approach looks for universality² by revealing commonalities along psychological dimensions that vary across cultures.

Mother-Infant Emotional Relationships in Argentine, Italian, and U.S. American Ecological Contexts

Even if early normative human development follows a universal course, every ecological and cultural context makes its own demands and has evolved its own developmental agenda, so that childrearing attitudes and activities as well as child development can be expected to be adapted (in some degree) to specific contexts (Bornstein, 2009; Bronfenbrenner & Morris, 2006). Cultural models of parenting comprise interconnected cognitions and practices shared by members of a community (Bornstein & Lansford, 2009; Greenfield, Suzuki, & Rothstein-Fisch, 2006). In Ogbu's (1981) cultural-ecological theory, individual competencies are defined within the cultural and historical contexts in which children live and grow. Insofar as different countries, and regions within countries, have varying requirements for parents and infants, we expect that dyads living in these contexts will experience different conditions of development and so might express themselves somewhat differently, albeit in an adaptive range, in terms of their emotional relationships.

Argentina, Italy, and the United States encompass an attractive set of countries in which to examine culture-common as well as community-specific aspects of mother-infant emotional relationships. These three nations are reasonably similar to one another in terms of predominant European heritage, levels of modernity, industrialization, and per capita income, ecology and climate, education and literacy, and standards of living; all three also have comparably low birth rates and small average family size as well as families that are nuclear in organization where the mother is normally the primary caregiver (see Table 1). So, these countries and samples are roughly comparable in terms of general sociodemographics, leading us, on the one hand, to expect that mothers and infants in them would display similar and adaptive levels of emotional relationships. On the other hand, these countries differ in terms of cultural values thought to influence parenting practices surrounding emotional relationships, and so we expected that mothers and infants from the different countries might differ somewhat in the expression of their emotional relationships.

Argentina—Argentina belongs to a Latin and Catholic cultural tradition that has a high regard for collectivist values especially *familism* (Gonzalez-Ramos, Zayas, & Cohen, 1998; Sabogal et al., 1987). Indeed, family is seen as more important than country, religion, or politics (Harkness et al., 2007). Despite this, little or no research on the observed parenting behaviors of Argentines is available (Facio & Resett, 2008). Harwood, Leyendecker, Carlson, Asencio, and Miller (2002) concluded that *respeto*, an emphasis on children's demonstrating respect and obedience, is valued by Latin American families from a wide range of national, economic, and social backgrounds. Latin American parents tend to display more authoritarian attitudes regarding parenting (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Livingston & McAdoo, 2007). Latina mothers place less value on child autonomy and physically guide children's actions, use discipline, and engage in didactic teaching methods (Cardona, Nicholson, & Fox, 2000; Carlson & Harwood, 2003). Blount (1990) observed that Spanish-speaking mothers generally rely more on attentionals (utterances designed to attract the young child's attention) and high volume in their interactions with infants, and Bornstein et al. (1992) observed that Argentine mothers

²Psychological universals are core constructs, structures, functions, or processes shared by human beings everywhere and constitute foundational postulates of psychology. However, Brown (1991) argued against distinguishing between *universals* that exist in all cultures and *near-universals* that exist in virtually all cultures. Universals can be established without exhaustive sampling of every culture of the world (Norenzayan & Heine, 2001). Generalizing across disparate populations having different ecologies, languages, belief systems, and social practices suffices to establish universality.

relatively favor direct and controlling statements in speech to infants and young children. Chaudhuri, Easterbrooks, and Davis (2009) studied emotional relationships in first-time (adolescent) mothers of toddlers and used cluster analysis to examine relations with mothers' reports of parenting attitudes and behaviors; Latina mothers were more highly represented in a directive parenting group.

In cultures where interdependence and subordination to group goals are given priority, psychological control is a common parenting practice rooted in traditional roles that ascribe higher status and authority to parents, and it functions to instill obedience, respect, and closeness in the child towards family and elders (Chen et al., 2000; Kagitçibasi, 1996). Within this context, psychological control does not necessarily imply lack of warmth; rather, psychological control is regarded as a normative tool to instill interdependence and obedience in the child (Rudy & Grusec, 2006). Latin American mothers tend to value children acting in respectful, deferential, and obedient ways toward adults (Harwood et al., 2002; Villanueva Dixon, Graber, & Brooks-Gunn, 2008) and may inculcate these values through parent-child relationships (Dumka, Gonzales, Bonds, & Millsap, 2009). However, Lindahl and Malik (1999) distinguished between hierarchical parenting and authoritarian parenting. In cultures where a premium is placed on showing respect for adult authority, and where adults feel a strong obligation to guide child behavior, parents may exercise more control over children (e.g., they may be stricter), and they may involve themselves more in decisions about what children can do. Unlike authoritarian parents, however, hierarchical parents are not necessarily emotionally distant or unresponsive; that is, an authority hierarchy is maintained but not at the expense of emotional connectedness. Thus, for hierarchical parents, strictness and intrusiveness are not punitive or unresponsive. So long as their parents are generally warm and responsive, children of hierarchical parents may accommodate to their more intrusive style and find themselves in no more conflict with their parents than children of authoritative parents.

Italy—Italian culture encourages emotional expressiveness in interpersonal interaction, promotes social competence during early childhood, and considers expressions of inhibition, caution, or withdrawal as indicative of poor social skills (Attili, Vermigli, & Schneider, 1997; Chen et al., 2000; Edwards, Gandini, & Giovannini, 1996). Italian valuation of social interaction and relationships is reflected in mothers' parenting expectations; Italian mothers report that they favor social-oriented interactions with their infants (Bornstein, Cote, & Venuti, 2001; Senese, Poderico, & Venuti, 2003). Harkness et al. (2007) coded interviews for nine themes of child development and 34 related caregiving practices that constitute culturally defined developmental agenda. Among Italy, Korea, the Netherlands, Spain, and the United States, social-emotional closeness, defined as the developing infant's ability to form significant affective relationships with others, was highest in Italy. The importance of social intelligence and emotional experience supports a cultural model centered on the infant's ability to build significant relationships from the opening months of life. Specifically, emotional closeness defines infant development in terms of expressiveness and liveliness (the *vivace* child), closeness to other people (the “sociable” child), and emotional security (the “serene” child). Northern Italian mothers believe that sociability, liveliness, and activity are positive manifestations of their babies' health and therefore tend to appreciate these characteristics (Axia & Weisner, 2002). Overall, a composite picture emerges in which social-emotional closeness and emotional security form the core developmental goal for Italian infant development. There, mothers employ a parenting style characterized by high levels of physical affection, intimacy, and face-to-face interactions. Hsu and Lavelli (2005), for example, compared Italian and U.S. American maternal parenting in early infancy: Italian mothers displayed greater affection, held their infants more, and spent more time in synchronous dyadic exchanges with their babies.

The United States—U.S. American childrearing is highly individualistic. Mothers prize effort for self-reliance, self-actualization, and autonomy in their children, and see optimal growth as the child's achievement (Bellah, Madsen, Sullivan, Swindler, & Tipton, 1985; Tamis-LeMonda & McFadden, 2009; Triandis, 1995). Important to children's development are psychological independence, that is accepting responsibility for one's own actions and establishing individual beliefs and values (Tilton-Weaver & Kakiyama, 2007). U.S. American mothers reportedly favor authoritative parenting, regulating interactions with their children so as to foster physical and verbal individuality and assertiveness (Bellah et al., 1985; Markus & Kitayama, 1991; Whiting & Child, 1953). In Harkness et al. (2007), U.S. mothers especially focused on cognitive processing and more generally on stimulating infant development. U.S. American parents were judged to conceptualize even young infants as thinking persons who could learn about their environments and organize their behaviors. U.S. American mothers engage in less social play, and verbally praise their children less, compared to Argentine mothers (Bornstein, Haynes, Pascual, Painter, & Galperin, 1999). Compared to Italian mothers, U.S. American mothers look at and talk to their young infants less frequently (Richman, LeVine, et al., 1988; Richman, Miller, & Solomon, 1988), and they display lower levels of affection toward them and spend less time in synchronous dyadic social exchanges with them (Hsu & Lavelli, 2005).

Mother-Infant Emotional Relationships in Rural and Metropolitan Ecological Contexts

Just as parenting and infant development are not necessarily uniform across countries, they are not necessarily uniform across major ecological settings within a country, such as rural and metropolitan. The distinction between rural and metropolitan is continuous rather than categorical. People in these two ecological contexts face many of the same challenges and share much of the same general cultural information (Thompson et al., 1996; Zayas, 1995). Yet, the notion that rural life differs in systematic ways from metropolitan life is a classic one in social science (see Hauser & Schnore, 1965; Redfield, 1947; Wirth, 1938). Rural areas typically differ from metropolitan centers structurally (in terms of population characteristics, density of social organization, and level of technological development). Metropolitan communities tend to be large, normally subscribe to a wider range of ideas and actions, and provide diverse experiences to smaller, more mobile, nuclear families (Bettencourt, Lobo, Helbing, Kühnert, & West, 2007). By contrast, rural environments more often consist of mutually dependent communities that tend to foster intimate contact where tradition, cohesiveness, homogeneity, and shared values typify interaction styles (Greenfield et al., 2006; Palacios & Moreno, 1996). Coleman et al. (1989) observed that less populated rural communities are more conventional and that cultural change often occurs there more slowly.

Rural and metropolitan environments are believed to engender different requirements and condition different patterns of adaptation within the family (Bradley, 2002). In rural areas, traditional and conservative ideas associated with the family tend to prevail (Scanzoni & Arnett, 1987; Willis, Bealer, & Crider, 1982). Rural parents often express less flexibility in childrearing (Palacios, 1999; Sanchez Hidalgo & Hidalgo García, 2003); they tend to be less permissive and more restrictive and punitive, preferring obedience and conformity (Mussen & Maldonado Beytagh, 1969); they also tend to possess less realistic developmental expectations for their children (Lehr & Jeffery, 1996; Palacios & Moreno, 1996). Rural communities tend to have fewer social resources available to families (Lichter & Jenson, 2002), and parents with fewer resources appear to parent less effectively (Sampson & Laub, 1994; Simons, Johnson, Conger, & Lorenz, 1997) and experience more impediments to fostering and sustaining their children's development (Kaiser & Delaney, 1996). Such stress tends to promote parental inconsistency and less optimal childrearing skills (Conger, McCarty, Yang, Lahey, & Kropp, 1984) and to interfere with parental sensitivity (Belsky,

Robins, & Gamble, 1984). In contrast, metropolitan parents tend to believe they are more influential in child development and to hold expectations for their children that coincide more closely with the child's actual level of development. Better educated, more literate, and exposed to more and different mass media (Greenfield et al., 2006; Hill, Stycos, & Back, 1959), they place greater emphasis on personal decision making and independence. They are also more child-centered and intent on fostering the development of independence and achievement in their children (Mussen & Maldonado Beytagh, 1969; Nsamenang & Lamb, 1995). Metropolitan parents tend to be authoritative, to eschew gender stereotypes, and to be more permissive and less rigid in regard to discipline (Camaioni, Longobardi, Venuti, & Bornstein, 1998; Palacios & Moreno, 1996). Thus, rural versus metropolitan settings relate to the psychology of caregivers and to their parenting cognitions and practices. These contrasting beliefs and behaviors, in turn, may differentially shape emotional relationships in the mother-child dyad.

The foregoing brief review of the psychology and sociology of parenting and infant development in Argentina, Italy, and the United States, and in rural and metropolitan contexts, supports some distinguishing community-specific expectations about mother and infant emotional relationships even in a culture-common framework of the adaptive significance of emotional relationships. Of course, the review refers to average group differences that perforce elide over variation that is characteristic within any group.

The Present Study

Despite the essential importance of emotional relationships in parent-child affairs and human development, a dearth of studies has systematically examined their cultural universality or investigated residual community-specific country and regional variation in this common dyadic construct. This study proposes to fill a gap of needed information about universal parent-child emotional relationships very early in life by addressing questions of specific country and region variation. The comparative approach we adopted is acknowledged by empiricists and theoreticians alike as requisite to a fuller understanding of developmental processes as well as necessary for testing the limits of generalization.

The samples that we used were generally representative of healthy, nonreferred mothers and their first infants in the national and regional groups described in more detail above. Given the critical importance of adequate emotional relationships for the survival and health of the human infant, we predicted (1) that most or all dyads in all samples would fall into the adaptive range on all Emotional Availability Scales. With respect to divergent cultural emphases in childrearing, we predicted (2) that Argentine mothers and infants, because of high demand practices, might be somewhat less emotionally available to one another; (3) that Italian mothers and infants, because of strong expectations in their culture for mutual socioemotional expressiveness, would be relatively more emotionally available to one another; and (4) that the pervasive individualist orientation in U.S. American childrearing would have the effect of rendering mothers and infants somewhat less emotionally available to one another. We also predicted (5) that across countries, metropolitan mothers and babies would display relatively higher levels of emotional relationships than those in rural settings.

Within the literature concerned with basic mother-infant emotional relationships, the following features distinguish the present study: (1) mothers and infants in two regional contexts in each of three countries were observed, recorded, and assessed; (2) the three countries and two regions were represented in adequate sample sizes; (3) sociodemographic and social status characteristics that may also relate to mother and infant emotional relationships were controlled; (4) consistent and standard cross-culturally validated observational and coding methodologies were employed; (5) child age and birth order were held constant across groups; and (6) all samples were balanced with respect to child gender

so that potential differences in emotional relationships in mothers and their infant daughters versus mothers and their infant sons could be examined.

Method

Mother-Infant Dyads

A total of 220 mother-infant dyads from 2 contrasting geographic regions in each of 3 countries were observed when the child was 5 months old. Seventy dyads resided in Argentina: 30 in rural Córdoba Province and 40 in metropolitan Buenos Aires. Seventy dyads resided in Italy: 30 in rural Ruoti in the southern Basilicata region and 40 in metropolitan Padua in the northern Veneto region. Eighty dyads resided in the United States: 40 in rural Berkeley County, West Virginia, and 40 in metropolitan Montgomery County, Maryland, and Fairfax County, Virginia, outside Washington, DC. Primiparous mothers with non-adopted, healthy infants were recruited from hospital birth notifications, patient lists of medical groups, newspaper birth announcements, and mass mailings. Sample demographic statistics by country are presented in Table 2 and by region in Table 3. All mothers were of European heritage; their average age was 26.58 years ($SD = 5.32$) at the time of the home visit; their average educational level (measured on the 7-point Hollingshead scale) was 4.24 ($SD = 1.57$); and their average hours of employment per week was 10.96 ($SD = 15.94$). Most mothers were married, and the child's father was living in the home in 93.64% of families. The six samples represented a range from low to upper-middle SES as measured by the Hollingshead (1975) Four-Factor Index of Social Status (see also Bornstein, Hahn, Suwalsky, & Haynes, 2003; Pascual, Galperín, & Bornstein, 1993): grand $M = 37.73$ ($SD = 14.48$).

All infants were born at term, and all but 2 weighed over 2500 g at birth (2 from Buenos Aires weighed 2360 g and 2450 g, but neither emerged as a univariate or multivariate outlier, so both were retained). Infants averaged 5.27 months of age at the visit ($SD = 0.25$ months). Approximately equal numbers of girls and boys were recruited in each group, $\chi^2(5, n = 220) = 1.52, ns$.

The rural-metropolitan contrast is naturally confounded with socioeconomic status (SES; i.e., parent education and occupation). SES per se is believed to play a significant role in the expression of diverse aspects of child development and parenting (see Bornstein & Bradley, 2003; Hoff, Laursen, & Tardif, 2002), and dyads that are less deprived and whose needs are less pressing may function more optimally. Ziv, Sagi, Gini, Karie-Koren, and Joels (1996), for example, reported that higher-SES mother-child dyads are more emotionally available to one another than lower-SES dyads. We therefore controlled maternal education as a proxy for SES (Bornstein et al., 2003).

Procedures

Each mother-infant dyad was visited at home and recorded for an hour of naturalistic interaction by a single female filmer who was a native of the country. Observations were scheduled at a time when the infant was awake and alert and when only mother and infant were at home. The mother was instructed to go about her ordinary routine and to disregard the filmer as much as possible. Because we were interested in observing natural mother-infant interaction, no foreign objects (e.g., toys) were introduced into the home. After a conventional period of acclimation to the camera and the presence of the filmer (McCune-Nicolich & Fenson, 1984; Stevenson, Leavitt, Roach, Chapman, & Miller, 1986), filming commenced. The filmer resisted talking to the mother or making eye contact and interacting with or otherwise reacting to the infant during the filming. In all samples, there was ample evidence of diverse interactive behavior: infants vocalized and explored, and mothers

encouraged exploration and engaged babies to interact with them. Mothers also tended to their infants by bathing, diapering, and feeding as needed.

Assessments

Emotional relationships—Emotional relationships in mother-infant dyads were evaluated using the Emotional Availability Scales: Infancy to Early Childhood Version (EA Scales; 3rd ed.; Biringen et al., 1998). Each of the 6 qualitative relationship dimensions is expressed on a linear scale, ranging from the most to the least optimal configuration of behavioral indicators. Maternal sensitivity (1–9 scale) assesses acceptance, flexibility, affect regulation, and variety and creativity of behavior displayed toward the infant. Structuring (1–5) assesses appropriate facilitation, scaffolding, or organizing of infant state, activity, exploration, and routine by providing rules, regulations, and a supportive framework for interaction without compromising the infant's own interest in such activities. Nonintrusiveness (1–5) assesses support for the infant without being overdirective, overstimulating, overprotecting, and/or interfering. Nonhostility (1–5) assesses the degree to which maternal behavior was patient, pleasant, and harmonious, and not rejecting, abrasive, or antagonistic. Infant responsiveness (1–7) assesses age- and situation-appropriate engagement with mother and with the inanimate environment (i.e., the balance between relatedness and autonomy) as well as enjoyment of social interaction. Involvement of Mother (1–7) assesses the infant's attempts to engage the mother as well as their success. Upper and lower ranges both contain variations in the degree to which, and the behavioral style with which, the construct is expressed.

For all dimensions of emotional availability, there is a relatively broad behavioral range within which dyadic functioning is conducive to healthy development. For example, all mothers scoring 6, 7, 8, or 9 on Sensitivity are judged to be sensitive in interaction with their infants, but their style of sensitivity may vary. The authors of the Scales have indicated points on each Scale below which dyadic behavior is considered to be non-adaptive (clinically concerning) for mother and baby. Thus, a mother scoring 9 on Sensitivity is considered to be more exquisitely sensitive than a mother scoring 6, but both are judged to be sensitive overall with no signs of insensitivity. A mother scoring 5.5 or below has demonstrated some behavioral indications of a lack of sensitivity. As another example, although any score on Nonintrusiveness that falls below 5 indicates the presence of observed intrusiveness, the authors set the cut point for clinical concern for this scale below 3. A score of 3 indicates that “The parent too frequently sets the pace of the interaction...as opposed to following the child's direction... . Such behavior appears more directive and/or slightly overprotective rather than truly intrusive... . The parent has the quality of a didactic school teacher, with an agenda about child performance in this context” (Biringen et al., 1998, p. 69). Scores below 4.5 for Sensitivity, below 3 for Structuring and Nonintrusiveness, and below 4 for Nonhostility, Responsiveness, and Involvement raise concern about the emotional health of the dyad. It is primarily within the upper ranges of the EA Scales that we expected to discern group differences associated with different (country or region) contexts. More complete descriptions of the EA Scales can be found in Biringen and Robinson (1991), Biringen (2000), and Easterbrooks and Biringen (2000, 2005, 2009).

Cross-cultural comparisons are feasible to the extent that the meaning of the questions, settings, scales, and so forth are roughly similar across cultures (Van de Vijver & Leung, 1997). Although the EA Scales were developed within a European American research tradition, they have been used successfully in 20 countries (see, e.g., Easterbrooks & Biringen, 2009; Oyen et al., 2000; Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000). The EA Scales have been used with children from low and high social-risk populations (e.g., Oyen, Landy, & Hilburn-Cobb, 2000;

Swanson, Beckwith, & Howard, 2000). Furthermore, construct (convergent) validity of the EA Scales has been examined against concurrent and longitudinal measures of attachment in a variety of studies (see Easterbrooks & Biringen, 2000, 2005, 2009). For example, the general construct of sensitivity was initially developed by Ainsworth (1967) in Uganda, but has proven to be a robust predictor of attachment in children in a wide variety of different societies (van IJzendoorn et al., 2006). Emotional availability has been linked to a host of positive child characteristics and outcomes including independence, social responsibility, low aggressiveness, self-confidence, high self-esteem, and behavioral adjustment in the socioemotional sphere as well as school readiness, language, and play in the cognitive sphere (e.g., Biringen, Skillern, Mone, & Pianta, 2005; Pressman, Pipp-Siegel, Yoshinaga-Itano, Kubicek, & Emde, 2000; Venuti, de Falco, Giusti, & Bornstein, 2008). As an informal test of the cross-cultural construct validity of the EA Scales in our data, we assessed relations between maternal Sensitivity and mothers' parenting knowledge in each country. Maternal Sensitivity was significantly related to knowledge of child development and childrearing in the full sample, $r(194) = .29, p \leq .001$, and in each country: Argentina, $r(55) = .37, p \leq .01$; Italy, $r(63) = .45, p \leq .001$; and the United States, $r(72) = .37, p \leq .001$.

Emotional availability was coded from the first 15 min of records of mother-infant naturalistic interaction in the home setting. The findings of previous studies using 10- to 15-min observations support the validity of this temporal parameter (see Easterbrooks, Biesecker, & Lyons-Ruth, 2000; Swanson et al., 2000; Ziv et al., 2000). All coders were first trained on the EA Scales in English to obtain satisfactory interrater reliability with one of the authors of the EA Scales and with one another. We established compatibility of the EA Scales across raters. Two English-Spanish bilingual U.S. natives coded the Argentine interactions; two English-Italian bilingual Italian natives coded the Italian interactions; and six English-speaking U.S. natives coded the U.S. interactions. Each coder scored approximately the same number of interactions. Coders were blind to hypotheses and purposes of the study and to additional information about the dyads. In accordance with the recommendations of Shrout and Fleiss (1979), intraclass correlation coefficients (*ICC*) were calculated to establish reliability; interrater reliability was assessed using average absolute agreement *ICC* in a two-way random effects model (McGraw & Wong, 1996). Coder reliabilities were computed for the 4 bilingual coders on 20% of the U.S. interactions ($n = 16$), and *ICCs* for the 6 EA Scales ranged from .83 to .91, and reliability ($n = 16$ cases) of the four bilingual coders with the six U.S. native coders across the 6 EA Scales ranged from .88 to .93. As a further test, within-country reliability was computed for the 2 English-Spanish bilingual coders on 16 Argentine interactions and the 2 English-Italian bilingual coders on 16 Italian interactions. Argentine reliability on the 6 EA Scales ranged from .52 to .98, and Italian reliability ranged from .86 to .95. The lowest reliability for the Argentine sample was for Nonhostility and was the result of attenuated scale variance; coders agreed within one-half point on their Nonhostility ratings for 100% of the sample.

Evaluations of the observations—As a check against threats to validity, at the conclusion of the home visit mother and filmer independently evaluated the session by marking a series of 8-point (*range* = 0 to 7) graphic rating scales, randomly ordered with respect to valence but recoded in ascending order. Mothers reported that their infants' behavior ($M = 5.34, SD = 1.86$) and their own ($M = 5.01, SD = 1.73$) during the visit was characteristic of their normal routine. According to filmers' evaluations, mothers were relaxed ($M = 4.63, SD = 1.88$) and infants were not fussy ($M = 2.25, SD = 1.94$). Nonetheless, several country differences emerged on these measures: Argentine mothers rated themselves and their infants lower on the typicality of their behavior than Italian and U.S. mothers; filmers rated Italian mothers as less relaxed than U.S. mothers; and filmers rated Italian babies as more fussy than U.S. and Argentine babies. Therefore, these variables were included as potential covariates in the analyses that follow.

Results

Preliminary Analyses

Univariate distributions of the Emotional Availability Scales and potential covariates were initially examined for normalcy, homogeneity of variance, outliers, and influential cases (Fox, 1997). Transformations were applied to resolve problems of non-normalcy, and residuals were examined for influential points (Bollen, 1987; Tabachnick & Fidell, 1996). Maternal Nonintrusiveness and Nonhostility were skewed, all $ps < .05$, and no transformation would normalize them; they were therefore analyzed with nonparametric statistics. These skewed distributions were not surprising; both Scales were designed to capture specific types of negative behaviors that are relatively uncommon in low-risk samples. The other four EA Scales were re-expressed using second-power transformations to approximate normalcy. Analyses were conducted on the transformed data; for clarity, descriptive statistics are presented using untransformed variables.

Covariates

As shown in Tables 2 and 3, a number of demographic variables distinguished the countries and regions, but these were natural variations that are representative of the countries and regions under study. We only wanted to control for variables that were related to variations in mother and child emotional relationships. Because maternal education was highly correlated with paternal education and family SES in the full sample, $r(215) = .81, p \leq .001$, and $r(218) = .80, p \leq .001$, respectively (see Schwartz & Mare, 2005), and because mothers were observed interacting with their infants, we used maternal education as the proxy for family education and SES. Child birth weight, maternal age and hours of employment, and mother and filmer evaluations of the visit were also examined as potential covariates. Maternal education and age were related to the 4 continuously distributed EA Scales ($r_s = .19$ to $.32, ps \leq .01$). The typicality of the infant's behavior in the session (as reported by the mother) was related to maternal Structuring and infant Responsiveness and Involvement ($r_s = .16$ to $.23, ps \leq .05$), and mothers' self-reported typicality of her own behavior in the session was related to maternal Structuring ($r = .18, p \leq .05$). No other potential covariates were related to the EA Scales. Therefore, we included only maternal education and age and the typicality of infant and mother behavior as covariates in the parametric analyses that follow.

Analytic Plan

The dominant approach to assessment in developmental science uses single variables or combinations of variables as the main conceptual and analytical units (Hartmann & Pelzel, 2005). Thus, a datum for an individual derives psychological meaning from its position relative to the positions of other individuals' data on the same dimension. Each of the six EA Scales (defined above) rates the behavior of one actor, mother or infant, in terms of variables. We also conducted complementary assessments of configurations of variables for both actors across the dyad (Magnusson & Allen, 1983). In this paper, we use "variable" to describe the statistical *cum* conceptual approach specific to our analyses of the expressions of emotional relationships in individuals and "person" to describe the more holistic approach to the analyses of behavioral patterns in dyads. We analyze and compare emotional relationships in mothers and infants at the variable level using individual EA Scales, and we compare emotional relationships in mother-infant dyads at the person level by applying an analytic procedure that groups dyads into clusters that show similar patterns of Scale ratings. We use both variable and person analyses because they provide complementary interpretations of the data. For example, individuals (scales) may not show differences by country, but dyads (clusters) might, indicating that, although average scores on a particular

scale might be the same between countries, when all Scales are used to cluster dyads, country differences become apparent.

First, descriptive statistics are presented separately for country, region, and infant gender. Next, for variable-level analyses four $3 \times 2 \times 2$ (country by region by infant gender) analyses of covariance (ANCOVAs) were conducted to assess main effects and possible interaction effects in maternal Sensitivity and Structuring and infant Responsiveness and Involvement. We had no specific hypotheses about interaction effects, and so all possible interactions were explored. Because of the skewed distributions of maternal Nonintrusiveness and Nonhostility, nonparametric tests were performed on these two EA Scales to determine whether they differed across countries, regions, and infant gender. For country effects, Kruskal-Wallis tests were used; for region and gender effects, Mann-Whitney U tests were used. Because no covariates could be applied, and interactions are not possible using nonparametric tests, these findings should be interpreted with caution.

A post-hoc power analysis was computed prior to data analysis to determine whether the sample size of 220 provided sufficient power to detect a medium-sized effect in a $3 \times 2 \times 2$ ANOVA design (Faul, Erdfelder, Lang, & Buchner, 2007). With an effect size of .25, $\alpha = .05$, and $N = 220$, the power estimates ranged from .92 to .96, indicating adequate power to detect a medium or large effect.

Person-level analyses were computed using a K-Means Cluster Analysis (Hartigan & Wong, 1979) of the 4 continuous EA Scales. We pooled all dyads into a single analysis so that the clusters could be compared across country, region, and infant gender. Three clusters were specified *a priori* because theoretically the EA Scales have an underlying distribution consistent with low, mid-range, and high emotional availability (Biringen et al., 1998), and other studies have identified 3-cluster solutions (e.g., Bornstein, Gini, Suwalsky, Putnick, & Haynes, 2006; Chaundhuri et al., 2009). Finally, the distributions of Argentine, Italian, and U.S. mother-infant dyads, rural and metropolitan dyads, and mother-daughter and mother-son dyads across clusters were explored with first-order configural frequency analyses (von Eye, 2002) using Lehmacher's test with Küchenhoff's continuity correction. Configural frequency analysis explores whether each cell in a cross-tabulation contains significantly more or fewer cases than expected. The distributions of mothers' Nonintrusiveness and Nonhostility were examined in relation to the clusters derived from the other 4 EA Scales. The Nonintrusiveness and Nonhostility EA Scales were dichotomized into mothers who exhibited some vs. no intrusiveness or hostility to be able to make cross-tabulations with adequate cases in each cell.

Descriptive Statistics

Tables 4 and 5 present means and standard deviations for the EA Scales across country and region, respectively. In terms of mean level, functioning on all EA Scales across all groups was in the adaptive non-clinical range. That is, in all countries for both regions, dyadic emotional relationships were, on average, conducive to the healthy growth and development of the baby. The EA Scales shared variance across countries, regions, and infant gender (range = 6% to 87%), and the amounts of shared variance were similar across countries, regions, and infant gender. Separate variable analyses were conducted for each EA Scale because each Scale has independent theoretical standing in the literature (Biringen, 2009), and we were interested in exploring patterns of country, region, and infant gender on each.

Mother-Infant Emotional Relationships: Variable Analyses

Separate ANCOVAs were performed on maternal Sensitivity, maternal Structuring, infant Responsiveness, and infant Involvement. No two- or three-way interactions between

country, region, or gender emerged for any Scale, nor did main effects of gender in the parametric or nonparametric tests. For main effect results of country and region, see Tables 4 and 5. Mean differences reported below are in transformed (second-power) units.

Sensitivity—A main effect of country emerged for maternal Sensitivity. Simple contrasts indicated that Italian mothers were rated as more sensitive than Argentine and U.S. mothers, M difference = 5.57, $SE = 2.83$, $p \leq .05$, and M difference = 8.39, $SE = 2.96$, $p \leq .01$, respectively, but Argentine and U.S. mothers did not differ, M difference = 2.82, $SE = 2.73$, ns . No main effects for region were found.

Structuring—No main effects emerged for maternal Structuring.

Responsiveness—A main effect of country emerged for infant Responsiveness. Simple contrasts indicated that Italian infants were rated as more responsive than Argentine and U.S. infants, M difference = 3.98, $SE = 2.02$, $p \leq .05$, and M difference = 5.68, $SE = 2.12$, $p \leq .01$, respectively, and Argentine and U.S. infants did not differ, M difference = 1.70, $SE = 1.94$, ns . No main effects of region were found.

Involvement—No main effects emerged for infant Involvement.

Nonintrusiveness—Nonintrusiveness was higher in metropolitan than in rural dyads (i.e., rural mothers were more intrusive). Nonintrusiveness did not differ across countries.

Nonhostility—Nonhostility did not differ across countries or regions.

Mother-Infant Emotional relationships: Person Analyses

We employed a K-Means Cluster analysis, specified 3 clusters, and identified dyads as belonging to (1) Lower emotional availability (2) Mid-range emotional availability or (3) Higher emotional availability groups. Means and standard deviations by country and region are presented in Tables 6 and 7, respectively. Overall, for all 4 continuous EA Scales the three cluster means differed significantly from one another, $F_s(2, 217) = 183.24$ to 346.05 , $p_s \leq .001$. Mothers who exhibited some vs. no intrusiveness or hostility were not equally distributed across clusters, $\chi^2(2, n=220) = 36.81$, $p \leq .001$, and $\chi^2(2, n=220) = 46.92$, $p \leq .001$, respectively. Mothers who exhibited some intrusiveness were more likely than expected to be classified as lower in emotional availability, $z'_L = 4.91$, $p \leq .001$, and less likely than expected to be classified as higher in emotional availability, $z'_L = -4.88$, $p \leq .001$. Similarly, mothers who exhibited some hostility were more likely than expected to be classified as lower in emotional availability, $z'_L = 6.04$, $p \leq .001$, and less likely than expected to be classified as higher in emotional availability, $z'_L = -4.88$, $p \leq .001$. Mother-daughter and mother-son dyads were approximately equally distributed across clusters, $\chi^2(2, n=220) = .20$, ns . Results from configural frequency analysis confirmed that no cell contained an unexpected number of cases.

Distributions of Argentine, Italian, and U.S. dyads across clusters—Mother-infant dyads from Argentina, Italy, and the United States were not equally distributed across clusters, $\chi^2(4, n=220) = 10.19$, $p \leq .05$. Results from configural frequency analysis identified 2 cells with unexpected numbers of cases. Italian dyads were less likely than expected to be classified as lower in emotional availability, $z'_L = -1.81$, $p \leq .05$, and more likely than expected to be classified as higher in emotional availability, $z'_L = 2.84$, $p \leq .01$.

Distributions of rural and metropolitan dyads across clusters—Rural and metropolitan mother-infant dyads were not equally distributed across clusters, $\chi^2(2, n=220)$

= 16.64, $p \leq .001$. Results from configural frequency analysis identified 4 cells as containing unexpected numbers of cases. Metropolitan dyads were less likely than expected to be classified as mid-range in emotional availability, $z'_L = -2.40$, $p \leq .01$, and more likely than expected to be classified as higher in emotional availability, $z'_L = 3.93$, $p \leq .001$. Rural dyads were more likely than expected to be classified as mid-range in emotional availability, $z'_L = 2.40$, $p \leq .01$, and less likely than expected to be classified as higher in emotional availability, $z'_L = -3.93$, $p \leq .001$.

Discussion

This international study of mother and infant emotional relationships had as its chief goal to explore the culture-common and community-specific nature of mother-infant emotional relationships across country and region. On an evolutionary based argument, we expected to see primarily adaptive dyadic emotional functioning in healthy non-clinical samples, but we also expected that contextual characteristics would differentially shape expressions of emotional relationships within this normative range.

Emotional relationships are assessed across a range of everyday parent-child exchanges and are a product of the interaction of constitutional needs and organismic development, embedded in situation-specific experiences and contexts. That is, emotional relationships arise from requirements as well as desires. A developmental requirement is that parents and infants communicate emotionally with one another. In this sense, dimensions of emotional relationships constitute expected universal aspects of parent-child relationships (Papoušek & Papoušek, 2002). Just as secure attachments represent the majority and the norm across cultures (van IJzendoorn et al., 2006), so mothers and their young infants appear to function at adaptive levels in the sphere of their emotional relationships across the countries and regions we studied. As an operationalization of emotional relationships, we were readily able to apply the EA Scales in all of our samples, and the results demonstrate clearly that mothers and new babies in different locales around the globe connect with each other emotionally.

Emotional relationships proved to be culturally common across country, region, and gender, and the mean level of functioning on all EA Scales across all groups fell in the adaptive non-clinical range. That is, in all countries for both regions and for both girls and boys, dyadic emotional relationships were, on average, conducive to healthy growth and development in the dyad. Overall, our data suggest that, across a variety of cultural groups around the world, adaptive emotional functioning between mothers and young babies is the norm. While intuitively not surprising, these conclusions are as important as are findings of residual cultural and regional differences in mother-infant emotional relationships.

Next to the demand for adequate emotional relationships, it is desirable that parents and infants communicate in certain ways that are both adaptive for the dyad as well as functional within their specific ecological and social context. Country and regional comparisons of emotional relationships tell us about mothers' and infants' mutual adjustment in terms of contextually appropriate and desirable demands. One influential paradigm to assess the general association between culture and development suggests that cultural prescriptions influence the formation of parental cognitions that in turn manifest in the practices parents use to achieve their childrearing goals (Gauvain & Parke, 2009; Greenfield et al., 2006; Whiting & Child, 1953). The present findings suggest that this model, at least in part, might describe cultural forces that shape maternal and infant mutual emotional relationships.

Why, given the assumption of adequate functioning for most or all dyads, would variations in emotional expression be of interest? The neurologically intact newborn can survive and

perhaps thrive in diverse conditions, but maternal and infant behaviors are also plastic and adaptable. If a young child is to be fully successful, he or she must be socialized securely into the group(s) within which he or she will live and function. This responsibility early in life falls mainly and normatively to parents (Bornstein, 2006). Their effectiveness as agents of socialization depends, at least in part, on how well the malleable infant behavior repertoire is assimilated to the expectations and patterns of the group. One primary mechanism for accomplishing this task is the mother-infant relationship, of which emotional characteristics are a salient component. Naturally, and without necessarily consciously intending to, mothers perceive and react to their young infants selectively, shaping dyadic exchanges according to the cultural prescriptions within which the family is embedded. Examining these processes sheds light on the complex nature of socialization which, around the world and across time, has resulted in a stunning variety of contextually moderated and linked permutations on normative human functioning. This study of country and regional variations in emotional relationships in infancy targets this phenomenon in ways that have not previously been attempted.

In our data, when a country difference emerged, Italian mothers were rated as more sensitive, Italian infants as more responsive, and Italian dyads were disproportionately likely to be classified as higher in their emotional availability. These results accord with other cultural findings of a special valuation and cultural demand characteristic on Italian mothers and children with respect to displays of emotions. De Sandre (1993) investigated the representation of roles in a sample of more than 400 Italian women and found that they awarded more importance to family-related interests and needs compared to personal achievement. Within the family, Italian parents principally concentrate their energies on affective relationships with the child, and Italian mothers particularly stress the importance of the relationship they have with the child – “a relationship that is to satisfy the affective needs of the mother and of the child” (Bimbi, 1992, p. 150). Richman and colleagues reported that positive affective exchanges hallmark Italian mother-infant interactions (e.g., Richman, LeVine, et al., 1988; Richman, Miller, et al., 1988). Moreover, Italian mothers' social representation of caregiving practices – for example breast feeding – are predominantly characterized by affective and warm elements compared to objective and instrumental ones (Molinari & Speltini, 1997). Hsu and Lavelli (2005) also found that, compared to U.S. American mothers, Italian mothers display high levels of social/affective behaviors, hold their very young infants more, and spend more time in synchronous dyadic social exchanges with their infants. Italian dyads are more likely to openly express affection to each other than are U.S. American dyads during their first 3 months, and Italian mothers' self-efficacy ratings covary systematically with measures of dyadic attunement. Our results accord with all these findings that reflect Italians' central cultural valuation of harmonious socioemotional interactions. More generally, Italian society values the mother-infant social bond. In Italy, maternity leave and pay are among the most generous in the European Union (Hardy & Adnett, 2002). Each parent can take a 10-month parental leave at any time until the child is 8 years old. Italian parents can also use parental leave to shorten their work by 2 hours per day during the child's first year (Hardy & Adnett, 2002).

With respect to regional differences, our findings showed that rural mothers were less likely than metropolitan mothers to be classified as higher in emotional availability. Rural mothers were also, on average, more intrusive than metropolitan mothers, even though the mean level of intrusiveness in the rural sample was low (i.e., Nonintrusiveness was high). This finding of widespread, low-level (nonclinical) intrusiveness suggests that the intrusiveness we observed was not indicative of dysfunctional parenting but, rather, reflected a contextually driven emphasis in maternal behavior. It is possible, had our nonparametric analyses been able to control maternal education, these differences would have attenuated. However, the findings articulate with other studies of rural childrearing orientations. For

example, rural mothers' speech is more generally controlling (e.g., directing children to act in a certain way; Camaioni et al., 1998), and controlling through speech is one aspect of intrusiveness. Maternal intrusiveness in infancy is most likely to be reflected in non-verbal behavior (e.g., the manner in which play materials are presented or the way in which caregiving routines are carried out), and our data suggest that rural mothers may be more directive with their children from the earliest months. Nearly half of mothers mid-range in their emotional relationships demonstrated at least some intrusiveness. Intrusiveness can be indicative of a mother's perception of herself as a "teacher" (as opposed, perhaps, to an "educator"), invested with responsibility to impart important information and skills to her child. What cultural purpose might this serve? Perhaps maternal intrusiveness in rural mothers reflects parental perceptions of a more demanding and challenging environment for children in their future dealings with life circumstances (rural families tend to command fewer external health, educational, and financial resources). Are these mothers then subtly preparing their children to cope with a life that imposes more restrictions and hardships in the sense that they may have less control (or may be controlled to a larger degree by environmental dictates) as compared to mothers in metropolitan settings? On the premise that functional behavior patterns tend to survive, understanding the adaptive value of variations in parenting behavior for children is critical to a full appreciation of socialization techniques. Such intra-country/culture variation also serves to caution cross-culturalists against too ready country- or culture-wide generalizations.

In terms of range, Tables 6 and 7 show that there were some dyads in both regions of each country for whom dyadic functioning in terms of Sensitivity, Responsiveness, and Involvement did not appear to be healthy. Although no group fell below clinical cut-points, some individual dyads did. Just as all groups tend to be well-functioning on average, no group is immune to difficulties in emotional relating.

Balancing Strengths with Weaknesses

The strengths of this study need to be considered next to its weaknesses. In terms of representativeness, we recruited mothers and infants from Western and roughly comparable South American, European, and North American societies. The study contributes information about early emotional relationships in two relatively underresearched populations (Argentina and Italy) and compares them to a more comprehensively researched one (the United States). It also brings to the fore intracultural variation in the context of cross-cultural comparison. We studied three countries on three continents and two regions within each country; despite this range of research sites, it is certainly possible that mother-infant emotional relationships express themselves differently in other countries and in different regions. The restrictions we took in recruitment aided our comparisons by clearly defining the sample-to-population reference, and we caution against generalizing our findings to populations not sampled. The infants who participated were all healthy firstborns of a specific age; moreover, we studied only young infants and their mothers. Examination of children of different ages or with special needs; single, separated, or divorced mothers; or fathers or other nonparental caregivers might result in different patterns of parent/caregiver and child emotional relationships. Our cluster means also did not represent the full range of the EA Scales identified by Biringen et al. (1998) because ours were nonclinical community samples that lacked sufficient dyads who might score in the maladaptive range. Voluntary recruitment could have influenced which families agreed to participate in the study. These factors (and others no doubt) constrain the generalizability of our findings. Robinson, Little, and Biringen (1993) identified possible methodological limitations based on stereotypes in raters' coding of the EA Scales. In our study, however, trained, reliable, independent coders contributed to the data. In interpreting group (country, region, and gender) findings, it is also important to bear in mind that average differences can mislead because there is almost

always considerable overlap between comparison groups. The EA Scales were originally developed in a U.S. American setting, but the consistency and face validity of findings resulting from their wide cross-cultural application support their validity and generalizability across cultures and regions.

Future Directions and Conclusions

Studies like ours suggest additional research on developmental questions related to individual differences in mother-infant emotional relationships. How and why do parents and children come to develop emotionally relationships with one another so early in life? Although hormonal or physiological processes are likely involved (Bornstein & Suess, 2000; Panksepp, 1998), our results clearly show that the cultural context in which mother and infant are making each other's acquaintance must be considered to play a role as well. It would be desirable to examine the processes by which emotional relationships guide elements of the social agenda of day-to-day parent-child interactions. In this regard it may pay dividends to investigate parenting beliefs as they influence parenting behaviors, especially as culture is involved (Bornstein, 2006; Bornstein & Lansford, 2009). Effects that explain small amounts of variance in initial states can account for large final outcomes when those states recur; an implication of this statistical and systems observation in the developmental realm suggests that children may follow divergent ontogenetic paths if their interactive environments -- those to which they are exposed repeatedly -- differ even slightly in infancy. On this argument, the eventual developmental consequences of early variation in emotional relationships clearly merit additional study. According to attachment theory (Bowlby, 1969), infants who experience positive emotional relationships with caregivers should be better able to regulate their own emotions and hold a more accessible and empathic stance toward others (Biringen & Robinson, 1991). Emotional relationships in infancy thus help to set the stage for socioemotional regulation in childhood and beyond. Another question for future investigation would be to identify the domains of parenting and child development that individual differences in emotional relationships predict. A growing body of evidence using the EA Scales shows that both parent and child components of emotional relationships predict quality of attachment (Easterbrooks & Biringen, 2000) as well as other dimensions of child development, parenting, and parent-child relationships, such as mothers' understanding of their infants' perspective (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002) and appreciation of infant psychological state (Ainsworth, Bell, & Stayton, 1974; Feldman & Reznick, 1996; Reznick, 1999; Sroufe, 1985) as well as her own reflective function (Fonagy et al., 1995; for reviews see Biringen, 2000; Pipp-Siegel & Biringen, 1998). These observations indicate that an emotional relationships framework might be profitably applied in "a global way to describe the overall quality of the affective relationship" between parent and child (Biringen, 2000, p. 112) and to understand better culture-common and community-specific trajectories of child development.

Acknowledgments

This research was supported by the Intramural Research Program of the NIH, NICHD.

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Table 1
Rural and urban population demographic statistics from Argentina, Italy, and the United States

	Argentina		Italy		United States		
	Urban	Rural	Urban	Rural	Urban	Rural	
	Buenos Aires	Cordoba Province	Padua, Veneto Region	Ruoti, Basilicata Region	Montgomery County, Maryland	Fairfax County, Virginia	Berkeley County, West Virginia
Population	2,776,138	3,066,081	203,350	3,599	873,341	969,682	75,905
Population density (per km ²)	136,796.0	18.6	2,190.1	65.4	679.9	947.9	91.3
Birth rate (per 1,000 population)	13.9	15.9	9.3	9.1	14.3	14.6	13.2
Average per capita income ^a	\$28,200	\$9,040	\$27,165	\$16,013	\$35,684	\$36,888	\$17,982

Note: Argentine statistics are drawn from National Institute of Statistics and Censuses (INDEC; 2009), Italian statistics are drawn from ISTAT (2001), and U.S. statistics are drawn from the U.S. Census Bureau (2009).

^a Italian per capita income was converted from Euros to U.S. Dollars (conversion rate as of December 31, 2003: 1 Euro = 1.2597 U.S. Dollars).

Sample demographic statistics and tests of group differences for families in Argentina, Italy, and the United States

Table 2

	Argentina (<i>n</i> = 70)		Italy (<i>n</i> = 70)		United States (<i>n</i> = 80)		<i>F</i> (2, 219)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Mother age at child's birth	24.92 _a	5.35	27.28 _b	4.59	26.23 _{a,b}	5.71	3.53 [*]
Mother education	4.00 _a	1.44	3.67 _a	1.58	4.95 _b	1.42	15.36 ^{***}
Mother employment (% employed)	40.00%		17.14%		53.75%		--
Mother hours of employment	22.81 _a	11.52	27.27 _{a,b}	15.91	33.79 _b	8.72	8.55 ^{***}
Father age at child's birth	27.53 _a	5.26	30.50 _b	5.09	29.80 _b	6.11	5.41 ^{**}
Father education	3.88 _a	1.43	3.61 _a	1.53	4.86 _b	1.31	16.10 ^{***}
Family socioeconomic status	35.96 _a	15.41	34.68 _a	14.37	41.91 _b	12.88	5.62 ^{**}
Marital Status (% married)	77.14%		100%		82.50%		--
Infant birth weight (grams)	3342.50 _a	414.71	3271.29 _a	395.51	3552.94 _b	479.26	8.67 ^{***}
Infant gender (% female)	50.00%		42.86%		50.00%		--
Infant age at visit (in days)	164.11 _a	9.06	154.87 _b	5.17	162.13 _a	5.37	37.07 ^{***}

Note. Means with different subscripts differed significantly at $p < .05$ in Tukey HSD post-hoc comparisons. Mother and father are rated on the 7-point Hollingshead (1975) education scale. Family socioeconomic status was measured by the Hollingshead (1975) Index.

*
 $p \leq .05$.

**
 $p \leq .01$.

***
 $p \leq .001$.

Table 3
Demographic statistics and tests of group differences for rural and metropolitan families

Metropolitan	Rural (n = 100)		Urban (n = 120)		F(1, 219)
	M	SD	M	SD	
Mother age at child's birth	23.56	4.82	28.30	4.74	53.59***
Mother education	3.54	1.40	4.83	1.47	43.62***
Mother employment (% employed)	35.00%		40.00%		--
Mother hours of employment	30.06	11.53	28.76	12.16	.24
Father age at child's birth	26.90	4.88	31.21	5.49	35.76***
Father education	3.40	1.28	4.76	1.42	53.39***
Family socioeconomic status	29.17	11.47	44.72	12.87	86.78***
Marital Status (% married)	81.00%		90.83%		--
Infant birth weight (grams)	3378.33	445.71	3411.39	452.24	.30
Infant gender (% female)	50.00%		45.83%		--
Infant age at visit (in days)	158.95	6.82	161.70	8.25	7.07**

Note. Mother and father are rated on the 7-point Hollingshead (1975) education scale. Family socioeconomic status was measured by the Hollingshead (1975) Index.

**
p ≤ .01.

***
p ≤ .001.

Table 4

Descriptive statistics of the Emotional Availability Scales by country

	Argentina (<i>n</i> = 70)		Italy (<i>n</i> = 70)		United States (<i>n</i> = 80)		<i>F</i> / χ^2	η^2
	M	SD	M	SD	M	SD		
Mother								
Sensitivity	6.26 _a	1.55	6.81 _b	1.35	6.29 _a	1.30	4.14 [*]	.04
Structuring	4.06	.85	4.27	.66	4.25	.72	.18	.00
Nonintrusiveness	4.66	.63	4.67	.59	4.79	.45	2.60	--
Nonhostility	4.82	.38	4.88	.27	4.73	.59	2.15	--
Infant								
Responsiveness	4.99 _a	1.16	5.54 _b	.86	5.05 _a	1.01	3.73 [*]	.04
Involvement	4.89	1.07	5.40	.85	5.06	1.02	2.33	.03

Note. Analyses of Sensitivity, Structuring, Responsiveness, and Involvement included other factors in the model and controlled for covariates. Results for Nonintrusiveness and Nonhostility are Kruskal-Wallis tests (χ^2). Means with different subscripts differed significantly at *p* < .05 in post-hoc contrast analyses.

* *p* < .05.

Table 5

Descriptive statistics of the Emotional Availability Scales by region

	Rural (<i>n</i> = 100)		Metropolitan (<i>n</i> = 120)		F/Z	η^2_p
	M	SD	M	SD		
Mother						
Sensitivity	6.08	1.40	6.75	1.35	1.27	.01
Structuring	4.03	.80	4.34	.68	.25	.00
Nonintrusiveness	4.60	.66	4.80	.43	2.80**	--
Nonhostility	4.80	.48	4.81	.42	.16	--
Infant						
Responsiveness	4.98	.98	5.37	1.06	.02	.00
Involvement	4.90	.96	5.29	1.01	.00	.00

Note. Analyses of Sensitivity, Structuring, Responsiveness, and Involvement included other factors in the model and controlled for covariates. Results for Nonintrusiveness and Nonhostility are Mann-Whitney U tests (Z).

**
p < .01.

Table 6

Cluster means of emotional relationships by country

	Lower			Mid-range			Higher			F/ χ^2
	M	SD	n	M	SD	n	M	SD	n	
Argentina										
	n = 21			n = 30			n = 19			
Sensitivity	4.48 _a	1.11		6.40 _b	.58		8.00 _c	.55		123.14***
Structuring	3.12 _a	.76		4.22 _b	.43		4.84 _c	.29		66.09***
Nonintrusiveness ^a	67%			23%			11%			16.41***
Nonhostility ^a	53%			13%			5%			15.26***
Responsiveness	3.60 _a	.58		5.13 _b	.43		6.32 _c	.56		130.85***
Involvement	3.60 _a	.60		5.03 _b	.35		6.11 _c	.52		138.57***
Italy										
	n = 11			n = 26			n = 33			
Sensitivity	4.50 _a	1.14		6.50 _b	.58		7.82 _c	.54		103.64***
Structuring	3.14 _a	.60		4.12 _b	.26		4.77 _c	.25		113.44***
Nonintrusiveness ^a	55%			57%			12%			15.17***
Nonhostility ^a	55%			27%			0%			18.14***
Responsiveness	4.18 _a	.78		5.31 _b	.45		6.18 _c	.37		79.03***
Involvement	4.05 _a	.57		5.17 _b	.53		6.03 _c	.41		70.14***
United States										
	n = 21			n = 38			n = 21			
Sensitivity	4.67 _a	1.03		6.45 _b	.59		7.62 _c	.52		103.41***
Structuring	3.38 _a	.63		4.46 _b	.46		4.74 _c	.37		47.02***
Nonintrusiveness ^a	52%			21%			0%			16.20***
Nonhostility ^a	57%			24%			5%			14.98***
Responsiveness	3.71 _a	.77		5.26 _b	.45		6.00 _c	.35		105.84***
Involvement	3.76 _a	.74		5.14 _b	.40		6.19 _c	.40		127.99***

Note. Means with different subscripts were significantly different in Tukey HSD post-hoc tests.

***
 $p \leq .001$.

Percentage of mothers in the cluster who engaged in some intrusiveness or hostility. Test statistic reported is a chi-square.

Table 7

Cluster means of emotional relationships by region

	Lower			Mid-range			Higher			F/χ^2
	M	SD		M	SD		M	SD		
<i>Rural</i>	<i>n</i> = 29			<i>n</i> = 52			<i>n</i> = 19			
Sensitivity	4.40 _a	1.04		6.42 _b	.58		7.71 _c	.67		129.52***
Structuring	3.12 _a	.70		4.23 _b	.43		4.84 _c	.24		86.39***
Nonintrusiveness ^a	59%			42%			5%			13.86***
Nonhostility ^a	48%			19%			0%			16.02***
Responsiveness	3.79 _a	.73		5.22 _b	.41		6.11 _c	.43		130.33***
Involvement	3.79 _a	.68		5.07 _b	.41		6.13 _c	.47		140.55***
<i>Metropolitan</i>	<i>n</i> = 24			<i>n</i> = 42			<i>n</i> = 54			
Sensitivity	4.75 _a	1.08		6.48 _b	.58		7.84 _c	.50		191.23***
Structuring	3.35 _a	.63		4.36 _b	.42		4.76 _c	.32		87.17***
Nonintrusiveness ^a	58%			19%			9%			23.39***
Nonhostility ^a	63%			24%			4%			33.00***
Responsiveness	3.73 _a	.74		5.25 _b	.48		6.19 _c	.44		170.01***
Involvement	3.71 _a	.66		5.18 _b	.44		6.08 _c	.43		180.85***

Note. Means with different subscripts were significantly different in Tukey HSD post-hoc tests.

***
 $p \leq .001$.

^aPercentage of mothers in the cluster who engaged in some intrusiveness or hostility. Test statistic reported is a chi-square.