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Developmental Continuity and Stability of Emotional Availability in the Family: Two Ages and Two Genders in Child-Mother Dyads from Two Regions in Three Countries

Marc H. Bornstein, Joan T. D. Suwalsky, Diane L. Putnick, Motti Gini, Paola Venuti, Simona de Falco, Marianne Heslington, and Celia Zingman de Galperín

Child and Family Research, Program in Developmental Neuroscience, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service

Abstract

This study employs an intra-national and cross-national, prospective and longitudinal design to examine age, gender, region, and country variation in group mean-level continuity and individual-differences stability of emotional availability in child-mother dyads. Altogether, 220 Argentine, Italian, and U.S. American metropolitan and rural residence mothers and their daughters and sons were observed at home when children were 5 and 20 months of age. Similar patterns of continuity and discontinuity of emotional availability from 5 to 20 months were observed across regions and countries, but not between genders. Stability of emotional availability from 5 to 20 months was moderate and similar across genders, regions, and countries. Universal and gender-specific developmental processes in child-mother emotional availability as revealed in intra- and cross-national study are discussed.

Child-Mother Mutual Emotional Availability

Emotions arise from, and form the relational foundations for, most aspects of human attachments, social communications, and prosocial encounters with others (Bornstein, 2000; Denham, 1998; Emde, 1980). Emotional interactions normally include both signaling and understanding in each partner, resulting in the emotional accessibility of one to the other (Biringen & Robinson, 1991; Emde, 2000; Emde & Easterbrooks, 1985). In child development, reciprocal positive emotional sharing is indispensable to healthy caregiving and wholesome child-parent relationships (Aviezer, Sagi, Joels, & Ziv, 1999; Biringen & Robinson, 1991; Bretherton, 2000; Lovas, 2005). As such, emotional availability in parent-child interactions has been called the “connective tissue of healthy socioemotional development” (Easterbrooks & Biringen, 2000, p. 123). Children signal their emotional states and needs to their parents (Graziano & Tobin, 2003; Halle, 2003; Saarni, Campos, Camras, & Witherington, 2006; Thompson & Goodvin, 2005; Witherington, Campos, & Hertenstein, 2001), and parental emotional displays to children express and reciprocate affection, foster and extend social interaction, and mark important dyadic events (Martin, Clements, & Crnic, 2002; Papoušek & Papoušek, 2002). Both emotion knowledge and emotion regulation are formatively experienced in the family and are products of parental socialization (Eisenberg, Cumberland, & Spinrad, 1998; Morris, Robinson, & Eisenberg,

2006). Parents shape young children's emotional experiences and promote their emotional competencies.

In this study, we focused on two specific dimensions of very young children's emotional availability and four specific dimensions of mothers' emotional availability (Biringen, Robinson, & Emde, 1998). Child responsiveness assessed the degree to which the child responds to the mother's bids as well as how much the child enjoys the interaction. Child involvement of parent assessed the child's attempts to engage the mother. Maternal sensitivity assessed acceptance, affective tone, flexibility, affect regulation, and variety and creativity of behavior displayed toward the child. Maternal structuring assessed appropriate facilitation, scaffolding, or organizing of the child's activity, exploration, and routine by providing rules, regulations, and a supportive framework for interaction without compromising the child's own interest in such activities. Maternal nonintrusiveness assessed support for the child without interrupting the child by being overdirective, overstimulating, overprotecting, and/or interfering. Maternal nonhostility assessed talking to or behaving with the child in ways that are patient, pleasant, and harmonious and not rejecting, abrasive, or antagonistic. We evaluated these six dimensions of mutual emotional availability using the Emotional Availability Scales (EA Scales; Biringen et al., 1998).

These features of child-parent emotional availability and development are normative and probably universal (Scherer & Wallbott, 1994; van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2006). At the same time, ideas about emotional experiences and emotion displays vary with culture as do their elicitation and regulation (Eid & Diener, 2001; Kitayama & Markus, 1994; Markus & Kitayama, 1991; Matsumoto, 1993; Mesquita, Frijda, & Scherer, 1997), and culturally appropriate expressions and understandings of emotion are critical to social competence (Eisenberg et al., 1997; Halberstadt, Denham, & Dunsmore, 2000; Saarni, 1999). The development of emotional availability in the child-mother dyad is, thus, determined and influenced by many factors including evolutionary dictates and developmental agenda (which may apply broadly), children's and parents' own psychological makeups (which may be idiosyncratic), as well as the ecologies surrounding development such as context and culture (which may vary). This study was specifically concerned with developmental and ecological factors.

Child and Mother Emotional Availability and Child Age: Developmental Continuity and Stability

A principal component of the bioecological model in contemporary developmental science is time (Bronfenbrenner & Morris, 2006). The first aim of the present study was to examine developmental continuity and stability of child-mother emotional availability across the first two years of life. We focused on two metrics of development, the mean level of emotional availability in groups of children and mothers across time (continuity) and individual-differences variation across time (stability). If dyadic emotional availability showed continuity, children and mothers as a group would function in terms of their mutual emotional availability at the same average levels at one point in time and at a second point later in time. If emotional availability showed stability, individual children and mothers who displayed relatively high levels at one point in time would display relatively high levels at a second point later in time. Continuity and stability, central constructs in developmental science, thus describe statistically independent, if conceptually related, realms of development (Bornstein & Suess, 2000; Hartmann & Pelzel, 2005; McCall, 1981; Roberts, Walton, & Viechtbauer, 2006; Wohlwill, 1973).

We studied these developmental dynamics of emotional availability in the same child-mother dyads at two developmental points: once in infancy and once in toddlerhood. By middle infancy, children demonstrate intentionality and flexibility in behavioral organization

(Emde, Gaensbauer, & Harmon, 1976; Wolff, 1984). Five-month-olds (our first assessment point) are sensitive to dynamics in the dyad; for example, infants can share the lead in turn-taking exchanges (Bornstein & Tamis LeMonda, 1990; Cohn & Tronick, 1987; Kaye, 1982). Typically developing toddlers manifest remarkable progress in all domains of behavior, including fine and gross motor coordination, symbolic capacities, receptive and expressive language skills, and emotion-related abilities (Adolph & Berger, 2005; Bornstein & Haynes, 1998; Užgiris & Raeff, 1995). Twenty-month-olds (our second assessment point) express emotions openly and are known to be sensitive and responsive to the expressions of emotions and feelings in others (Clarke-Stewart & Hevey, 1981; Edwards & Liu, 2002; Lillard & Witherington, 2004).

With respect to continuity, there are reasons to expect mutual emotional availability (as we measured it) to improve as children develop on the simple grounds that older children and mothers know and have accommodated to one another better since infancy. Developmental improvements in this direction would indicate that emotional availability is sensitive to maturational or experiential aspects of child-mother interaction. By the same token, however, there are also reasons to expect mutual emotional availability in the dyad to erode over this period. For example, the need for autonomy (one of a small number of presumably universal needs posited by self-determination theorists; Grolnick & Ryan, 1989) is a hallmark the toddler period. Toddlers' increasing autonomy strivings may render them more challenging, and they may elicit more irritation and hostility in mothers. Caregivers who are sensitively responsive to their child's signals, who structure and support their child's endeavors in nonintrusive appropriately challenging ways, who respect the child's individuality, and who are warm and positive in their interactions presumably guide a child through this stage more successfully. Previous studies have reported mixed developmental continuity and discontinuity in emotional availability (e.g., increases in sensitivity and involvement between 9 and 14 months in Biringen et al., 1999; increases in responsiveness and involvement, but continuity in sensitivity or structuring, between 19 and 24 months in Lovas, 2005). The two discontinuity positions (enhancement and deterioration of relationships) notwithstanding, the Emotional Availability Scales are operationalized and coded in an age-appropriate way that is intended to yield similar score distributions for the same levels of functioning at different ages. It is a different task to appropriately structure interactions with a preverbal, not-yet-mobile 5-month-old infant, for example, compared to those of a verbal and mobile 20-month-old toddler.

With respect to stability, individual differences in emotional availability are thought to reflect consistent global qualities of dyads' shared emotional life. Parents generally tend to show behavioral consistency (Holden & Miller, 1999). For example, Dallaire and Weinraub (2005) examined stability of parenting behaviors over the first 6 years of children's lives in 893 participants enrolled in the NICHD Study of Early Child Care in the United States. Parenting behaviors were rated annually using laboratory observations and home visits. Both sensitive and stimulating parenting behaviors displayed considerable stability. The extant literature supports short-term (1-week) stability of emotional availability in both infancy and toddlerhood (Bornstein, Gini, Putnick, et al., 2006, Bornstein, Gini, Suwalsky, Putnick, & Haynes, 2006), and Robinson, Little, and Biringen (1993), Ziv, Gini, Guttman, and Sagi (1997), Biringen, Matheny, Bretherton, Renouf, and Sherman (2000), and Lovas (2005) have all reported short- and long-term stabilities of EA Scales across the older age range we tested here. However, infants are inherently volatile (Bornstein, 2002), and, as observed above, autonomy-striving toddlers test their parents in unique ways (Edwards & Liu, 2002). Thus, there is a possibility that child-mother dyads could be unstable in their emotional availability between the two developmental time points we tested.

In brief, the first aim of this study was to examine developmental continuity and stability in six dimensions of child-mother mutual emotional relationships so as to chart and compare ontogenetic trajectories in each. Based on the extant literature, our expectations about continuity of emotional availability were decidedly mixed. However, we expected that dimensions of emotional availability would show at least moderate stability over the 15-month inter-assessment interval we tested.

Ecological Context and Culture

Another vital ecological perspective is setting. Most psychological and developmental study in the first years of life is culture-limited (Arnett, 2008; Tomlinson & Swartz, 2003), and critics wisely reject broad generalizations derived from culturally restricted findings (e.g., Bornstein, 1980, 1991, 2002; Kennedy, Scheirer, & Rogers, 1984; Moghaddam, 1987; Russell, 1984; Sexton & Misiak, 1984; Triandis, 1980). A more encompassing *intra-cum* cross-cultural approach is advocated by both empiricists and theoreticians as being likely to yield a more comprehensive understanding of psychological and developmental processes and as critical for testing the limits of generalization of psychological and developmental phenomena (e.g., Bornstein, 1980, 1991, 2002; Piaget, 1966/1974; van de Vijver & Leung, 1997; Whiting, 1981). Whereas cross-cultural research is usually designed to describe and explain cultural similarities and differences, here we tested ontogenetic trajectories in three countries, as well as two regions in each country, to explore the generalizability of developmental findings about emotional availability.

Accordingly, the second aim of this study was to explore the two facets of development (continuity and stability) of emotional availability across countries and between regions within country. To do so, we evaluated the continuity and stability of emotional availability in mothers and their young children in six contrasting ecologies: three were country (Argentina, Italy, and the United States) and two were region within each country (metropolitan and rural). Argentina, Italy, and the United States compose an attractive comparative suite in which to investigate culture-general versus culture-specific developmental aspects of child-mother emotional availability. These three countries, as well as contrasting metropolitan and rural locales in each, are reasonably similar to one another with respect to their primarily European heritage, levels of modernity, industrialization, and per capita income, ecology and climate, education and literacy, and standard of living. All are characterized by families with low birth rates, small size, nuclear organization, and primary caregiver mothers.

The three countries also differ, however, in terms of history and cultural values that influence parenting cognitions and practices surrounding emotional availability. These distinctive forces might differentially influence the course of development of child-mother emotional availability in the 3 samples (Bornstein, 1991, 2002; Greenfield, Suzuki, & Rothstein-Fisch, 2006). Every ecological context has its own needs and has evolved its own developmental agenda, and so childrearing attitudes and activities can be expected to be adapted (in some degree) to specific contexts (Bornstein, 1991, 2002; Bronfenbrenner, 1979, 1989; Okagaki & Divecha, 1993; Valsiner, 1989).

Just as parenting and child development may not progress comparably in different countries, they also vary across ecological settings within a country. To explore this idea, we compared the developmental trajectories of continuity and stability of emotional availability in metropolitan and rural settings within each country. In the present study, we use the term “metropolitan” to refer to families living in cities or in urbanized suburban areas surrounding cities. These families normally have higher education and SES than their “rural” counterparts. The variation between metropolitan and rural falls on a continuum because families in these two contexts face many of the same modern-day challenges and

share the same general cultural information (Thompson et al., 1996; Zayas, 1995); child development in the two contexts also follows much the same normative course (Coleman, Ganong, Clark, & Madsen, 1989; Thompson et al., 1996; Zayas, 1995).

Nonetheless, the notion that metropolitan life generally differs in systematic ways from rural life is a classic one in social science (see Coleman et al., 1989; Greenfield et al., 2006; Hauser & Schnore, 1965; Palacios & Moreno, 1996; Redfield, 1947; Sjoberg, 1964; Tonnies, 1887/1963; Wirth, 1938). Like cultures, regions are believed to pose different requirements and condition different adaptations within the family (Bradley, 2002; Lampard, Voigt, & Bornstein, 2000; Stott, 1940). Denizens of large cities contend with overload, and the overextended urbanite adapts by focusing on goals and moving directly toward them as quickly as possible (Bornstein, 1979; Levine & Norenzayan, 1999). Metropolitan parents tend to be better educated, more literate, exposed to a wider range of mass media, and are more likely to believe they are influential in their children's development (Greenfield et al., 2006; Hill, Stycos, & Back, 1959). They tend to be more child-centered and intent on fostering the development of independence and achievement in children (Mussen & Maldonado Beytagh, 1969; Nsamenang & Lamb, 1995). Metropolitan parents tend to be authoritative, to eschew gender stereotypes, to express greater permissivity and less rigidity in regard to discipline, and to address their children less directly (Camaioni, Longobardi, Venuti, & Bornstein, 1998; Palacios & Moreno, 1996). They tend to hold developmental expectations for their children that coincide more closely with the child's actual stage of development. In contrast, in rural areas, parents tilt toward tradition (Scanzoni & Arnett, 1987; Willis, Bealer, & Crider, 1982) and often lack flexibility in childrearing practices (Palacios & Moreno, 1996); they tend to be less permissive and more restrictive and punitive, valuing obedience and conformity (Mussen & Maldonado Beytagh, 1969). They also tend to harbor less realistic developmental expectations for their children (Lehr & Jeffery, 1996; Palacios & Moreno, 1996). The metropolitan-rural contexts we studied in Argentina, Italy, and the United States were largely faithful to these general regional distinctions. Insofar as different countries, and regions within countries, maintain different requirements for children and parents (Weisner, 2005), we generally expected that dyads living in them would experience different conditions of development and might express themselves differently in terms of emotional availability across early childhood.

The particular comparisons we designed directly contrast cultural conditions of childrearing. By recruiting from metropolitan and rural locales in each of three countries, we also availed ourselves of the possibility of creating a broader empirical platform than is typical of cultural developmental research (see Bornstein, 1991, 2002, 2009; Brislin, 1983; Piaget, 1966/1974; Whiting, 1981). In a nutshell, to analyze continuity and stability of emotional availability comprehensively, it is both necessary and desirable to assess these developmental dynamics from intra-cultural and cross-cultural perspectives.

Dyadic Emotional Availability and Child Gender

The samples we recruited were intentionally balanced with respect to child gender so that, as our third aim, developmental variation in the continuity and stability of emotional availability could be examined in mother-daughter and mother-son dyads. Many researchers have identified meaningful gender differences in socioemotional function starting in early childhood, even if they are small in magnitude (e.g., Eagly, Beall, & Sternberg, 2004; Halpern, 2000; Kimura, 1999; Maccoby & Jacklin, 1974; Ruble, Martin, & Berenbaum, 2006). Girls and boys are typically socialized with respect to different emotional goals, and so gender differences in emotional expression, experience, and development are expectable (Brody & Hall, 2000; Chodorow, 1978), even across cultures (McCrae et al., 2004; McCrae, Terracciano, & 78 Members of the Personality Profiles of Cultures Project, 2005). Moreover, assessed gender differences are largely consistent with gender stereotypes, and so

widespread views appear to have a basis in the characteristics of individuals. Specifically, the literature in gender differences tends to support the general view that females display higher levels of social interest, are better at decoding emotional expressions, and are more invested in social relationships than are males (Gilligan, 1982; Golombok & Fivush, 1994; Halpern, 2000; Lovas, 2005; Maccoby, 1990). Traditional gender role prescriptions also characterize women as more affiliative and interpersonally sensitive, and feminine stereotyped activities tend to emphasize collaborative behaviors and foster social proximity (Caldera, Huston, & O'Brien, 1989; Leaper, 2002; Maccoby, 1988; Ruble et al., 2006); development in girls is usually also associated with higher levels of emotional closeness to significant others (Chodorow, 1978; Clarke-Stewart & Hevey, 1981; Ley & Koepke, 1982; Olesker, 1984, 1990; Robinson & Biringen, 1995).

Because girls and boys are typically socialized with respect to different emotion-related goals, we expected gender differences in the development of emotional expression and interpretation (Brody & Hall, 2000; Chodorow, 1978; Ruble et al., 2006) even across cultures (McCrae et al., 2004, 2005). Although some have reported small but consistent differences in gender for toddlers (Lovas, 2005), few studies have investigated developmental gender effects. Moreover, cross-country and between-region comparisons would expand this literature. Because of how young we started, we expected few if any systematic gender differences in infant and mother emotional availability at 5 months, but we expected that gender differences in child-mother emotional availability would emerge by 20 months with daughters and mothers enjoying somewhat more harmonious emotional relationships than sons and mothers. Thus, we predicted an interaction between gender and child age.

The Present Study

Few studies have systematically examined basic developmental properties of child-mother mutual emotional availability by country, region, and gender. Within the literature concerned with emotional relationships, and beyond its developmental focus on continuity and stability of emotional availability, the following features distinguish the present study: (1) girls and boys and their mothers were observed and assessed longitudinally in two regional contexts in each of three countries; (2) all samples (three countries, two regions, both genders, and two ages of children) were adequate in size; (3) sociodemographic and social status characteristics which may also relate to child-mother emotional availability were controlled in selected analyses; (4) a consistent and standard cross-culturally validated observational methodology was employed; and (5) child age and birth order were held constant across groups. We believe that these cross-country, cross-region, between-gender, and cross-age assessments will increase our general understanding of the development of emotional availability within families, will do so specifically in several underresearched populations, and will enhance the validity of developmental continuity and stability findings by assessing these issues more broadly.

Method

Participants

A total of 220 child-mother dyads from 2 geographic regions within each of 3 countries were observed when each child was 5 months old and again when the same child was 20 months old. Seventy dyads resided in Argentina: 40 in metropolitan Buenos Aires and 30 in rural Córdoba Province. Seventy dyads resided in Italy: 40 in metropolitan Padua and 30 in rural Basilicata. Eighty dyads resided in the United States: 40 in metropolitan Washington, DC, and 40 in rural West Virginia. Families were recruited from hospital birth notifications, patient lists of medical groups, newspaper birth announcements, and mass mailings, and

they were selected to be primiparous with term, non-adopted, healthy infants. Demographic statistics of the metropolitan and rural families from each country are presented in Table 1. All children were 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). Children averaged 5.27 and 20.22 months of age at the two times of the study ($SDs = 0.25$ and 0.35 months). Approximately equal numbers of girls and boys were recruited in each group, $\chi^2(5, n = 220) = 1.52, ns$. The average age of the mothers was 26.58 years ($SD = 5.32$) at the 5-month 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 the families across all groups. 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 $M = 37.73$ ($SD = 14.48$).

The statistical differences in child birth weight and age, mother education and hours employed, and family SES may not be practicably meaningful. As a precaution, however, these variables, with the exception of child age, where the range of country means is 2 weeks, were examined as covariates (see below).

Procedures

Each child-mother dyad was visited twice at home, once in infancy and once in toddlerhood, and videorecorded by a single female filmer who was a native of the country. Observations were scheduled at times that were optimal in terms of the child's behavioral state and when the child and mother would be alone at home. At each visit, the mother was instructed that the filmer was interested in observing her and her child engaging in their usual activities and to disregard the filmer insofar as possible. 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 with, interacting with, or otherwise reacting to the child during the filming.

Emotional availability was coded from the videorecords of 15 min of infant-mother natural interaction at 5 months and 10 min of child-mother natural play interaction at 20 months. Because we were interested in observing natural infant-mother interaction at 5 months, we did not introduce any foreign objects (e.g., new toys) into the home. We wanted the interaction to represent everyday emotional connections, so we allowed dyads to do what they would normally do at 5 months. In all samples, infants explored, and mothers encouraged exploration, initiated social play, and engaged their babies, for example. At 20 months, children and mothers were observed in situations of free play together. A standard set of toys was brought to the home (the child's own toys were not used); this standard toy set was used to control for variations in the quality and quantity of toys older children might have available. Although slightly different, the situations at 5 and 20 months were both age-appropriate, home-based, nonstressful contexts for assessing natural and typical child-mother interactions and the expression of mutual emotional relationships. The findings of previous studies using 10- to 15-min observations lend credence to the validity of the temporal parameters we selected in measuring emotional availability (see Easterbrooks, Biesecker, & Lyons-Ruth, 2000; Swanson, Beckwith, & Howard, 2000; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000), and the results of previous studies show that some contexts (home versus laboratory) are less important to the expression of emotional availability in the dyad than are individual differences (Bornstein, Gini, Putnick, et al., 2006). Emotional availability is also reliable in the short-term at each of the two ages tested here (Bornstein, Gini, Putnick, et al., 2006; Bornstein, Gini, Suwalsky, et al., 2006).

Assessments

Emotional availability—Emotional availability in each child-mother dyad was evaluated using the Emotional Availability Scales: Infancy to Early Childhood Version (EA Scales 3rd ed.; Biringen et al., 1998). The EA Scales (operationally defined above) were specifically designed to assess emotional availability through observations and ratings of child-parent interaction and were constructed to reflect age-appropriate behaviors in child-parent interactive cycles. Each of the six individual EA Scales focuses on the behavior of one partner; however, all dimensions are viewed as “relationship variables” because each takes 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 interactional style. Child Responsiveness and Involvement of Mother each range from *non-optimal* (1) to *optimal* (7). Maternal Sensitivity ranges from *highly insensitive* (1) to *highly sensitive* (9); Structuring ranges from *non-optimal* (1) to *optimal* (5); Nonintrusiveness ranges from *intrusive* (1) to *nonintrusive* (5); and Nonhostility ranges from *markedly hostile* (1) to *nonhostile* (5). More complete descriptions of the Emotional Availability Scales can be found in Biringen and Robinson (1991), Easterbrooks and Biringen (2000, 2005, 2009), and Biringen (2000).

All coders were first trained on the Emotional Availability Scales in English to obtain satisfactory interrater reliability with one of the authors of the EA Scales and then with one another. Then, two English-Spanish bilingual U.S. natives coded the 5- and 20-month Argentine interactions; two English-Italian bilingual Italian natives coded the 5- and 20-month Italian interactions; six English-speaking U.S. natives coded the 5-month U.S. interactions, and the 20-month U.S. interactions were split amongst the four bilingual coders. All EA Scales were coded in half-points. Different coders rated each dyad at 5 and 20 months to remove the possibility of within-family coding bias. 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), intra-class correlation coefficients (*ICC*) were calculated to establish reliability specifically using average absolute agreement *ICCs* in a two-way random effects model (McGraw & Wong, 1996). Reliability ($n = 16$ cases) of the four bilingual coders with the six 5-month coders ranged from .88 to .93. Coder reliabilities were computed for the 4 main bilingual coders on 20% of the U.S. interactions ($n = 16$ at 5 months and $n = 16$ at 20 months), and *ICCs* ranged from .81 to .95. On these grounds, we concluded that coders from different countries had adequate reliability when coding the same interactions. As a further test, within-country reliability was also computed for the 2 English-Spanish bilingual coders on 32 Argentine interactions ($ns = 16$ at each time point) and the 2 English-Italian bilingual coders on 32 Italian interactions ($ns = 16$ at each time point). Argentine reliability ranged from .52 to .98, and Italian reliability ranged from .86 to .97. The lowest reliability for the Argentine sample was for Nonhostility at 5 months and was the result of restricted scale variance. Coders agreed on their ratings (within half-points) for 100% of the sample. Any residual differences between coders were resolved by discussion, and consensus ratings were used for subsequent analyses (altogether 16 individual ratings, representing 0.91% of all EA Scale ratings).

Evaluations of the observations—As a check against threats to validity, at the conclusion of both the 5-month (“5”) and 20-month (“20”) home visits both mother and filmer independently evaluated the observation 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 children’s behavior ($M_5 = 5.34$, $SD_5 = 1.86$; $M_{20} = 5.08$, $SD_{20} = 1.77$) as well as their own ($M_5 = 5.01$, $SD_5 = 1.73$; $M_{20} = 5.46$, $SD_{20} = 1.73$) during each visit was characteristic of their normal routine. According to the filmers’ evaluations, mothers were relaxed ($M_5 = 4.63$, $SD_5 = 1.88$; $M_{20} = 5.42$, $SD_{20} = 1.52$) and

children were not fussy ($M_5 = 2.25$, $SD_5 = 1.94$; $M_{20} = 1.49$, $SD_{20} = 1.71$). All evaluations differed at 5 and 20 months: Mothers rated children's behavior as more typical at 5 months than at 20 months, $t(173) = 2.45$, $p \leq .05$; mothers rated their own behavior as more typical at 20 months than at 5 months, $t(175) = -2.25$, $p \leq .05$; filmers rated mothers as more relaxed at 20 months than at 5 months, $t(173) = 5.21$, $p \leq .001$; and filmers rated children as less fussy at 20 months than at 5 months, $t(170) = -4.79$, $p \leq .001$. As a result of these differences, mothers' and filmers' evaluations were examined as potential covariates.

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 nonnormalcy, and residuals were examined for influential points (Tabachnick & Fidell, 1996). Maternal Nonintrusiveness and Nonhostility scales at both visits were skewed, all $ps < .05$, and no transformation would normalize them; they were therefore analyzed with nonparametric statistics which do not assume that variables are normal. The skewed distributions of the Nonintrusiveness and Nonhostility scales are not surprising. These two scales were designed to capture specific types of negative behaviors that are uncommon in low-risk samples. The other four EA Scales were re-expressed using second-power transformations to approximate normality. Analyses were conducted on transformed data; for clarity, descriptive statistics are presented using untransformed variables.

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 $2 \times 2 \times 2 \times 3$ (Child age by Gender by Region by Country) repeated-measures ANOVA design (similar to the GLMM design we used). With an effect size of .15 for within-subjects effects and .25 for between-subjects effects (Faul, Erdfelder, Lang, & Buchner, 2007), $\alpha = .05$, and $N = 220$, the power estimates ranged from .98 to 1.00, indicating adequate power to detect a medium or large effect.

Covariates

As shown in Table 1, a number of sociodemographic variables distinguished the countries, but these were natural variations that are representative of the countries and regions under study. We wanted to control only those variables that were related to variations in child and mother emotional availability. 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 children, we examined 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 visits were also examined as potential covariates. Because child age was a factor in the study, we did not control it. Aggregating across child age, maternal education and age and the typicality of the child's behavior in the sessions were related to the 4 continuously distributed EA Scales ($rs = .14 - .30$, $ps \leq .01$), and no other potential covariates were related. Therefore, we included only maternal education and age and the typicality of the child's behavior as covariates in the analyses that follow. Maternal education and age were significantly correlated, $r(218) = .52$, $p \leq .001$, but not so highly that they could not both be controlled in the same analysis.

Analytic Plan

Generalized linear mixed models (GLMMs) – analogous to repeated-measures analyses of covariance (ANCOVAs) – were conducted to assess mean differences in child Responsiveness and Involvement and maternal Sensitivity and Structuring across child age, controlling for maternal education and age and the typicality of the child's behavior in the sessions. Child age was modeled as a repeated fixed effect within dyads, and the covariance structure was modeled as heterogeneous compound symmetry, which allows the variance of the EA Scales to change and accounts for their stability across child age. Gender, region, and country were included as fixed factors to determine whether they interacted with child age. Maternal Nonintrusiveness and Nonhostility were evaluated with Wilcoxon signed ranks tests (because no covariates could be used, these findings should be interpreted with caution).

Following the analysis of continuity, stability of the Emotional Availability Scales was assessed with partial correlations of corresponding 5- and 20-month EA Scales, controlling for maternal education and age and the typicality of the child's behavior in the sessions. Stabilities of maternal Nonintrusiveness and Nonhostility were evaluated with Spearman's ρ s. Stability coefficients were also compared across genders, regions, and countries (using z -scores) to determine if stability was similar in all groups.

Descriptive Statistics

Table 2 displays descriptive statistics of the Emotional Availability Scales across child age for the full sample. We present means and standard deviations for Nonintrusiveness and Nonhostility, but 85% of mothers in the full sample scored 4.5 or 5 on Nonintrusiveness, and 90% of mothers scored 4.5 or 5 on Nonhostility at 5 months, as did 57% and 88%, respectively, at 20 months. Within each visit, the EA Scales shared similar amounts of variance across genders, regions, and countries (range = 36% to 88%). Separate analyses were conducted for all EA Scales because each Scale has independent theoretical standing in the literature, and we were interested in exploring patterns of continuity and stability by gender, region, and country for each.

Continuity and Discontinuity in Emotional Availability from 5 to 20 Months

We evaluated group mean-level consistency in the Emotional Availability Scales across child age in the full sample, as well as for any subgroup which showed a significant interaction with child age.

Full sample—Maternal Sensitivity, Structuring, and Nonintrusiveness decreased on average from 5 to 20 months, but maternal Nonhostility and child Responsiveness and Involvement did not differ between 5 and 20 months. See Table 2. To determine whether the mean changes we observed were uniform across genders, regions, and countries we also explored interactions between child age and each of these factors. There were no significant interactions between child age and country or region, indicating that the mean differences from 5 to 20 months were similar in Argentina, Italy, and the United States and in metropolitan and rural regions. However, the interaction between child age and gender was significant for child Responsiveness, $F(1, 191.47) = 6.40, p \leq .05$, and Involvement, $F(1, 188.57) = 4.22, p \leq .05$, indicating that continuity across time of girls' and boys' Responsiveness and Involvement were different (see below).

By gender—Mothers of girls decreased in Structuring and Nonintrusiveness from 5 to 20 months, but Sensitivity, Nonhostility, Responsiveness, and Involvement did not change from 5 to 20 months. Mothers of boys decreased on all EA Scales -- Sensitivity, Structuring,

Nonintrusiveness, and Nonhostility -- and boys decreased in Responsiveness, but not Involvement (although there was a trend), from 5 to 20 months. See Table 3.

Stability and Instability of Emotional Availability from 5 to 20 Months

Individual-difference stability of the Emotional Availability Scales from 5 to 20 months was assessed in the full sample. Table 2 presents zero-order correlations followed by partial correlations controlling for covariates. In the full sample, there was low to moderate stability between each of the 6 EA Scales at 5 months and the corresponding EA Scale at 20 months. These stability coefficients were similar across genders, regions, and countries.

Discussion

Emotional availability refers to the overall affective quality of the parent-child relationship, “the degree to which each partner expresses emotions and is responsive to the emotions of the other” (Emde & Easterbrooks, 1985, p. 80). This study focused on continuity/discontinuity (group mean-level consistency over time) and stability/instability (individual-differences order consistency over time) of emotional availability in child-mother dyads by gender, region, and country. Between 5 months and 20 months, maternal Sensitivity, Structuring, and Nonintrusiveness decreased, but maternal Nonhostility and child Responsiveness and Involvement did not change. More complex individual patterns across gender emerged, but these patterns were similar across regions and countries. Consistent (if moderate) individual stability of children’s and mothers’ emotional availability on all dimensions also emerged across this 15-month interval for both genders and across the two regions and all three countries. For this study, we recruited children and mothers in sociodemographically comparable but culturally distinct South American, European, and North American societies. The study also therefore contributes information about the development of emotional relationships in families in two relatively underresearched populations (Argentina and Italy) and compares them to a more comprehensively researched one (the United States). Furthermore, the study explores intra-cultural (metropolitan-rural) developmental variation in the context of cross-cultural developmental variation.

Several limitations to our findings should be considered. The children in this study were all healthy firstborns of two specific ages; moreover, we restricted our data to children and their mothers. Examinations of more diverse populations (children of different ages or with special needs; single, separated, or divorced mothers; fathers or other caregivers) might result in different developmental patterns of adult-child emotional availability. Although we studied different regions in three countries on three continents, it is possible that the developmental trajectories of emotional availability would look different in still other locations. These constraints aided the comparisons we undertook by specifying the sample-to-population reference, however they also have implications for the generalizability of our findings. The 5- and 20-month contexts of data collection also naturally differed somewhat, but emotional availability still showed (modest) stability across them. Notably, Bornstein, Gini, Putnick, et al. (2006) reported that emotional availability is both continuous and stable across (home and laboratory) contexts at 24 months. Robinson et al. (1993) have cautioned that raters may bring gender (or other) stereotypes to the task of coding emotional availability. However, trained, reliable, country native, and independent coders contributed to the data in the present study. In interpreting group trends, it is important also to keep in mind that “average” differences can mislead because there is almost always considerable overlap between comparison groups. The Emotional Availability Scales were originally developed in a European American context, but have been used extensively in diverse cultures, and the consistency and face validity of the patterns of findings resulting from their cross-cultural application bolster their validity and generalizability. With these several considerations in mind, we briefly elaborate on the main substantive findings of the study.

Developmental Continuity and Stability by Country and Region

Three Emotional Availability Scales did not change from 5 to 20 months (maternal Nonhostility, child Responsiveness, and child Involvement of mother), but where a developmental discontinuity occurred, dyadic emotional availability diminished from infancy to toddlerhood. In considering longer-term continuity as we do here, it is important to bear in mind that the EA Scales evaluate age-appropriate behaviors. In coding maternal Structuring of a preverbal, stationary 5-month-old infant's activities, for example, coders look for a different set of behaviors than when coding maternal Structuring of a verbal and mobile 20-month-old toddler's activities. These differences are part of the operationalization of the EA Scales (Biringen et al., 1998). Previous studies have reported continuity as well as discontinuity of dyadic emotional availability depending on the inter-assessment interval: continuity normally across short time spans (Biringen, Emde, Campos, & Appelbaum, 1995; Bornstein Gini, Putnick, et al., 2006; Bornstein Gini, Suwalsky, et al., 2006; Robinson et al., 1993), but discontinuity more typically across longer time spans (Biringen et al., 1999; Lovas, 2005). We observed decrements in 3 of 6 EA Scales overall, reflective perhaps of the increasing and universal challenges mothers confront as their babies become toddlers. From 5 to 20 months, we observed decreases in mothers' Sensitivity and Structuring as well as increases in their Intrusiveness. These developmental data, reflected in 3 countries and 2 regions, accord with the observations of Mahler, Pine, and Bergman (1975) who opined that toddlers crossing the threshold to locomotion set the stage for enhanced emotional exchange in the dyad. Biringen et al. (1995) also reported that, as toddlers begin to walk, they experience somewhat less harmonious and/or more challenging relationships with their parents and that mothers' concerns shift from nurturing to nurturing *cum* discipline.

Patterns of continuity and discontinuity of emotional availability did not differ based on country or region. Despite the different cultures and socioeconomics of these contexts, child-mother emotional availability followed similar developmental pathways over time. Our cross-cultural and intra-cultural design reinforces the universality of selective discontinuity of aspects of emotional availability due, perhaps, to common developmental tasks of emerging autonomy in toddlerhood (Edwards & Liu, 2002). The apparent decrease in dyadic emotional availability might therefore reflect specific developmental challenges the dyad faces around 20 months, raising the question for future research of whether (or not) dyadic emotional functioning returns to the *status quo ante* as children grow out of the *terrible twos*.

That said, all EA Scales were moderately stable from 5 to 20 months. Short-term (1-week) stability of the EA Scales at 5 and at 24 months have been reported previously (Bornstein, Gini, Putnick, et al., 2006; Bornstein, Gini, Suwalsky, et al., 2006), indicating that individual differences in emotional availability across shorter periods of time might reflect characteristics of the dyad. Apparently, individual consistency in emotional availability is established early and is relatively buffered from change as the child matures (so long as coding is age-appropriate) as well as across specific circumstances surrounding early development. Our stability data accord with and broaden extant findings using the EA Scales. Robinson et al. (1993) reported moderate stability in maternal Sensitivity between 18 and 24 months. Ziv and colleagues (1997) examined emotional availability in a first visit conducted at home and in two subsequent visits in a laboratory setting: They reported stability for maternal and child emotional functioning when children were 6, 12, and 20 months of age. Biringen et al. (2000) reported that maternal emotional functioning was stable between home visits from 18 to 24 months. Finally, Lovas (2005) reported that all EA Scales (except Involvement) were moderately stable between 19 and 24 months. The cross-context (region and country) nature of our design extends and consolidates these stability findings of dyadic emotional availability.

Gender

Perhaps accurately reflective of prevailing gender stereotypes, and in line with our expectations, we found that mothers and their sons diminished in their emotional availability to one another from infancy to toddlerhood (5 of 6 EA Scales), whereas mothers and their daughters mostly stayed at the same levels across time (4 of 6 EA Scales). Previously, Biringen and colleagues (1995) observed a similar deterioration in the quality of some affective exchanges in children -- especially sons -- and their mothers around the time of the onset of locomotion.

Satisfactory explanations of gender differences in mutual emotional availability will probably involve interactions at biological, psychological, and social levels of analysis (Maccoby, 1966). It could be that biological and maturational differences favoring girls manifest in mutual emotional availability. Because girls mature faster than boys (Bornstein, Hahn, & Haynes, 2004; Waber, 1976), girls might be expected to develop some emotion-regulatory and -communicative abilities earlier than boys. Gender also influences the ways in which adults perceive and relate to a child. Prevailing stereotypes about girls and boys can affect adult perceptions. Miller (1986) emphasized a developmental emotional angle when proposing that daughters are socialized from early infancy to experience the self as a "self-in-relation" to others, whereas sons experience the self as increasingly autonomous. Furthermore, Hinde and Stevenson-Hinde (1987) proposed that gender differences might be exacerbated in relationship contexts versus in situations that emphasize individual performance. All of these forces might contribute to girls' developing preferences for, as well as more advanced, emotion-related skills. Following expected gender pathways, girls may more often experience interactions that emphasize and maintain higher emotional availability.

Girls' emotional availability may also be influenced by dint of their spending more sheer time with their more sociable mothers. Toddler girls tend to stay closer to their mothers and are more positively involved with them (Clarke-Stewart, 1973). Daughters of sensitive mothers are more likely to respond to maternal affect by matching affective expressions (e.g., smiling in response to maternal smiling). Moreover, higher rates of affect matching of daughters at 18 months contributes to their mothers being more sensitive at 24 months, controlling for mothers' initially observed sensitivity (Robinson et al., 1993). Girls could be more emotionally available on a continuous basis because children tend to model themselves primarily on the same-sex parent (Ruble et al., 2006). Because mothers are more emotionally available than fathers (Lovas, 2005), modeling the same-sex parent would (presumably) produce differentiated developmental trajectories of emotional availability in older girls versus boys. Mothers do not necessarily have to be more globally sensitive with daughters than sons, but some specific behaviors in the repertoire of emotionally available mothers might differ for daughters and sons, thus accounting for gender differences in the developmental trajectories in emotional availability we observed (Biringen, Robinson, & Emde, 1994).

Biological, psychological, and social variables are inextricably entwined and mutually influential. It is not possible to assess the effects of any one of these factors without implicating the others. Overall, however, it is important to emphasize that the developmental gender differences we observed reinforce the conceptualization of emotional availability as both sensitive to multiple experiences and guided by biological development.

Future Directions and Conclusions

Studies like the present one beg future research on developmental questions in many related areas. If stability of emotional availability in the dyad is already established by 5 months, as

appears to be the case in dyads from different countries and regions, how and why does this occur? Hormonal or physiological processes may be at play and merit investigation (Bornstein & Suess, 2000; Panksepp, 1998). Moreover, it would be desirable to explicate more precisely the processes by which emotional availability contributes to the social agenda of other day-to-day parent-child interactions. Attachment theory (Bowlby, 1969) posits that positive emotional relationships with caregivers should promote better emotion regulation and empathic ability in children (Biringen & Robinson, 1991). Emotional availability in infancy thus helps to set the stage for organized socioemotional regulation in childhood. Future research may identify which domains of parenting and child development are predicted by individual differences in emotional availability (theory of mind, perhaps). Clearly, more still needs to be learned too about gender differences in emotional availability, their sources, and their consequences.

Mutual emotional availability is an indispensable characteristic of the healthy child-mother dyad, and insofar as individual differences in maternal sensitivity, structuring, intrusiveness, and hostility, as well as child responsiveness and involvement, are moderately stable across gender, region, and country, the significance of emotional availability as a psychological construct and as a global measure of dyadic interaction is reinforced. Understanding commonalities in dyadic emotional availability across genders, regions, and countries, as well as mapping the range of variation in emotional availability as shaped by contextual forces, promises to contribute to a more profound appreciation of the complexity of essential human behavior. This, in turn, cannot help but advance both theory and practice in developmental science. The emotional bond that is established between child and caregiver is critical for every child's adaptation and future development. How emotional relatedness is shaped by contextual and individual factors should be of paramount interest to everyone concerned with the welfare of the world's young.

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Demographic statistics and tests of group differences for rural and metropolitan families in Argentina, Italy, and the United States

Table 1

		Argentina			Italy			United States			F
		M	SD		M	SD		M	SD		
Child birth weight (grams)	R	3323.33 _a	323.27		3176.67 _a	369.70		3570.83 _b	503.32		8.03 ^{***}
	M	3356.88	475.47		3342.25	403.82		3535.05	459.64		2.30
Child gender (% female)	R	53.33%			46.67%			50.00%			--
	M	47.50%			40.00%			50.00%			--
Child age at 5-month visit (days)	R	159.40 _a	6.73		153.90 _b	5.34		162.40 _a	5.59		18.00 ^{***}
	M	167.65 _a	9.03		155.60 _b	4.99		161.85 _c	5.19		32.69 ^{***}
Child age at 20-month visit (months)	R	20.22	.32		20.16	.27		20.09	.23		2.08
	M	20.65 _a	.44		20.06 _b	.14		20.14 _b	.22		47.53 ^{***}
Mother age at child's birth (years)	R	21.88	3.53		24.61	4.86		24.04	5.38		2.82
	M	27.19	5.38		29.27	3.18		28.42	5.21		1.98
Mother education	R	3.47 _a	1.28		2.53 _b	1.07		4.35 _c	1.19		20.25 ^{***}
	M	4.40 _a	1.43		4.53 _a	1.34		5.55 _b	1.40		8.26 ^{***}
Mother employment (% employed)	R	46.67%			33.33%			60.00%			--
	M	57.50%			57.50%			67.50%			--
Mother hours of employment (based on employed mothers)	R	27.29 _a	12.31		35.00 _a	14.12		35.96 _a	6.49		3.35 [*]
	M	26.48	13.10		29.65	9.71		34.30	12.97		2.66
Father age at child's birth	R	25.20	3.68		27.31	4.65		27.81	5.59		2.45
	M	29.10 _a	5.62		32.90 _b	4.01		31.64 _{ab}	6.05		5.34 ^{**}
Father education	R	3.21 _a	1.26		2.47 _b	1.04		4.26 _c	.85		25.76 ^{***}
	M	4.35 _a	1.37		4.47 _a	1.24		5.45 _b	1.41		8.05 ^{***}
Family socioeconomic status	R	25.12 _a	16.31		22.13 _a	8.22		35.58 _b	7.80		14.34 ^{***}
	M	41.84	13.70		44.09	10.15		48.24	13.90		2.62
Marital status (% married)	R	73.33%			100%			72.50%			--
	M	77.50%			100%			92.50%			--

Note. R = Rural; M = Metropolitan. Means with different subscripts differed significantly at $p < .05$ in Tukey HSD post-hoc comparisons. Mother and father education were collected at the 5-month visit and are rated on the 7-point Hollingshead (1975) education scale. Family socioeconomic status was measured by the Hollingshead (1975) Index. Mother employment status and hours of employment are based on the 20-month visit. Due to missing father data, degrees of freedom are (2, 91) for the rural fathers' age at child's birth and (2, 94) for the rural fathers' education F -tests.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

Descriptive statistics, mean differences across time (continuity), and correlations across child age (stability) for the Emotional Availability Scales

Table 2

	5 months (<i>n</i> = 220)		20 months (<i>n</i> = 220)		<i>F</i> ^a	<i>r</i> ^b
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Child						
Responsiveness	5.19	1.03	5.06	.98	2.22	.29***/.24***
Involvement	5.11	1.01	5.06	.95	.58	.26***/.23***
Mother						
Sensitivity	6.44	1.41	6.20	1.18	4.77*	.33***/.23**
Structuring	4.20	.75	3.79	.71	39.44***	.27***/.15*
Nonintrusiveness ^c	4.71	.56	4.26	.80	-7.12***	.26***
Nonhostility ^c	4.80	.45	4.75	.43	-1.75	.21**

^aAnalyses were computed using transformed variables, and controlling for maternal age and education and the typicality of the child's behavior.

^bZero-order correlations are presented before the slash and partial correlations controlling for maternal age and education and the typicality of the child's behavior are presented after the slash.

^cInstead of an *F*-test, the Wilcoxon Signed Ranks *z* test is reported, and instead of a Pearson's *r* correlation statistic a Spearman's ρ is reported. Because nonparametric tests were used, statistical controls were not possible.

*
p ≤ .05.

**
p ≤ .01.

p ≤ .001.

Table 3

Descriptive statistics and mean differences across time for the Emotional Availability Scales by gender

		5 months		20 months		<i>F^a</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Child						
Responsiveness	G	5.19	1.01	5.24	1.02	.51
	B	5.19	1.07	4.90	.91	7.47***
Involvement	G	5.13	.94	5.21	.97	.90
	B	5.10	1.06	4.92	.92	3.48 [†]
Mother						
Sensitivity	G	6.45	1.39	6.37	1.21	.14
	B	6.43	1.44	6.04	1.14	7.23**
Structuring	G	4.24	.75	3.90	.69	11.26***
	B	4.15	.75	3.69	.71	30.20***
Nonintrusiveness ^b	G	4.73	.52	4.36	.65	-4.57***
	B	4.69	.59	4.16	.90	-5.51***
Nonhostility ^b	G	4.80	.40	4.79	.39	-.29
	B	4.81	.49	4.72	.46	-2.08*

Note. G=Girls/Mothers of Girls (*n* = 105); B=Boys/Mothers of Boys (*n* = 115).

^a Analyses were computed using transformed variables, and controlling for maternal age and education and the typicality of the child's behavior.

^b Instead of an *F*-test, the Wilcoxon Signed Ranks *z* test is reported. Because nonparametric tests were used, statistical controls were not possible.

[†] *p* ≤ .10.

* *p* ≤ .05.

** *p* ≤ .01.

*** *p* ≤ .001.