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Mother–Infant Person- and Object-Directed Interactions in Latino Immigrant Families: A Comparative Approach

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Abstract

Cultural variation in durations, relations, and contingencies of mother–infant person-and object-directed behaviors were examined for 121 nonmigrant Latino mother–infant dyads in South America, Latina immigrants from South America and their infants living in the United States, and European American mother–infant dyads. Nonmigrant Latina mothers and infants engaged in person-directed behaviors longer than Latino immigrant or European American mothers and infants. Mother and infant person-directed behaviors were positively related; mother and infant object-related behaviors were related for some cultural groups but not others. Nearly all mother and infant behaviors were mutually contingent. Mothers were more responsive to infants' behaviors than infants were to mothers. Some cultural differences in responsiveness emerged. Immigrant status has a differentiated role in mother–infant interactions.

Cross-cultural researchers have observed that cultures can be characterized broadly with respect to whether their general cultural orientation is collectivist and sociocentric or individualist and idiocentric (e.g., Markus & Kitayama, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995). Moreover, these differences in collectivism and individualism have been implicated in differences in parenting and child development across cultures. An interesting issue to examine, then, would be the extent to which parenting and child development among immigrant families compares with the countries of origin and destination when these countries differ in their relative emphasis on collectivism and individualism.

The acculturation literature suggests that many immigrants adopt a bicultural perspective on acculturation, whereby identification with cultures of origin and destination are seen as balancing, rather than opposing, each other (Ward, 1999).

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However, immigrants' bicultural adaptation may occur more slowly in some areas, such as family life (including parenting practices and goals for children's development) than other areas (e.g., language use), and additionally, bicultural adaptation may occur more rapidly when the beliefs and practices of the cultures of origin and destination are more similar (e.g., Bornstein & Cote, 2006; Hong, Roisman, & Chen, 2006). Thus, the theoretical approach to the acculturation of parenting practices and children's development in this article is similar to Ward's (2001) culture learning approach, because we examined maternal and infant behaviors that are present in all cultures, but are known to vary in prevalence across cultures, and we examined the balancing of these behaviors among immigrants for whom the belief systems of the cultures of origin and destination differ. Specifically, Latinos and European Americans differ in their orientations toward collectivism and individualism, which manifest themselves in mothers' socialization goals for their children (Greenfield, Suzuki, & Rothstein-Fisch, 2006; Harwood, Leyendecker, Carlson, Asencio, & Miller, 2002), as reflected in their differing emphases on persons and objects, respectively. Utilizing the comparative approach to acculturation recommended by Berry, Kim, and Boski (1987), we compared the person- and object-directed behaviors of South American Latina immigrants (to the United States) and their infants to mother–infant dyads in South America (nonmigrant Latino dyads) and mother–infant dyads who were members of the dominant cultural group (European Americans) in the culture of destination (the United States) to better understand how immigrant mothers reconcile the belief system of their culture of origin (collectivism) with that of their culture of destination (individualism) when they socialize their young infants.

THEORETICAL BACKGROUND

Collectivism can be defined as the extent to which individuals view themselves as inextricably connected to others and motivated by the norms and values of their cultural or social group. The role of other people is more central to self-conceptions in cultures with a more collectivist than individualist orientation. Thus, a major socialization goal of Latino families is that the child is *bien educado* ("well educated"); this term has a broad meaning and includes the development of interpersonal skills so that the child will act appropriately and respectfully toward other people (Parke & Buriel, 1998) and share with others (Romano Yalour, 1986). For example, Fernández (2003) found that the childrearing goals of Peruvian middle-class mothers of preschoolers tended to emphasize loyalty to the family, humility, and honesty, and deemphasize assertiveness and creativity. This socialization focus on developing interpersonal skills is embodied in person-directed interactions (Bornstein, Haynes, Pascual, Painter, & Galperín, 1999; Posada et al., 2002; Valenzuela, 1997). By contrast, individualism refers to the extent to which individuals view themselves as independent and motivated by their own preferences, goals, and rights. In U.S. culture, European Americans view infants as dependent, and believe that caregivers need to encourage infants and young children to act on their own (both behaviorally and in terms of decision making) to develop properly (e.g., Caudill & Weinstein, 1969; Richman, Miller, & Solomon, 1988). Thus, European American mothers value and wish to instill autonomy and independence in their children (Bellah, Madsen, Sullivan, Swindler, & Tipton, 1985; Harkness, Super, & Keefer, 1992; Harwood et al., 2002; Richman et al., 1988), and as a result they engage in object-directed activities that allow their children to interact with and gain control over the physical environment (Bornstein, Azuma, Tamis-LeMonda, & Ogino, 1990; Welles-Nystrom, New, & Richman, 1994; Whiting & Child, 1953). Indeed, previous research comparing Latino families in South America and European American families in the United States exposes cultural differences in person-directed (i.e., a mother encourages her child to interact competently with people by physically or verbally engaging the child interpersonally, or the child has a corresponding focus of attention on the caregiver or other people; Bornstein, 1989, 2002; Emde, 1992; Stern, 1985) and object-directed (i.e., a mother

encourages her child to engage with the world outside of the dyad by physically or verbally stimulating the child's attention to objects or toys in the environment, or from the child's perspective, the child attends to objects in the environment; e.g., Bornstein, 1989, 2002; Papoušek & Bornstein, 1992) interactions that reflect these overarching socialization goals.

For example, Latina mothers in Argentina have been observed to engage in more person-directed and less object-directed play with their toddlers than European American mothers in the United States (Bornstein et al., 1999). Similarly, Posada et al. (2002) found that Latina mothers in Colombia engaged in more social interactions with their infants and fewer object-oriented behaviors than European American mothers in the United States. Valenzuela (1997) likewise reported that playing with toddlers in a nondirective way using toys is not part of the cultural tradition of Chilean mothers, as it is for European American mothers. In one of the few studies to look at Latino children's behaviors, European American children in the United States were found to engage in more exploratory (object-directed) play than children in Argentina, mirroring their mothers' behavior (Bornstein et al., 1999). This study differs from previous research because to date no study has compared European American and Latina mothers' or infants' person- and object-directed behaviors as early in life as we do here (5 months) when infants are first developing the capacity to manipulate and engage objects (Bakeman & Adamson, 1984; Belsky, Gilstrap, & Rovine, 1984; Bornstein & Tamis-LeMonda, 1990), in naturalistic observation (rather than a play setting), and compared middle-class Latina immigrant mothers and infants to mothers and infants in both countries of origin (nonmigrant Latinos) and destination (European Americans).

Although studies of childrearing among Latinos who have migrated from South America to the United States are few, generally these studies have found that the parenting behaviors of Latino immigrants from South America are similar to European American mothers' norms (Bornstein & Cote, 2006). For example, Cote and Bornstein (2005) found that middle-class Latina immigrant mothers from South America engaged in more exploratory (object-directed) play with their 20-month-old toddlers than mothers living in Argentina. Similar to their mothers, the toddlers of Latina immigrants from South America have been observed to engage in more object-directed play with their mothers than Latino toddlers whose families did not migrate to the United States (Cote & Bornstein, 2005). Thus, Latina immigrant mothers from South America appear to be socializing their toddlers' behaviors in ways similar to European American mothers. Thus, we hypothesized that non-migrant Latina mothers and their 5-month-old infants would engage in more person-directed and fewer object-directed behaviors than either Latino immigrant or European American mothers or infants, respectively.

DEVELOPMENTAL SIGNIFICANCE OF PERSON-AND OBJECT-DIRECTED INTERACTIONS

Many researchers and theorists have identified person-directed and object-directed interactions as separate and developmentally significant activities, although they often call them by different names (e.g., animate vs. inanimate, affective vs. informational, or social- vs. object-directed; e.g., Field, 1981; Goldfield, 1987; Sherrod, 1981; Stern, 1985; Wachs & Combs, 1995). Developmentally, person-directed interactions occur with great frequency from the earliest days of life, but by the middle of the first year, infants' object-directed interactions become increasingly more frequent (see, e.g., Bakeman & Adamson, 1984; Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990). Moreover, these two types of interactions relate to children's later social and cognitive development (e.g., Bakeman, Adamson, Brown, & Eldridge, 1989; Bornstein, 1989; Clarke-Stewart, 1973; Olson, Bates, & Bayles, 1984; Smith, Adamson, & Bakeman, 1988; Yarrow, Rubenstein, & Pedersen, 1975). Bakeman and Brown (1980) found that infants who showed greater responsiveness

when interacting with their mothers also interacted more with other people and did so more competently at 3 years. Olson et al. (1984) found that mother–infant object-centered interactions predicted child cognitive and language competence (Bayley Mental Development Index and Peabody Picture Vocabulary Test) at 2 years, and Bornstein (1985) also found that mothers' object-centered activities with young infants predicted children's language and cognitive competence (vocabulary, Wechsler Preschool and Primary Scale of Intelligence) at 1 and 4 years. Notably, mothers and infants differ in the extent to which they engage in person- and object-directed behaviors and interactions across cultures (e.g., Bornstein, 2002; LeVine, 1991), although less is known about how these behaviors are manifest among acculturating families.

MOTHER–INFANT INTERACTION

In addition to investigating cultural differences and relations between mothers' and infants' behaviors, we analyzed sequences of mother–infant interactions. Most research that has examined mother–infant interactions has used time-sampling coding techniques and has looked at cooccurrence in the sequence of mother and infant behaviors without regard to the timing of those behaviors. In contrast, we examined contingencies in mother–infant interactions by coding the onset and offset times of mother and infant behaviors separately (and to the nearest 0.1 sec), which allowed us to examine sequences of mother and infant behaviors with regard to the timing of the interactions and thereby obtain a more fine-grained understanding of mother–infant interaction. Watson (1979) suggested that contingencies in mother–infant interaction encourage the social responsiveness of the partner and reinforce eliciting behaviors; in this way an examination of contingency in mother–infant interaction promises to shed light on which behaviors mothers attempt to foster in their infants and helps to explain cultural differences in particular behaviors. For example, maternal contingent responsiveness to children's social signals has been found to enhance children's later social and cognitive competence (Clarke-Stewart, 1973).

In this study, we also used a within-dyad design, which allowed us to determine which partner was responsible for initiating the interaction (Fogel, 1982; Gottman & Ringland, 1981), and whether the responsibility for initiating interactions varied across cultural groups. Although mothers are often thought to take the lead in mother–infant interactions because they are the more mature partner in the dyad (Kochanska & Aksan, 2004), infants also influence mother–infant interaction and mother–infant relationships more generally (Bell, 1979; Rheingold, 1969; R. Schaffer, 1977). Bornstein, Tamis-LeMonda, Hahn, and Haynes (in press) concluded from their recent longitudinal study of maternal responsiveness in multiple contexts that infants and toddlers play an active role in eliciting maternal behaviors that are meaningful and relevant to their developmental needs. Clarke-Stewart (1973) found, for example, as young children's social signals to their mothers increased (i.e., looking, smiling, and vocalizing), their mothers became more affectionate and responsive to their needs.

We chose to study these dynamics in mothers and their 5-month-old infants because by 5 months of age infants actively participate in turn-taking exchanges (Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990; Kaye & Fogel, 1980). Because Latino parents (including those from South America) have been described as authoritarian (Aguinis, 1988; Fillol, 1961), observed to direct interactions with their children (Diaz Rosello, 1988; Halgunseth, Ispa, & Rudy, 2006; Harwood et al., 2002), and believe that caregivers must direct infants' and young children's actions for children to become *bien educado* and obedient (Bornstein et al., 1999; Valenzuela, 1997), we hypothesized that nonmigrant Latina mothers would be more likely to direct mother–infant interactions than European American mothers. Conversely, because mothers' contingent responses to their infants support their

infants' development of independent agency (Keller, 2002), a primary socialization goal of European American mothers (Bellah et al., 1985; Harkness et al., 1992; Harwood et al., 2002; Richman et al., 1988), we hypothesized that European American mothers would be more responsive to their infants than nonmigrant Latina mothers. We did not hypothesize a priori how immigrant Latinas would respond to their infants.

CHARACTERISTICS OF SOUTH AMERICAN LATINO IMMIGRANTS

According to the 2000 Census (U.S. Census Bureau, 2001), about 51% of immigrants to the United States (using the Census designation "foreign-born") were from Latin America, and of these 1.9 million (13%) were from South America. Latino children in the United States have been characterized as being more likely to be born into low-income, single-parent households, and to parent(s) with low levels of education (e.g., Cauce & Domenech-Rodriguez, 2002). Although this description may characterize most Latino children in the United States (who are primarily of Mexican origin), it does not accurately describe Latino children whose parents originated in South America. Latino immigrants to the United States from South America tend to be well-educated professionals, and economically they more closely resemble first-wave Cuban immigrants than other Latino immigrants (e.g., Cauce & Domenech-Rodriguez, 2002; Field & Widmayer, 1981; Levinson & Ember, 1997; U.S. Census Bureau, 2001). Our Latino immigrant sample was demographically representative of immigrants from South America to the Washington, DC, metropolitan area (Whoriskey & Cohen, 2001; Wilson & Pan, 2000), and they are representative of South American immigrants to the United States (who for the past 20 years have been well educated, from the urban middle class, and primarily immigrating for economic reasons; Levinson & Ember, 1997; U.S. Census Bureau, 2001; Van Egeren, 1999). Although Latino children in the United States are also less likely to have received prenatal care than European American children (e.g., Cauce & Domenech-Rodriguez, 2002), the children of South American immigrants tend to be healthy compared to other Latino immigrant children (Field & Widmayer, 1981). Consistent with data that show that Latino immigrants from South America are better off economically and healthier than other Latino immigrants, 100% of Latino immigrants in this study had received prenatal care at least once per month (as had the nonmigrant Latino and European American samples), and the children were healthy at birth and at the time of the study.

Harwood et al. (2002) identified four sources of diversity among Latinos, including generation level, socioeconomic status, country of origin, and reasons for being in the United States. Taking all four into account, we studied a specific group of Latinos, namely middle-class immigrants from South America who immigrated to the United States for economic reasons (professional employment), and who were not refugees or sojourners (both of whom perceive their migrations as temporary). There is very little research on South American families, and what there is often combines Central and South Americans in demographic (e.g., Ramirez & de la Cruz, 2003) and social science research reports (Field & Widmayer, 1981; Frisbie & Bean, 1995; Johnson, 1999), despite the fact that they differ both socioeconomically (Larsen, 2004) and in their reasons for immigrating to the United States (i.e., refugees vs. immigrants), both of which can influence parenting. By focusing on middle-class Latino families from South America, we identified differences among mothers and infants in their behaviors and interactions that could be attributed to culture and not other confounding variables (e.g., socioeconomic status [SES], reason for migrating), particularly because such confounds have undermined extant research on Latino families living in the United States (e.g., Johnson, 1999; Van Egeren, 1999). In addition, the majority of research on Latinos in the United States has been restricted to low-SES families; thus, little is known about parenting and normative infant development among middle-class Latino families (Johnson, 1999; Van Egeren, 1999).

OVERVIEW

This study addresses several questions in child development. First, it analyzes behavioral interactions among Latino families, a burgeoning but still underresearched population (Cabrera, Shannon, West, & Brooks-Gunn, 2006). Moreover, the focus of this study is on Latino families from South America, perhaps the least researched of all Latinos. Second, it investigates two developmentally important behaviors for the age group studied: person-directed and object-directed interactions. Third, it compares mother–infant interactions among immigrants to mothers in the cultures of origin and destination, thereby contributing to our understanding of developmental acculturation. As the United States becomes increasingly culturally diverse, it is important to document normative parenting behaviors and beliefs in all cultural groups and to understand them in terms of cultural explanations (Ogbu, 1981). Finally, much of the research on Latinos in the United States has been restricted to low-SES families; thus, little is known about parenting and normative infant development among middle-class Latino families (Johnson, 1999; Van Egeren, 1999).

METHOD

Participants

A total of 121 mother–infant dyads from three cultural groups participated: 40 European American dyads living in the Washington, DC, metropolitan area; 33 Latina immigrants from South America and their infants living in the Washington, DC, metropolitan area; and 48 Latino dyads in the Buenos Aires, Argentina, metropolitan area (who we refer to as nonmigrant Latinos). It should be noted that we chose the term *Latino* to describe our immigrant and nonmigrant samples from South America because, like the United States, South America is ethnically heterogeneous, and we wished to emphasize both the within-group commonality and distinctiveness of our samples. Specifically, all Latina mothers in our study were Spanish speakers with European heritage, none was Brazilian (or Portuguese-speaking), and they were neither members of indigenous South American ethnic groups (e.g., Peruvian mothers were not Quechan) nor another ethnicity (e.g., none was Peruvian of Japanese ancestry).

Families were recruited using methods typical of research with firstborn infants (e.g., primarily from mass mailings, but also from advertisements in newspapers, newspaper birth announcements, hospital birth notifications, and patient lists of medical groups). Because demographic and ecological differences are often confounded with cultural ones, the sociodemographic status and ecological context of participants were controlled: All families were middle-class urbanites, the immigrant and U.S. groups came from the same geographic region, and the European American sample was selected from a larger sample so that their education level would be similar to that of Latina mothers. The European American families who participated had been in the United States for at least four generations (i.e., the mothers, the mothers' parents, and at least some of their grandparents were born in the United States), and all were native English speakers.

It should be noted that we used a restricted definition and sample of immigrants in this study. Although researchers sometimes combine first- and second-generation children in their immigrant samples (e.g., demographers; Hernandez, Denton, & Macartney, 2007), all mothers in our sample were first-generation (i.e., they were born in South America and immigrated to the United States) and all of their infants were second-generation (i.e., all infants were born in the United States). On average the Latina immigrant mothers immigrated when they were in their mid-20s, $M = 23.50$, $SD = 8.06$, and had been in the United States on average for 11.37 years ($SD = 7.42$). This is consistent with the median length of residence for immigrants from South America (13.0 years) reported by the most

recent U.S. Census (U.S. Census Bureau, 2001). Latina immigrant mothers indicated that they were bicultural, $M = 2.20$ ($SD = .28$), on the 5-point South American Acculturation Scale (Cote & Bornstein, 2000). This acculturation scale, which was modeled on the ARSMA-I (Cuellar, Harris, & Jasso, 1980) and modified to ask about behavioral acculturation to South American culture, embodies a bicultural perspective on acculturation, whereby identification with cultures of origin and destination are seen as balancing, rather than opposing, each other (Ward, 1999). We explored the relation between acculturation and mothers' behaviors in our immigrant sample, and we did not find any significant relations (nor any that were significant in a practical sense).

Latina immigrant mothers were all from Spanish-speaking countries in South America, primarily Argentina (18%), Colombia (18%), and Peru (24%). Fewer than 10% of participants were from Chile, Bolivia, Ecuador, Paraguay, Uruguay, or Venezuela. Significantly, mothers participating in this study self-identified as South American by responding to our advertisement for "South American families"/"familias de origen Sud Americano," which is an important methodological issue in research with Latino participants (Marín & Marín, 1991). Indeed, in areas of the United States such as Washington, DC, where there are several Latino groups and not a large concentration of one particular Latino group (Whoriskey & Cohen, 2001; Wilson & Pan, 2000), people tend to identify themselves as Latinos or by their regional affiliation rather than by their specific country of origin (Winn, 1992); moreover, even within South America, adults from Spanish-speaking countries strongly identify with supranational identities (Salazar & Villegas, 1999), thereby lending this grouping additional cultural validity. Consistent with other research on parenting among South American Latinos (e.g., Escovar & Escovar, 1985), there were no country-of-origin differences within our Latino immigrant sample on any of the dependent variables or covariates (Table 1), further confirming that the Latino immigrants formed a relatively homogenous sample.

Nonmigrant Latina mothers were drawn from the capital city of Buenos Aires, Argentina. The demographic structure of Buenos Aires is typical of many metropolitan areas around the world (Recchini de Lattes & Lattes, 1975). Fully one-third of Argentina's population lives in Buenos Aires, as it contains the greatest concentration of job opportunities, services and recreation, and academic and scientific activities (González van Domselaar, Sala, & Radrizzani de Enríquez, 1983; Torrado, 1993). A salaried middle class predominates in Buenos Aires, and Buenos Aires's social well-being indicators are by far the highest in the country (Radrizzani de Enríquez, 1989; Torrado, 1993). European migration accounted for most of the population growth in Argentina up to World War II, and the majority of those immigrants were from Italy and Spain. Since the end of World War II, population growth in Buenos Aires has been ascribable mostly to internal migration. The nonmigrant Latina mothers who participated had lived in Argentina for at least two generations (i.e., the mothers and their parents were born in Argentina), and all were native Spanish speakers.

All mothers in the study were married to the baby's father. On average infants were 5.5 months old. All children were healthy, term, and firstborn. Most mothers and infants in our Latino immigrant sample lived in nuclear families, as tends to be the case for families in South America (e.g., Colombia: Posada et al., 2002; Chile: Valenzuela, 1997) and European Americans in the United States (rather than extended families). (See Table 2 for sociodemographic information about the participants.) Although we studied two-parent families, the mother–infant dyad was the focus of this study because across cultures mothers are children's primary caregivers during infancy, mothering is most consistently associated with child outcomes; and the maternal role is also more scripted and universal (e.g., Barnard & Solchany, 2002; Bornstein, 2002; Crouter, Helms-Erikson, Updegraff, & McHale, 1999; Leiderman, Tulkin, & Rosenfeld, 1977; Maccoby & Martin, 1983; Rothbaum & Weisz,

1994). Moreover, because mothers are the transmitters of culture to the next generation (Greenfield et al., 2006), and because we are interested in cultural socialization patterns, we studied mother–infant dyads. Importantly, among the families we studied, there was none in which the fathers were primarily responsible for caregiving. Immigrant mothers (the only group for whom we have detailed data) estimated that they spent significantly more time than fathers with their infants ($M = 102.65$, $SD = 48.54$ hours per week for mothers; $M = 56.85$, $SD = 34.47$ for fathers), $t(32) = 6.56$, $p < .001$, $d = 1.14$; and more time alone with their infants (mothers $M = 50.41$, $SD = 28.43$; fathers $M = 13.82$, $SD = 14.69$), $t(32) = 8.20$, $p < .001$, $d = 1.43$.

Procedures

Mothers and infants were visited in their homes when the infants were 5.5 months old. Dyads were videorecorded at a time when the infant was awake and alert, and the only people present were the mother, the infant, and a female member of the research team. The mother was asked to ignore the camera operator and to behave as she would normally (she was not required to perform any specific activities nor was she required to remain in one place during the observation because the camera operator held the battery-operated videocamera). Mothers spent the observation period attending to their infants' physical, emotional, and cognitive needs, their own needs, and household chores as they saw fit, and as was typical for them. Following a period of acclimation (Stevenson, Leavitt, Roach, Chapman, & Miller, 1986), mothers and infants were videorecorded continuously for 50 min. At the end of the visit, mothers completed a demographic questionnaire, an evaluation of the visit, and immigrant mothers completed an acculturation questionnaire. These questionnaires were originally written in English and were translated into Spanish by bilingual and bicultural social scientists who were natives of Argentina, and then back-translated (following Brislin's [1980 following Brislin's [1986] procedure).

Behavioral Coding

All 50-min videorecordings were coded using exhaustive coding schemes. Mothers' behaviors were mutually exclusive and exhaustive, as were infants' behaviors. Indeed, according to H. R. Schaffer (1989), during this developmental period infants tend to focus on either "an object *or* a person but not both" (p. 197). Onsets and offsets of the following maternal and infant videorecorded behaviors were coded to the nearest 0.1 sec: mothers' encouraging attention physically, verbally, or both to (a) herself, (b) an object or event in the environment, or (c) other or neither of these; infant looking was categorized as (a) at mother's face, (b) at an object, or (c) other or neither of these. Behaviors coded in this way can be used to generate timed event-sequential data (Bakeman & Quera, 1995), which allow for sequential analysis (Bakeman & Gottman, 1986).

Coders were bilingual natives of each cultural group and unaware of the study hypotheses. They were trained to reliability ($\kappa > .60$; Cohen, 1960) on a standard set of videorecordings before they coded the videorecordings for this study, and their reliability was checked every 10 videorecordings to guard against coding drift. Coder agreement was calculated using approximately 15% of the Latino immigrant and nonmigrant dyads' videorecordings and 22% of the European American videorecordings. All coders achieved acceptable levels of intercoder reliability (Fleiss, 1981); κ s ranged from .64 to .75 (assessed separately for the three groups and the four behaviors).

Evaluation of the Visits

At the end of the home visit, mothers evaluated the validity of the observation session by marking a series of 8-point graphic ratings for five questions. The ratings were randomly ordered with respect to valence but recoded in ascending order and scored 0 to 7.

Specifically, mothers reported that their infants' and their own behaviors during the observation were characteristic of their normal routine (a score of 7 would indicate that their behavior was normal; *M*s for each of the three cultures ranged from 5.64–5.85 for infants and 5.15–5.39 for mothers). Mothers reported that during the visit they played with (*M*s 3.18–3.57), talked to (*M*s 2.82–3.27), and spent time with their child (*M*s 3.39–3.95) neither more nor less than usual (as indicated by a score of 3.5). There were no significant differences among cultural groups for these questions, suggesting that our observations were broadly representative of the dyads' usual interactions.

Data Reduction

To investigate cultural differences in mothers' and infants' person- and object-directed behaviors and interactions, and relations between these behaviors, scores for eight variables were computed. Specifically, the durations (i.e., the proportion of time during the observation) of mothers' and infants' engagement in each behavior (i.e., person-directed, object-directed) were computed using the Generalized Sequential Querier program (GSEQ version 4.1.2; Bakeman & Quera, 1995; available at <http://www.psychology.umd.edu/~bakeman/gseq/>). (We also analyzed frequency; we found that duration and frequency were highly correlated and that the patterns of results were similar for duration and frequency; therefore, we only report duration.) The remaining four variables captured sequential aspects of mother–infant interaction and were computed using the same program. Landry, Smith, Swank, Assel, and Vellet (2001) and Van Egeren, Barratt, and Roach (2001) determined that a 3-sec time window best captured contingencies for mother–infant behavior in naturalistic settings. Thus, following Bakeman and Quera (1995) and Bakeman and Gnisci's (2005) procedures, we assessed: (a) the likelihood that an infant responded to the mother (by looking at mother) within 3 sec of the onset of his or her mother's encouraging her or him to look at her (which we called mother-initiated person-directed interaction), (b) the likelihood that a mother responded to her infant (by encouraging her infant to look at her) within 3 sec of the onset of infant looking at mother (infant-initiated person-directed interaction), (c) the likelihood that an infant responded to the mother (by looking at an object) within 3 sec of the onset of the mother's encouraging the infant to look at an object (mother-initiated object-directed interaction), and (d) the likelihood that a mother responded to her infant (by looking at an object) within 3 sec of the onset of her infant looking at an object (infant-initiated object-directed interaction). Separately for each dyad, time units were tallied in 2×2 tables for each of the four behavioral sequences (a–d just given), and an odds ratio (OR) was computed for each table (dyad). The OR is a descriptive measure of effect size (Bakeman, Deckner, & Quera, 2005) and is easy to interpret (e.g., an OR of 3.00 for mother-initiated person-directed interaction means that the odds of the infant looking at the mother within 3 sec of the mother encouraging the infant to look at her are 3.00 times greater when the mother is encouraging the infant to look at her than when the mother is not encouraging the infant to look at her). If fewer than five occurrences of the given behavior were observed, we regarded the value of the OR as missing for that dyad because we would not have had a sufficient sample of behavior from that dyad to draw conclusions about behavioral contingency (Bakeman et al., 2005). Overall, data for fewer than 4% of dyads were considered insufficient for any given analysis, and the proportions of data considered sufficient did not differ across cultural groups.

RESULTS

Details of the Statistical Analyses

Covariates—Mother and child age and maternal education level were screened as covariates for all (multivariate) analyses of (co)variance ([M]AN[C]OVAs) and correlations; they were used only if they correlated significantly ($p < .05$) with the dependent variable

(DV) and if the effects of the covariates were significant in the (M)AN(C)OVAs. Because European American mothers worked longer hours than nonmigrant Latina mothers (Table 2), we examined number of hours per week that mothers worked as a covariate, and we found the same pattern of results as those we report here, suggesting that how long mothers worked did not alter or explain the between-country differences that we found in mothers' and infants' behaviors. We also investigated relations between the DVs and the average number of hours per week infants spent in nonmaternal care during the first 6 months of their lives (we only had these data for the immigrant sample); they were neither statistically nor practically significant.

Post-hoc tests and transformations—Significant group mean differences in the (M)AN(C)OVAs were decomposed using *t* tests with Bonferroni's correction ($p < .05$); only the *F* statistics are reported. Due to space limitations, statistics are reported only for significant results ($p < .05$). Some data were analyzed using transformations and excluding outliers to normalize distributions (as recommended by Fox, 1997; Tabachnick & Fidell, 1996); results were the same for transformed and untransformed data, thus, results for untransformed data are reported. The sequential analyses data are an exception; because the distribution of ORs is known to be positively skewed (i.e., ORs range from zero to positive infinity with a mean of 1; Wickens, 1993), those data were analyzed using the cube root transformation.

Duration of Mother and Infant Behaviors

One 3 (cultural group) $\times$ 2 (gender) AN(C)OVA was performed for each cultural comparison and each behavior to investigate group mean differences in the duration of mothers' and infants' behaviors. Table 3 contains descriptive statistics.

Mother person-directed behavior—Nonmigrant Latina mothers engaged in person-directed behavior significantly longer than Latina immigrant or European American mothers, $F(2, 115) = 17.60$, $p < .001$, $\eta^2_p = .23$.

Infant person-directed behavior—Like their mothers, nonmigrant Latino infants engaged in person-directed behavior significantly longer than Latino immigrant or European American infants, $F(2, 115) = 12.26$, $p < .001$, $\eta^2_p = .18$.

Mother object-directed behavior—Nonmigrant Latina mothers engaged in object-directed behavior significantly longer than European American mothers, $F(2, 115) = 3.84$, $p < .05$, $\eta^2_p = .06$.

Infant object-directed behavior—Latino immigrant infants engaged in object-directed behavior significantly longer than nonmigrant Latino infants, $F(2, 115) = 4.68$, $p < .05$, $\eta^2_p = .08$.

Correlations Between Mother and Infant Behaviors

Pearson correlations were performed to investigate whether mother and infant behaviors covaried, separately for each cultural group. *Z* tests were performed to investigate whether the correlations for the same behaviors were of significantly different magnitude across cultural groups. As can be seen in Table 4, mothers' and infants' person-directed behaviors were significantly positively correlated for all groups. *Z* tests indicated that the correlation for the duration of Latino immigrant dyads' person-directed behavior was significantly larger than for any other group ($p < .05$). The durations of Latino immigrant and European American mothers' and infants' object-directed behaviors were significantly positively correlated.

Contingency of Mother and Infant Behaviors

ORs larger than 1 indicate that bouts of the target behavior are more likely to begin within the target window than at other times, whereas values between 0 and 1 indicate less likelihood. *T* tests were performed separately for each cultural group to determine whether pairs of behaviors were significantly contingent (i.e., whether the ORs differed from 1; Wickens, 1993). With one exception (infant look at object given mother encouraged attention to object for the Latino immigrant dyads), all pairs of behaviors were significantly contingent ($p < .001$) with moderate to large effect sizes (Cohen's $d = .77$).

Mixed design MAN(C)OVAs with two between-subject factors (cultural group, gender) and one within-dyad factor (initiator) with two levels (mother, infant) were performed to investigate cultural and gender differences in the likelihood that interactional partners respond to one another's behaviors with complementary behaviors. The Cultural Group $\times$ Initiator interaction was the a priori focus of this analysis (indeed, no significant gender main effects or Cultural Group $\times$ Initiator $\times$ Gender interactions emerged); thus, simple effects and pairwise comparisons were examined even if the omnibus interaction effect was not significant (Keppel, 1991). Multivariate *F*s and simple effects are reported; all pairwise comparisons were *t* tests with Bonferroni's correction ($p < .05$).

Person-directed interactions—The Cultural Group $\times$ Initiator interaction was significant, $F(2, 110) = 3.99, p < .05, \eta^2_p = .07$. European American mothers were significantly more responsive to their infants' person-directed behavior than Latina immigrant mothers, $F(2, 110) = 4.27, p < .05, \eta^2_p = .07$. Mothers were significantly more responsive than infants to their partner's person-directed behavior in each of the three cultural groups: nonmigrant Latinos, $F(1, 110) = 29.89, p < .001, \eta^2_p = .21$; Latino immigrants, $F(1, 110) = 5.32, p < .05, \eta^2_p = .05$; and European American, $F(1, 110) = 41.59, p < .001, \eta^2_p = .27$ (Table 5).

Object-directed interactions—The Cultural Group $\times$ Initiator interaction was not significant, $F(2, 114) = 1.04, ns, \eta^2_p = .02$. However, analysis of simple effects indicated that nonmigrant Latino and European American infants were significantly more responsive to their mothers' object-directed behavior than Latino immigrant infants, $F(2, 114) = 6.00, p < .01, \eta^2_p = .10$. In addition, mothers in each cultural group were significantly more responsive than infants to their partners' object-directed behavior: nonmigrant Latino, $F(1, 114) = 14.99, p < .001, \eta^2_p = .12$; Latino immigrant, $F(1, 114) = 14.18, p < .001, \eta^2_p = .11$; European American, $F(1, 114) = 4.37, p < .05, \eta^2_p = .04$ (Table 5).

DISCUSSION

Our comparison of mothers who immigrated to the United States to mothers in their culture of origin and those in the majority group in their culture of destination allowed us to address the compelling contemporary issue of "What happens to individuals, who have developed in one cultural context, when they attempt to live in a new cultural context?" (Berry, 1997, p. 6). We investigated this question by examining parent–infant interactions with respect to persons and objects; both are involved in mother–infant interaction universally and each is important to infant development. The examination of cultural variation in developmentally important behaviors helps to test and refine developmental theories, particularly those believed to be culturally universal (Bornstein, 2001). More specifically, this study adds to our knowledge of normative parenting and infant development among middle-class Latino families with young infants, about whom very little is currently known (Johnson, 1999; Van Egeren, 1999). Although recent studies of cultural minority children no longer focus exclusively on pathology, most studies that look at normative development focus on

developmental variables that directly reflect culture (e.g., development of cultural identification; Quintana et al., 2006); few studies have looked at everyday interactions between Latina mothers and their infants (Johnson, 1999; Van Egeren, 1999).

Cultural Differences in Mother and Infant Person-Directed and Object-Directed Behaviors

With respect to mothers' person-directed behaviors, nonmigrant Latina mothers engaged for longer periods of time in person-directed behaviors than either Latina immigrant or European American mothers living in the United States. These differences in person-directed behaviors between mothers in the country of origin and country of destination confirmed our hypotheses and demonstrate generally that Latino families in South America emphasize interpersonal skills in their children (Bornstein et al., 1999; Posada et al., 2002; Valenzuela, 1997). The differences between mothers in the country of origin and immigrant mothers were also consistent with our hypotheses and show that by 5 months, first-generation immigrant mothers are already behaving with their infants like fourth- and fifth-generation European American mothers in their culture of destination and unlike mothers from their culture of origin with respect to their person-directed interactions. This finding accords with previous research that suggests that middle-class immigrant mothers adopt a bicultural approach to parenting (behaviors specifically; Bornstein & Cote, 2006). Moreover, it may be that mothers who chose to immigrate to the United States (and were not compelled to leave their country of origin due to war, famine, or the like) adapt particularly well to some aspects of U.S. culture, including parenting behaviors. Like their mothers, nonmigrant Latino infants engaged in person-directed behaviors for a longer proportion of time than either Latino immigrant or European American infants. In overview, our hypotheses for person-directed behaviors were generally confirmed for both mothers and infants, and underscore the importance of interpersonal interactions among nonmigrant Latino families (Bornstein et al., 1999; Posada et al., 2002; Valenzuela, 1997).

Our hypotheses for object-directed behaviors, however, were partially supported for infants but not supported for mothers. Unexpectedly, nonmigrant Latina mothers engaged in longer object-directed exchanges than European American mothers. As might be expected, Latino immigrant infants in the United States engaged in more object-directed exchanges than nonmigrant Latino infants. No other differences emerged. The different patterns of findings for object-directed behaviors of mothers and infants suggest that object-directed behaviors in mothers and infants are separate forms of behavior from person-directed behaviors in the sense that they follow different patterns of adjustment in the acculturation process (Bornstein & Tamis-LeMonda, 1990). Moreover, that our results for person-directed interaction more closely corresponded to our hypotheses than was the case for object-directed exchanges suggests that, because object-directed behavior is a relatively new part of the 5-month-old infant's behavioral repertoire (Bakeman & Adamson, 1984; Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990), cultural differences in mothers' engagement in these behaviors may yet emerge.

Correlations and Contingencies in Mother–Infant Behaviors

We found that similar mother and infant behaviors were related. Specifically, mothers who engaged in more person-directed behaviors had infants who also engaged in more person-directed behaviors, regardless of cultural group, and Latina immigrant and European American mothers who engaged in more object-directed behaviors had infants who engaged in more object-directed behaviors. Thus, mothers' and infants' person-directed and object-directed behaviors appear to be coordinated within dyads. This may be because mothers and infants have been coordinating their person-directed interactions from the earliest days of the infants' life (Bakeman & Adamson, 1984).

If our analysis ended with the correlations, we might conclude (erroneously) that European American and Latino immigrant dyads' object-directed interactions are more coordinated or reciprocal than those of nonmigrant Latino dyads. However, the question of whether mother and infant behaviors are coordinated in real time is better answered by sequential analysis. Relations between variables (correlations) are computed at the group level and contingencies (sequences) at the individual level. One mother–infant dyad may engage in high levels of person-directed interactions relative to another mother–infant dyad, but this does not necessarily mean that their behaviors are synchronized and occur contingently to one another in real time. Contingency analyses and correlational analyses mutually inform one another, and contingency analyses add information about interaction over correlational analyses. Concretely, as reported earlier, nonmigrant Latino mothers' and infants' object-directed behaviors were unrelated, however nonmigrant Latino infants' object-directed behaviors were contingent on their mothers' object-directed behaviors. In contrast, immigrant Latino mothers' and their infants' object-directed behaviors were related, however, immigrant Latino infants' object-directed behaviors were not contingent on their mothers' object-directed behaviors. When object-directed behavior was infant-initiated, in contrast, mothers' behavior was found to be contingent on infant behavior in each of the three cultural groups. In short, although mothers who engage in high levels of a behavior may have infants who engage in high levels of that behavior, this information tells us nothing about the sequencing of those behaviors in interaction.

As a result of the sequential analyses, we determined that mother and infant behaviors of like kind are coordinated in real time. That is, when a mother was engaging in person-directed behavior, it was likely that her infant would also begin engaging in person-directed behavior within several seconds, and vice versa. This was true for object-directed behaviors (with the exception of infant look at object given mother encouraged attention to object for the Latino immigrant dyads). This pattern of findings may point to a species-general tendency for mothers and infants to engage in shared person-directed interactions by middle infancy, and more specifically for the behavior of one partner in a dyad to be contingent on a similar behavior in the other partner in the dyad (Hunt, 1979; Wachs & Chan, 1986). The sequential analysis findings for person-directed interactions were similar to those for the correlations, and lend credence to the idea that person-directed interactions may be well coordinated within dyads because mothers and their 5.5-month-old infants have considerable experience with these interactions (Bakeman & Adamson, 1984).

That said, we also found that mothers were more responsive to their infants than their infants were to them, in each cultural group and for both person-directed and object-directed interactions. This finding suggests that mothers bear more responsibility of supporting interactions with their infants (Kochanska & Aksan, 2004), which may be culturally universal for mother–infant interactions generally or with infants at this young age. Previous researchers have found that (European American, primarily low-income, single) mothers are more responsive (vocally) than infants to infants' social signals (smiling) and object-oriented behaviors (e.g., Van Egeren et al., 2001).

Some cultural differences in mother–infant interactions emerged. For example, European American mothers were significantly more likely to encourage their infants to look at them when they saw that their infant was already looking at them than Latina immigrant mothers. This observation suggests that European American mothers are more prone to follow their infants' lead in social interactions and these mothers seem particularly interested in lengthening social interactions, perhaps because they wish to stimulate their infants' sense of independent agency. Some support for our hypothesis that nonmigrant Latina mothers would direct their infants' behavior more than European American mothers emerged, but only for object-directed behaviors. Specifically, nonmigrant Latino infants (and European American

infants) were more likely to look at an object in response to their mothers' orienting them toward the object than were Latino immigrant infants, even though Latino immigrant infants spent more time looking at objects than nonmigrant Latino infants; but perhaps this was because Latino immigrant infants' looking at objects was not contingent on their mothers encouraging them to attend to objects. Thus, the analyses presented here suggest that mothers may (consciously) retain aspects of their culture that they value, and at the same time adopt some behaviors of the culture to which they have immigrated, with biculturalism as their goal (Trimble, 2003; see also Berry's, 2006, integration strategy). Research suggests that for voluntary immigrants such as the mothers in this study, a bicultural identity would be both the most common and the most adaptive (Berry, 2006; Phinney, 2003).

Most infants already show differential contingency to specific maternal behaviors by the end of the first half-year of life. This pattern of results reinforces the notion that behaviors and contingencies in mothers and young infants are sensitive to and can be shaped by cultural forces. Traditional socialization patterns in South America emphasize interdependence of the dyad and maternal shaping of infant behavior (Aguinis, 1988; Bornstein et al., 1999; Bornstein & Tamis-LeMonda, 1990; Fillol, 1961; Valenzuela, 1997). This may lead nonmigrant Latina mothers to have a greater influence (as evidenced by increased infant responsiveness; Fogel, 1982; Gottman & Ringland, 1981) on their infants' object-directed behaviors than Latina mothers in the United States for this relatively new type of interaction.

Caveats

These results may generalize only to primiparous middle-class mothers and infants in the particular cultural groups and countries that we studied, and our results for Latino immigrant families may apply only to mothers who immigrated from Spanish-speaking South American countries when they were in their mid-20s, and not to other Latino mothers or infants. This Latino immigrant sample was demographically representative of immigrants from South America to the Washington, DC, metropolitan area (Whoriskey & Cohen, 2001; Wilson & Pan, 2000), and they are representative of South American immigrants to the United States (who for the past 20 years have been well educated, from the urban middle class, and primarily immigrating for economic reasons; Levinson & Ember, 1997; U.S. Census Bureau, 2001; Van Egeren, 1999). Additionally the nonmigrant Latino sample was chosen to be demographically similar to the immigrant sample, thus our data are not representative of all South American mothers and infants. It may be that middle-class mothers' and infants' behaviors are more coordinated than those of mothers and infants in families with lower incomes, who may have additional stresses in their lives, or that the behaviors of mothers with their firstborn infants are more coordinated than mother–infant interaction would be for multiparous mothers. It may also be that voluntary migrants, such as those in our sample, interact differently with their infants than involuntary migrants, who may be under additional stress (Berry & Sam, 1997), or achieve bicultural adaptation more quickly than refugees or sojourners, because these latter groups envision their migrations as temporary and tend to believe that they will return to their country of origin eventually. Finally, although our country-of-origin comparison group may have been less than ideal because only one of the countries of origin of our immigrant mothers was represented (Argentina), previous researchers have observed similar patterns of maternal and infant person- and object-directed behavior among other South American Spanish-speaking countries from which our immigrant mothers originated (e.g., Argentina, Colombia, Chile), and as mentioned previously, there were no country-of-origin differences within our Latino immigrant sample on any of the dependent variables or covariates.

Our results generalize to mother–infant and not father–infant interaction. Although we studied two-parent families, mothers and not fathers were the focus of this study because cross-culturally mothers are children's primary caregivers during infancy, mothering is more

consistently associated with child outcomes, and the maternal role is more scripted and universal (e.g., Barnard & Solchany, 2002; Bornstein, 2002; Crouter et al., 1999; Leiderman et al., 1977; Maccoby & Martin, 1983; Rothbaum & Weisz, 1994). Future research might investigate the contributions of immigrant fathers to infants' socialization.

Conclusions

Central to a concept of culture is the expectation that different peoples possess different ideas and behave in different ways with respect to childrearing (Bornstein, 2005). Parenting practices are known to vary across cultures, and cultural messages are commonly and multiply embedded in daily parent–child interactions. In a larger sense, parenting contributes to the “continuity of culture” by helping to define culture and the transmission of culture across generations. Our research shows that it is incorrect to assume that all aspects of parenting and infant development in European American families automatically apply to other cultural groups in or outside of the United States. Relatively little is known about parenting among immigrant families (Garcia Coll & Pachter, 2002), and immigrants' increasing numbers to the United States (U.S. Census Bureau, 2001) make it imperative to learn more about them so that psychologists, educators, and practitioners can effectively promote immigrant children's adaptive development.

As our investigation is longitudinal, we next plan to evaluate the developmental consequences of differences in maternal and infant behaviors, and what mother–infant interactions may portend for children's later development. Specifically, our next step is to investigate whether and how mother–infant person- and object-directed interactions are predictive of Latino immigrant children's later social and cognitive development and whether the predictive power of these interactions is the same as is found for European American samples.

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TABLE 1

Descriptive Statistics for the Latino Immigrant Sample

	Argentina		Colombia		Peru		Other Spanish-Speaking Countries	
	M	SD	M	SD	M	SD	M	SD
Person-directed								
Mother behavior ^a	.06	.05	.09	.10	.05	.02	.06	.04
Infant behavior ^a	.07	.03	.10	.11	.04	.03	.05	.03
Mother-initiated interaction ^b	3.43	2.32	2.41	3.32	5.36	3.59	3.49	2.66
Infant-initiated interaction ^b	7.06	4.18	4.36	4.55	11.59	12.77	3.78	3.37
Object-directed								
Mother behavior ^a	.10	.08	.10	.11	.13	.05	.16	.09
Infant behavior ^a	.42	.03	.33	.08	.42	.12	.40	.12
Mother-initiated interaction ^b	1.96	1.33	.99	.95	1.54	1.04	1.19	0.73
Infant-initiated interaction ^b	2.35	1.35	3.95	2.87	1.55	0.96	2.43	1.49
Covariates								
Maternal age	33.17	4.77	32.68	4.66	31.24	4.35	31.68	6.09
Maternal education ^c	6.50	0.55	6.33	0.82	5.50	1.07	5.77	0.73
Infant age (days)	161.17	9.50	165.67	10.01	178.00	12.29	168.00	13.89

Note. Analyses of variance were performed to investigate country-of-origin differences; no significant differences were found.

^aProportion of time per hour.

^bOdds ratio.

^c7-point Hollingshead (1975) scale.

TABLE 2

Sociodemographic Characteristics of the Participants

	Nonmigrant Latino	Latino Immigrant	European America
Mother age ^a	27.02 (3.82)	32.02 (5.05)	29.43 (4.95)
Mother education ^b	5.60 (1.63)	5.94 (0.86)	5.73 (0.99)
Mother works (%) ^c	35%	55%	50%
Hours mother works per week ^d	21.40 (11.54)	28.28 (11.86)	33.85 (7.82)
Infant age ^e (days)	167.08 (6.63)	168.76 (13.01)	163.25 (5.38)
Infant gender ^f (girls:boys)	18:30	14:19	17:23
Family socioeconomic status ^g	45.96 (14.30)	47.59 (14.49)	52.21 (11.53)
Nuclear family unit ^h (%)	79%	76%	75%

Note. *M* (*SD*) unless otherwise specified. Analyses of variance were followed by *t* tests with Bonferroni's correction, $p < .05$.

^aLatina immigrant and European American mothers were older than nonmigrant Latina mothers, $F(2, 118) = 11.84$, $p < .001$, $\eta^2_p = .17$.

^bBecause differences exist between countries in the duration, quality, and content of schooling, bicultural researchers adjusted mothers' years of schooling so that the scales were equivalent to the 7-point Hollingshead (1975) index. No cultural differences were found, $F(2, 118) = 0.69$, ns , $\eta^2_p = .01$.

^cNo cultural differences were found, $\eta^2 (2, N = 121) = 3.38$, ns .

^dOnly employed mothers were included; European American mothers worked more hours per week than nonmigrant Latina mothers, $F(2, 50) = 6.14$, $p < .01$, $\eta^2_p = .20$.

^eLatino immigrant infants were older than European American infants, $F(2, 118) = 4.12$, $p < .05$, $\eta^2_p = .07$, by 5 days on average.

^fNo cultural differences were found, $\eta^2 (2, N = 121) = 0.30$, ns .

^gHollingshead (1975) index; no cultural differences were found, $F(2, 118) = 2.44$, ns , $\eta^2_p = .04$.

^hNo cultural differences were found, $\eta^2 (2, N = 121) = 0.24$, ns .

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TABLE 3

Descriptive Statistics for Mother and Infant Behaviors

	<u>Nonmigrant Latino</u>		<u>Latino Immigrant</u>		<u>European American</u>	
	M	SD	M	SD	M	SD
Person-directed behavior						
Mother	.13	.08	.07	.05	.05	.05
Infant	.12	.06	.06	.06	.08	.05
Object-directed behavior						
Mother	.15	.09	.13	.08	.09	.08
Infant	.32	.10	.40	.10	.33	.13

Note. Scores for duration are proportion of time per hour. Analyses of (co)variance were performed separately for each dependent variable and were followed by *t* tests with Bonferroni's correction, *p* < .05.

TABLE 4

Correlations Between Durations of Mother and Infant Behaviors

	Nonmigrant Latino	Latino Immigrant	European American
Person-directed	.51 ***	.77 ***	.44 **
Object-directed	.27	.40 *	.46 **

Note. All tests are two-tailed.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

TABLE 5

Descriptive Statistics for Sequential Interactions

	<u>Nonmigrant Latino</u>		<u>Latino Immigrant</u>		<u>European American</u>	
	M	SD	M	SD	M	SD
Person-directed						
Mother-initiated	3.20	2.39	3.74	3.01	3.59	2.33
Infant-initiated	6.61	3.98	6.38	7.50	9.70	8.84
Object-directed						
Mother-initiated	2.12	1.01	1.38	0.98	1.96	1.15
Infant-initiated	3.17	1.55	2.48	1.80	3.01	4.51

Note. Untransformed odds ratios appear in the table; however, transformed scores were used in the analyses. Multivariate analyses of variance were followed by analysis of simple effects and *t* tests with Bonferroni's correction, $p < .05$.