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Infant–Mother and Infant–Caregiver Emotional Relationships: Process Analyses of Interactions in Three Contemporary Childcare Arrangements

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Abstract

Emotional relationships in infant-mother dyads in families where mothers provided full-time (MC) childcare were compared with those of families where mothers used in-home childcare (IHC) providers and family childcare (FCC) providers ($N = 245$). Infant relationships with childcare providers were also studied. Emotional relationships were adequate in all 3 childcare arrangements, but infant-mother dyads in IHC arrangements displayed healthier emotional relationships than infant-mother dyads in MC arrangements; no differences in the health of emotional relationships with infants emerged among the three types of childcare providers (MC, IHC, FCC). Infant-mother dyads in IHC arrangements also displayed healthier emotional relationships than infant-IHC caregiver dyads, but infant-mother and infant-caregiver dyads were comparable in FCC families. Emotional relationships in infant-mother and infant-caregiver dyads were not correlated, regardless of the type of childcare.

The majority of young U.S. children today are normatively enrolled in nonparental care starting at an early age. In 2011, 88% of preschoolers of employed mothers, and 28% of preschoolers of mothers who were not working, were enrolled in at least one childcare arrangement on a regular basis, spending an average of 33 hours/week in childcare (Laughlin, 2013). Most (42%) were cared for by relatives, 33% were cared for by nonrelatives, and 12% experienced care of both types. Given the prevalence and potential significance of this societal circumstance, it is surprising that so few investigations have undertaken *process* evaluations of the *contemporary profile* of infant childcare arrangements. Furthermore, it is widely acknowledged that emotional relationships in infancy are significant in themselves and set the stage for many facets of cognitive, emotional, and social health in childhood and after (Bornstein, Arterberry, & Lamb, 2014). In this study, therefore, we assessed emotional relationships in infant-mother and infant-nonfamilial caregiver dyads in three prominent current childcare arrangements. The three were exclusive one-on-one home-based mother care, nonrelative care provided one-on-one care in the infant's home, and nonrelative care provided for a group of children including the target infant in a nonrelative's own home. We asked two questions: How do infants and mothers,

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infants and caregivers, and mothers and caregivers in these three situations compare in their emotional relationships? Do infant-mother and infant nonfamilial caregiver dyads in the three situations agree in the relative health of their emotional relationships? We first describe the caregiving arrangements we studied in more detail, and then the process orientation of this research on emotional relationships.

Three Contemporary Childcare Arrangements

Childcare in infancy is realistically characterized by diverse, complex, and variable arrangements (Burchinal, Magnuson, Powell, & Hong, 2015; Clarke-Stewart & Allhusen, 2002). However, maternal care at home has been the default type of early childcare most often studied historically in developmental science. In that framework, nonmaternal childcare was sometimes portrayed as deviant, even though it is, in fact, universal and normative across history and around the world. As Hrdy (2009) argued, human beings evolved as cooperative breeders, and, thus, childrearing amongst humans has always extensively involved multiple relatives and alloparents (Hrdy, 2009). In the last decades, nonparental care has (again) become normative for infants and young children even in industrialized societies, although there are broad inter- and intra-societal differences in parameters of that care, such as the types of care received, the ages at which infants begin care, and so forth. Today, large numbers of very young children are left in the care of nonparental care providers, and the nature and possible implications of this circumstance are widely debated.

Nonparental childcare is often automatically identified with professional care in centers, and as children grow older they are likely to be placed in center-based childcare programs. However, U.S. Survey of Income and Program Participation data collected in 2008 by the Census Bureau indicated that only 15.9% of infants younger than 1 year of age of working mothers were to be found in center-based care; another 13.6% of infants under 1 year of employed mothers were cared for in home settings: 4% were cared for by nonrelatives in the child's home (*in-home childcare*), and 9.6% were cared for by nonrelatives in the provider's home (*family childcare*). Approximately 36.5% of families utilize other forms of parental care while mothers work (e.g., father care, maternal care of infant while working, or parental complementary work schedules), and 45.3% rely on relatives (e.g., grandparents, aunts) to provide childcare (Laughlin, 2011). Further, approximately 23% of infants participate in more than one type of care arrangement.

In consequence, almost 60% of infants in the first year are served in so-called family, friend, and neighbor (FFN) care (Laughlin, 2011). FFN childcare providers include relatives and nonrelatives who are not licensed or regulated by a government agency for the provision of childcare. FFN includes family members, friends, neighbors, nannies, and babysitters and is also called *kith and kin, informal care, legally unlicensed*, or *license-exempt care*. FFN care may be provided in the child's home or in the caregiver's home. About one-half of the entire paid early childcare and education workforce care for children birth to 5 years of age in home-based settings (Powell, 2008). In this study, we included two types of FFN care – non-relative in-home caregivers (IHC) and non-relative family caregivers (FCC) who care for an infant in their own home.

FFN childcare is poorly understood, but deserves thoughtful attention given the important role it plays in caring for relatively large numbers of infants and children. Many FFN providers have limited formal education (Brandon, Maher, Joesch, Battelle, & Doyle, 2002) and little or no experience with formal childcare training programs (Anderson, Ramsburg, & Scott, 2005). Still, many families prefer FFN care to other formal childcare arrangements (U.S. Department of Health and Human Services Child Care Bureau, 2014), and parents opt for FFN childcare for many reasons. Some value the idea that their children will be cared for in the familiarity and security of their own home or another home (as opposed to institutional) setting. IHC and FCC (generally) have smaller numbers of children relative to center-based care, which may allot infants and young children more attention and restrict exposure to illness. Flexible hours, the ability of IHC providers to also perform household tasks (e.g., cooking and cleaning), and the provision of care during evenings all also appear to influence some parents' decisions to elect FFN childcare. Finally, the cost of IHC and FCC may be considerably reduced relative to center-based care.

Process Research: Emotional Relationships in Infant-Mother and Infant-Caregiver Dyads

What is infant care like, and how does it compare, across different types of care? Most current theories of socialization focus almost exclusively on the ways in which parents (especially mothers) influence their children's development within family contexts, largely ignoring effects of IHC and FCC nonparental care providers and extra-familial environments. However, from an early age (especially when mothers combine parenting with employment) children are commonly exposed to a dynamic of care arrangements. In consequence, infants in childcare develop meaningful relationships with adults other than parents, these relationships range in quality, and they have the potential to affect children's development. Childcare providers, like teachers, possess varied qualities that moderate their socialization of children (Denham, 1998), and children typically develop independent attachments to parents and childcare providers (Howes & Ritchie, 2002; Howes & Smith, 1995). The degrees to which caregivers express interest in children's feelings and respect children's emotional experiences profoundly affect children's socioemotional development. Increased understanding is therefore needed about how children's childcare providers serve as socializing agents. By observing systemically how caregivers actually interact with infants and young children, important information would be gained that may inform policy. Given the large numbers of infants in childcare, the quality of infants' relationships with mothers and with non-familial care providers of different sorts needs to be acknowledged as a neglected, but significant, area of investigation.

The developmental literature is of two minds with respect to the consequences of different types of childcare for infants' emotional relationships. Attachment theory maintains that separations between infants or young children and their mothers occasioned, for example, by maternal employment may compromise chances for mothers to learn their children's behavioral patterns and may undermine maternal sensitive care (Belsky, 1988). This theory is reinforced by a role strain perspective that purports that employment leads to role conflicts that, in turn, make it difficult for mothers to organize and engage in affectionate and

stimulating interactions with their children at home (Crouter, Bumpus, Maguire, & McHale, 1999). In contrast, a role enhancement perspective contends that employment does not diminish mothers' quality interactions with their children because mothers stretch their time and energy in flexible ways to compensate for their separations (Marks, Huston, Johnson, & MacDermid, 2001). Whereas employed mothers as a group do not differ from homemaker mothers in the amount of focused time they spend with their young children, mothers who hold fulltime jobs (vs. those with less than fulltime work) appear to spend less focused time with their children (Sayer, Bianchi, & Robinson, 2004). Thus, unsurprisingly, long hours of nonparental care have been associated with mother-child interactions of diminished quality (NICHD ECCRN, 1999).

Children's ability to regulate emotions develops in the context of their primary caregiving relationships during infancy and may be fundamental in organizing their future behavior, social relationships, and adaptive functioning (Bornstein, 2014; Eisenberg, Spinrad, & Knafo, 2015). Caregivers are vital to helping infants manage their emotional and behavioral reactions, and dyads develop characteristic regulatory patterns via thousands of interactions over the course of normal early development (Sroufe, Egeland, Carlson, & Collins, 2009). Researchers are drawn to such interactions to identify origins of individual differences in emotion regulation styles because the way an older child negotiates emotional challenges is theoretically linked to dyadic regulation processes experienced within early caregiving relationships. In well-regulated interactions, infants and caregivers are attuned to each other, experience mutually positive affective exchanges, and transition smoothly between activities (Bornstein, 2013). Over time, infant interactions with caregivers of all stripes help to regulate infants' emotional arousal; infants who are over- or understimulated participate in fewer prolonged positive interactions and process less new information (Bornstein & Manian, 2013). Dyadic regulation is therefore influenced by infants as well as by caregivers' abilities to read infant signals and adjust their own behavior accordingly.

Childcare research has evolved from antiquated questions about good or bad effects of childcare to a more appropriately nuanced agendum on identifying process aspects of childcare and associated developmental outcomes. Childcare composition is typically deconstructed into structural and process components, and variation in childcare reflects both. Conceptually, structural and process measures differ in that factors indexed by structural measures increase the likelihood of high-quality interaction and care but do not guarantee it, whereas process measures quantify actual care. Many researchers assess quality using structural indices--measures of caregiver training and experience, group size, caregiver-child ratios, crowding, staff turnover, and the like (Burchinal et al., 2015) – and quality of childcare has been identified as an effective factor in the emotional development of children. Higher quality childcare is associated with positive socioemotional outcomes in children, such as lower rates of negative emotional expression and higher levels of compliance, attention regulation, and sociability (NICHD ECCRN, 1998, 2000, 2001; Peisner-Feinberg et al., 1999; Votruba-Drazal, Coley, & Chase-Lansdale, 2004). Children in higher quality childcare are rated as more socially competent and happier, and they have fewer unfriendly peer interactions and receive fewer negative nominations from peers (Vandell, Henderson, & Wilson, 1988).

However, structural measures of childcare quality do not apply to individual caregivers. Moreover, childcare situations that are characterized by better adult-child ratios and staffed by well-trained providers, for example, may still offer poor individualized care. Extensive training, education, and experience of caregivers, like generous caregiver-child ratios, must translate into sensitive patterns of interaction, displays of appropriate emotion, and intuitive understanding of children to render children's experiences in care rewarding and growth-promoting. Process measures, the subject of investigation here, are observational assessments of actual interactions between childcare providers and children.

Two early studies that examined process in FFN childcare settings arrived at provocative (but neglected) sets of results. Rubenstein, Pedersen, and Yarrow (1977) reported that mothers, compared to substitute caregivers at home, provided a more stimulating environment for their 6-month-olds. After observing 5-to 6-month-olds with their mothers and their family childcare providers, Stith and Davis (1984) reported that substitute caregivers provided less stimulation, more muted affect, and fewer contingent responses than did mothers. On the basis of this scant data, we hypothesized that infant-mother emotional relationships might be characterized as higher in quality or healthier than infant-FFN caregiver relationships. As infants in IHC are cared for one-on-one and infants in FCC are cared for in groups, we also hypothesized that infant-FCC caregiver emotional relationships would be lower in quality than infant-IHC caregiver emotional relationships.

The Present Study

Given the significance of infant-careprovider emotional relationships in development, we evaluated and compared them in observed and coded infant-mother and infant-caregiver socioemotional exchanges. Specifically, in addition to exclusive mother care, two types of commonly used nonparental FFN childcare provided in home settings were sampled: nonrelative caregivers providing one-on-one care in the infant's own home and nonrelative caregivers caring for a group of children including the target infant in the caregivers' own homes. We collected process data on infant-mother and infant-caregiver interactions with the same infants using a standard measure.

The childcare literature is rife with conflicting reports of the effects of different indices of nonparental care (for reviews see Burchinal et al., 2015; Clarke-Stewart & Allhusen, 2002). Part of this heterogeneity of findings stems from variations in focus, methodology, and sampling across studies. Generalizations about possible childcare effects are also jeopardized by the failure to recognize that children are not randomly assigned to exclusive parental or nonparental care. The types of care that families select often relate to family characteristics that are themselves linked to family function, parenting, or children's development. Many variables have been implicated as alternative sources of variance in childcare effects; indeed, greater effect sizes for family variables, as opposed to childcare variables, have been reported (NICHD ECCRN, 1998, 2003; Vandell & Corasaniti, 1990). Thus, ignoring possible differences in families that do or do not enroll their infants in childcare risks attributing differences to childcare when they might be attributable (at least in part) to variation in the characteristics and behaviors of the parents and the communities in which they live (Duncan, 2003).

For example, Erel, Oberman, and Yirmiya's (2000) meta-analysis identified seven indices of child development commonly studied in connection with childcare; despite its everyday meaningfulness and significance, child gender was not among them. Girls and boys may be enrolled in different types of care, be treated differently in childcare, react differently to different kinds of care, or interpret different kinds of care differently (Bornstein & Hahn, 2007; Bornstein, Hahn, Gist, & Haynes, 2006; Botkin & Twardosz, 1988; NICHD ECCRN, 1997; Silverstein, 1991). In the present study, we paid special attention to child gender, and we included equal numbers of girls and boys in all samples. Most studies of childcare do not consider or report the birth order of children either; yet firstborn and laterborn children are widely acknowledged to differ in their psychological development (Dunn, 1993, 1995; Michalski & Shackelford, 2001; Plomin, 1994). They, too, could certainly experience, be treated in, and interpret childcare differently. In this study, we held birth order constant. Older mothers are also more likely to participate in the labor force as are mothers with higher levels of education (Repetti & Wang, 2014). Although these "third variables" contribute to child development, childcare has been found to link to child outcomes separate and apart from them (Bates et al., 1994; NICHD ECCRN, 2003). In the present study, we examined childcare exercising controls over variables in the child (gender, birth order, birth weight, age), the mother/caregiver (age, education), the context (evaluation of the interaction by observer and adult participant), and the family (SES).

In sum, within the literature concerned with childcare broadly the following features distinguish the present study: (1) infants, mothers, and caregivers in each of three prominent but research neglected childcare arrangements were observed and assessed; (2) both genders of infants in each arrangement were represented; (3) infant age and birth order were held constant across groups, and mother sociodemographic and family social status characteristics were controlled; and (4) a standard validated observational methodology and coding system to evaluate emotional relationships in interactive processes were employed. We consider that such process assessments of emotional relationships fill gaps of needed information on infant-adult relationships and may be revealing of diverse contemporary childcare populations.

Method

Participants

A total of 245 participants (92 5-month-old infants and 153 adult mothers and caregivers) provided data. Mothers were recruited from one of three childcare arrangements: (1) *Mothers who Provided Fulltime Childcare at Home* (Mother Care, MC; $n = 31$), nonemployed mothers who had no regular alternative childcare arrangements; (2) *Mothers with In-Home Childcare Providers* (In-Home Care, IHC; $n = 32$), employed mothers who employed a nonfamilial caregiver to provide one-on-one care in the infant's own home; and (3) *Mothers with Family Childcare* (Family Childcare, FCC; $n = 29$), employed mothers who took their infants to a nonfamilial caregiver's home (where at least one other child was also in care at the same time). IHC and FCC caregivers also contributed data. Therefore, 31 infants were observed only with their mothers (because there was no other primary caregiver), and 61 infants were observed twice, once with their mother and once with their

primary IHC or FCC provider. (One additional family using FCC was seen, but the provider did not interact with the target infant for 75% of the recorded hour; because of this low level of interaction, this infant-caregiver dyad could not be coded and the case was excluded from analyses.) Table 1 displays descriptive statistics for participating infants, mothers, and caregivers by childcare arrangement and tests of differences across groups.

Infants and mothers—Infants were all term, healthy at birth and at the visits, and had no known medical problems. Overall, 47.8% of the infants were female, and gender was equally distributed across childcare arrangement groups. Infants weighed an average of 3484.72 g (*SD* = 440.67) at birth and were 163.09 days old (*SD* = 6.11) on average at their only or first visit. Five of the 31 mothers with no regular childcare occasionally used babysitters (between 2 and 8 hr in a week). Those infants who were in regular childcare spent an average of 42.96 hr per week (*SD* = 10.46; range = 21–75) in nonmaternal care. Infants in FCC were in care with 1–6 other infants or children (*M* = 3.10, *SD* = 1.63).

All mothers were European American, married, and living with their husband. Overall, mothers averaged 31.26 years of age (*SD* = 3.51; range = 21.60–39.90) at the visit, but IHC mothers were older than FCC mothers. Maternal education averaged 6.08 (*SD* = .75; range 4–7) on the 7-point Hollingshead (1975) Four-Factor Index of Social Status education scale, and IHC mothers had higher education than FCC or MC mothers. Families were of middle to high socioeconomic status (SES; Hollingshead, 1975) with an overall mean of 56.95 (*SD* = 6.32), and IHC families had higher SES than FCC families. Finally, the mothers who were employed outside the home worked an average of 36.95 hr per week (*SD* = 7.04).

We recruited an ethnically homogenous sample as a first step in understanding the matrix of associations surrounding maternal, caregiver, and infant emotional relationships before embarking on more complex studies and analyses with more ethnically diverse samples because parenting, infant development, and the effects of maternal employment during a child's first year are all known to vary with ethnicity (Bornstein & Lansford, 2010; Brooks-Gunn, Han, & Waldfogel, 2002; García Coll & Pachter, 2002). In analyses of children from the Fragile Families and Child Wellbeing Study (a large sample of single-mother families drawn from 20 U.S. cities), for example, more negative effects of first-year maternal employment on parenting and child outcomes were found for Hispanic families and non-Hispanic White families than for African American families (Berger, Brooks-Gunn, Paxson, & Waldfogel, 2008). Approximately 75% of the population of the United States self-identifies as European American in descent (Humes, Jones, & Ramirez, 2011). By including only mothers of a single ethnicity, we intentionally avoided an ethnicity confound that has plagued the existing childcare literature and would also cloud our findings with respect to infant, mother, and caregiver emotional relationships (Bornstein, Jager, & Putnick, 2013).

Caregivers—IHC providers were not licensed because there was no process for licensing individual caregivers working in another home in the data collection areas. Some FCC providers in the data collection areas were required to be licensed by law; others were not (depending on the number and ages of children). We included all FCC providers regardless of licensure. Caregivers were all female, and they averaged 32.42 years of age (*SD* = 10.79; range = 17.38 – 65.05) at the visit. Caregiver education averaged 4.65 (*SD* = 1.22; range =

1–7) on the 7-point Hollingshead (1975) education scale. Caregivers ranged widely in job experience, having worked between 0 and 13 years as a caregiver, but IHC and FCC providers had similar caregiving experience. Caregivers had between 0 and 6 children of their own, and FCC providers had more children than IHC providers. More FCC than IHC providers were married. Over one-half of the caregivers were European American (58.18%), and the remainder were African American (21.82%), Asian American (10.91%), Latin American (7.27%), and Native American/Alaskan (1.82%); ethnicity was approximately equally distributed across caregiver arrangements. All but one caregiver regularly spoke English to the infant in her care.

Procedures

In the 2 weeks prior to a home visit, mothers completed a demographic questionnaire providing background information about the infant, mother, and family. Caregivers also completed a demographic questionnaire about themselves and the childcare setting. Each infant-adult dyad was visited by a single female researcher in the location where care was provided, and an hour of the dyad's naturalistic behavior was video/audiorecorded.

The mother or caregiver was told that the researcher was interested in the infant's usual activities. She was urged to go about her normal routine so that the infant would behave typically and was asked to disregard the researcher insofar as possible. After a conventional and recommended period of acclimation to the camera and the presence of the researcher (see McCune-Nicolich & Fenson, 1984; Stevenson, Leavitt, Roach, Chapman, & Miller, 1986), filming commenced. The researcher resisted talking to the mother/caregiver or making eye contact with, interacting with, or otherwise reacting to the infant during the filming. On average, infants were awake over 99% of the recorded time.

Assessment of Emotional Relationships

Infant, mother, and caregiver—We operationalized infant, mother, and caregiver emotional relationships from the videorecords using 4 dimensions from the Emotional Availability Scales: Infancy to Early Childhood Version (EA Scales, 3rd ed.; Biringen, Robinson, & Emde, 1998). Mother/Caregiver Sensitivity, ranging from 1 (*highly insensitive*) to 9 (*highly sensitive*), assesses mother/caregiver acceptance, flexibility, affect regulation, conflict resolution, and variety and creativity of play with the infant. Mother/Caregiver Structuring, ranging from 1 (*nonoptimal*) to 5 (*optimal*), assesses the degree to which mother/caregiver appropriately facilitates, scaffolds, and organizes infant play, exploration, or routine by providing rules, regulation, and a supportive framework for interaction without compromising the infant's autonomy. Infant Responsiveness, ranging from 1 (*nonoptimal*) to 7 (*optimal*), focuses on the infant's age- and context-appropriate interest in exploring on his/her own and in responding to mother/caregiver bids (i.e., the balance between relatedness and autonomy) as well as the extent of the infant's enjoyment of interaction with mother/caregiver. Infant Involvement of Adult, ranging from 1 (*nonoptimal*) to 7 (*optimal*), assesses the infant's ability, willingness, and success in engaging the mother/caregiver in interaction. We chose to use four of the six available EA Scales because the remaining two (Nonintrusivness and Nonhostility) are uncharacteristic of normative, healthy dyads and showed very little variance in these samples. All EA Scales were coded in half-points. More

complete descriptions of the EA Scales can be found in Biringen and Robinson (1991), Easterbrooks and Biringen (2000, 2005, 2009), and Biringen (2000).

In coding the hr-long infant-adult interactions, an overall score was assigned for each EA Scale that took into account the entire infant-adult interaction as it unfolded throughout the observation. No coder rated interactions of the same infant with both mother and caregiver. Therefore, coders were blind to the behaviors and the ratings of their assigned infants with the other adult. Coders were also blind to hypotheses and purposes of the study and to additional information about the dyads. Coders were first trained on the EA Scales to obtain satisfactory coding reliability with one of the Scales' authors. Roughly 20% ($n = 30$) of the sample of infant-adult interactions were double coded, and in accordance with the recommendations of Shrout and Fleiss (1979) reliability was computed using average absolute agreement *ICCs* in a two-way random-effects model (McGraw & Wong, 1996): Sensitivity, .82 for mothers and .85 for caregivers; Responsiveness, .87 with mothers and .83 with caregivers; Involvement, .89 with mothers and .75 with caregivers. *ICCs* for Structuring were not computed due to restriction of range; defining agreement as within a half-point, agreement was 100% for mothers and 83% for caregivers.

Evaluation of the mother and caregiver visits—As a check against threats to validity, at the conclusion of both the mother ("*M*") and caregiver ("*C*") visits the participating adult and the researcher independently evaluated the observation sessions 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/caregivers reported that they felt comfortable being recorded ($M_M = 5.09$, $SD_M = 1.53$; $M_C = 5.73$, $SD_C = 1.51$). Mothers/caregivers rated the infant's behavior ($M_M = 5.48$, $SD_M = 1.77$; $M_C = 5.67$, $SD_C = 1.69$) and their own behavior ($M_M = 4.90$, $SD_M = 1.84$; $M_C = 5.46$, $SD_C = 1.76$) during each visit as characteristic of their normal routine. According to the researchers' evaluations, mothers and caregivers were relaxed ($M_M = 5.25$, $SD_M = 1.50$; $M_C = 5.04$, $SD_C = 1.91$) and infants were alert ($M_M = 5.06$, $SD_M = 1.70$; $M_C = 4.74$, $SD_C = 2.05$) and not fussy ($M_M = 2.47$, $SD_M = 1.61$; $M_C = 2.16$, $SD_C = 1.69$). One-way analyses of variance among the three groups of mothers revealed only one difference: MC infants were more alert than FCC infants, $F(2,80) = 5.42$, $p = .006$, $\eta_p^2 = .12$. Infant alertness was therefore included as a potential covariate. Paired t tests between working mothers and their caregivers revealed no differences between observations. These data suggest that our observations were normative and broadly representative of dyads' usual interactions.

Results

Preliminary Analyses

Univariate distributions of the EA Scales and covariates (see below) were initially examined for normality, homogeneity of variance, outliers, and influential cases (Tabachnick & Fidell, 2007). Sensitivity, Structuring, and Involvement of Adult were re-expressed using second-power transformations to normalize their distributions; Responsiveness was normally distributed in its original metric. Descriptive statistics of the untransformed EA Scales are presented in Table 2. On average, infant-mother and infant-caregiver dyads scored in the

adaptive ranges on the EA Scales, but individual dyads ranged from maladaptive to highly adaptive. Correlations among the EA Scales were very high, *r*s(151) = .75 to .93, *p*s < .001. Consequently, we computed a single mutual emotional relationships composite scale as the average of mother or caregiver Sensitivity and Structuring and infant Responsiveness and Involvement standardized scores ($M = 0$, $SD = 1$). This composite scale was normally distributed and had strong internal consistency ($\alpha = .95$). Because each scale targets a particular member of the dyad, and the individual EA Scales have important independent theoretical and practical implications, however, we present results for both the individual scales and the composite scale. Descriptive statistics of the emotional relationships composite scale and individual scales for infant-mother and infant-caregiver dyads in the three caregiving arrangements are presented in Table 2.

In a preliminary set of analyses that included infant gender as a factor, no main effects or interactions with gender emerged. Consequently, scores for girls and boys, and mothers/caregivers of girls and boys, were combined for all analyses that follow.

Analytic Plan

Our main analyses address two questions. First, do infants, mothers, and caregivers differ in levels of mutual emotional relationships? Analyses of variance (ANOVAs) and covariance (ANCOVAs) were computed on the emotional relationships composite scale and individual scales to assess (1) differences among dyads in the three groups of mothers (MC mothers vs. IHC mothers vs. FCC mothers) and (2) differences among dyads in the three groups of primary caregivers (MC mothers vs. IHC providers vs. FCC providers). Because the infant was consistent across matched mother and caregiver dyads, general linear mixed models with family ID as the repeated effect were computed on the composite scale and individual scales to assess (3) differences between dyads of IHC mothers and IHC providers and (4) differences between FCC mothers and FCC providers. In general linear mixed models the covariance structure was modeled as heterogeneous compound symmetry to account for any relations of infant-mother and infant-caregiver emotional relationships, but allowing variances of infant-mother and infant-caregiver dyads to differ.

Our second question was, do infant-mother and infant-caregiver dyads agree in the relative health of their mutual emotional relationships? Correlations are presented to assess whether infant-mother and infant-caregiver dyads show similar or different relative levels of agreement in mutual emotional relationships.

Infant birth weight and ages at the visits, maternal report of infant adjustment, mother and caregiver age, education, ethnicity (European American vs. minority), and evaluations of the visits, and family SES were screened as potential covariates in all analyses. In analyses of mothers and their infants' IHC and FCC providers, hours in childcare was also evaluated as a covariate. Hours in childcare was unrelated to emotional relationships in mothers and caregivers, and the number of infants in care was unrelated to emotional relationships in FCC provider arrangements. To preserve power, we initially computed tests without covariates. If there was a significant main effect of group or a significant correlation and a potential covariate was either significantly different between groups (see Table 1) and/or significantly correlated with the outcome variable, it was then statistically controlled.

Due to relatively small cell sizes, we had power to detect only large effects in (1) between-subjects ANOVAs (α = .05, f = .40) with three groups (Power = .93), (2) within-subjects mother-caregiver comparisons assuming a correlation of .20 between mothers and caregivers (α = .05, f = .40, Power = .92), and (3) two-tailed correlations (r = .50, Power = .84) between mothers and caregivers.

Emotional Relationships in Infant-Mother and Infant-Caregiver Dyads

We compared the composite scale of mutual emotional relationships in mother-infant and caregiver-infant dyads. We then followed with tests of the individual scales for mothers and caregivers (Sensitivity, Structuring) as well as infants (Responsiveness and Involvement of Adult).

Infant-mother dyads in different arrangements of childcare—Emotional relationships of infant-MC mother, -IHC mother, and -FCC mother dyads were compared, and group differences evaluated using simple contrasts. An effect of childcare arrangement emerged on the composite scale, $F(2,89) = 4.24$, $p = .017$, $\eta_p^2 = .087$, with post-hoc contrasts revealing that infant-mother dyads using IHC scored higher than infant-mother dyads using MC ($p = .005$). Infant-mother dyads using FCC were similar to infant-mother dyads using MC and IHC (ps = .273 and .088, respectively). Controlling for maternal age and education and family SES, the effect of childcare arrangement remained significant, $F(2,86) = 4.43$, $p = .015$, $\eta_p^2 = .093$, with infant-mother dyads using IHC still scoring higher than infant-mother dyads using MC ($p = .004$).

In follow-up tests, Sensitivity and Structuring were similar across the 3 groups of mothers, $F(2,89) = 2.10$, $p = .128$, $\eta_p^2 = .05$, and $F(2,89) = 2.79$, $p = .067$, $\eta_p^2 = .06$, respectively. Infants of IHC mothers were more Responsive and Involving than infants of MC mothers, $F(2,89) = 5.61$, $p = .005$, $\eta_p^2 = .11$, and $F(2,89) = 4.49$, $p = .014$, $\eta_p^2 = .09$, respectively. Infants of FCC mothers were similar to infants of MC mothers and IHC mothers. Controlling for maternal age and education and family SES, the effects of childcare arrangement remained significant for Responsiveness and Involving of Mother, $F(2,86) = 5.77$, $p = .004$, $\eta_p^2 = .12$, and $F(2,86) = 4.92$, $p = .009$, $\eta_p^2 = .10$, respectively.

Infant-primary caregiver dyads—Emotional relationships of infants and MC mothers, IHC providers, and FCC providers were compared. No differences emerged on the emotional relationships composite scale, $F(2,89) = 1.22$, $p = .301$, $\eta_p^2 = .027$, or any of the individual scales, indicating that primary caregiver adults and infants in these combinations have similar emotional relationships to one another on average.

Mothers and their infants' in-home childcare providers—Emotional relationships of IHC mothers and IHC providers with the same infant were compared using linear mixed models. Infant-IHC mother dyads had healthier emotional relationships on the composite scale than did those infants with their IHC providers, $F(1,31) = 7.97$, $p = .008$, and this effect remained significant controlling for mother/caregiver education, $F(1,45.99) = 5.14$, $p = .028$.

In follow-up tests, mothers with IHC were more Sensitivity and Structuring than their IHC providers, $F(1,31) = 5.22$, $p = .029$, and $F(1,31) = 6.56$, $p = .016$, respectively, and infants

were more Responsive and Involving of their IHC mothers than providers, $F(1,31) = 8.87$, $p = .006$, and $F(1,31) = 8.66$, $p = .006$, respectively. However, when controlling for mother/caregiver education, the effects for Sensitivity and Structuring attenuated to nonsignificance, $F(1,47.23) = 3.19$, $p = .080$, and $F(1,48.08) = 2.51$, $p = .120$, respectively. Controlling for mother/caregiver education and infant age and alertness, infants were still more Responsive to their mothers than their caregivers, $F(1,43.64) = 9.77$, $p = .003$. However, controlling for mother/caregiver education and infant age, infant Involvement attenuated to just below significance, $F(1,44.01) = 3.95$, $p = .053$.

Mothers and their infants' family childcare providers—Infants and their FCC mothers had healthier emotional relationships than infants with their FCC providers, $F(1,28) = 5.62$, $p = .025$, but this effect attenuated when mother/caregiver age and education were controlled, $F(1,28.75) = .91$, $p = .348$.

In follow-up tests, FCC mothers were more Sensitive and Structuring than were FCC providers, $F(1,28) = 4.65$, $p = .040$, and, $F(1,28) = 8.24$, $p = .008$. Infants did not significantly differ in their Responsiveness or Involvement of FCC mothers and FCC providers, $F(1,28) = 3.13$, $p = .088$, and $F(1,28) = 4.13$, $p = .052$, respectively. Controlling for mother/caregiver age and education, the effects for Sensitivity and Structuring attenuated to nonsignificance, $F(1,28.78) = .61$, $p = .441$, and $F(1,25.16) = 2.82$, $p = .105$, respectively

Mother and Caregiver Agreement in Emotional Relationships

Infant-IHC mothers' and their infant-IHC providers' emotional relationships were not correlated, nor were those of infant-FCC mothers and their infant-FCC providers (see Table 2). Although composed of the same infant, infant-mother and infant-caregiver dyads do not covary in their mutual emotional relationships.

Discussion

The present study was undertaken to contribute to the still small literature that addresses process questions of contemporary childcare during infancy. We focused on two types of home-based FFN childcare arrangements used today by U.S. American mothers with infants and very young children, comparing those to fulltime maternal care. One group of nonemployed mothers provided fulltime care for their infants. Two groups of employed mothers used two different types of home-based substitute FFN care: nonrelative caregivers providing one-on-one care in the infant's home and nonrelative caregivers caring for a group of children including the target child in the caregivers' homes.

Emotional relationships are a central feature of human interaction; and emotions are powerful intra- and interpersonal regulators of behavior (Kringelbach & Phillips, 2014). Emotions arise from and form the foundations for most aspects of human attachments, social communication, and prosocial encounters with others (Emde, 1980). As such, emotional relationships constitute a key feature of caregiving and infant development. Emotional exchanges between adults and children encompass both emotional signaling and emotional understanding in each partner and the emotional accessibility of one to the other (Biringen & Robinson, 1991). Theoretical work underscores the grounding of emotional relationships in

the attachment tradition (Bowlby, 1969) and its broad utility in clinical practice as well as in research (see Biringen & Robinson, 1991; Easterbrooks & Biringen, 2000, 2009). For example, a growing body of evidence attests that infant-parent emotional relationships relate to quality of attachment (Easterbrooks & Biringen, 2000) as well as other aspects of the infant-parent relationship (for reviews see Biringen, 2000; Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014). Emotional relationships serve in "a global way to describe the overall quality of the affective relationship" between parent or caregiver and infant (Biringen, 2000, p. 112).

In the present study, mother-infant and caregiver-infant dyads in all three childcare configurations displayed, on average, adaptive, healthy emotional relationships. Our data give no indications that infants in two types of commonly used FNN care arrangements experience care of poor quality. No main effects or interactions of gender emerged, so these results also seem to apply equally to dyads with infant girls and boys. At the same time, as would be expected, we observed a range of quality. In all groups, except mother-infant dyads of mothers using IHC, some individual dyads scored in the maladaptive range on at least some scales (Table 2). Mean scores for all 5 groups of adults on Sensitivity (1–7) were above 5.5 and all but one were above 6, scores that reflect differing levels of Sensitivity and an absence of insensitive behaviors. A score below 4.5 indicates insensitivity. Similarly, mean Structuring (1–5) scores for 4 of 5 groups of adults were above 4 on the 5-point scale, indicating strong or very strong structuring, and the 5th score was just slightly below 4. A score below 3 is nonoptimal on Structuring. With respect to Responsiveness (1–7) all groups of babies had scores close 5 (“moderately optimal”). Responsiveness scores below 3.5 give cause for concern. Mean scores for Involving of Mother (1–7) were likewise around 5 for all groups, suggesting that, on balance, babies were more interested in exploring the environment than they were in engaging with mother, which is not surprising given that babies were observed in the natural setting replete with manipulable objects. Scores below 3.5 are indicative of avoidance or nonadaptive over-involvement. The EA scores in our samples accord with those in reports of other non-clinical samples of mothers, babies, and care providers (Biringen et al., 2014). We conclude that, at least when arranged by mothers similar to those in this study, two common forms of home-based FFN substitute care adequately meet the emotional needs of infants while their mothers are working.

We compared infant-mother and infant-caregiver dyads in different possible combinations. Our analyses revealed both similarities and differences in emotional relationships of infant-mother and infant-caregiver dyads. In terms of emotional relationships in the three groups of infants with their primary daytime caregiver, no differences were found across groups; that is, the three groups of infants experienced comparable and adequate emotional availability, whether they spent time with mother or an FNN caregiver. These data suggest that mothers who choose two frequent types of FFN care are successful in providing their babies with daytime care comparable in emotional quality to fulltime maternal care.

Still, we did not find that the emotional relationships in the three groups of infant-mother dyads were comparable. Dyads whose mothers employed in-home caregivers displayed healthier emotional relationships than dyads whose mothers cared for their babies full-time. Notably, this group difference was attributable to the infant’s behavior, with infants cared for

by in-home caregivers being more Responsive to and Involving of their mothers than infants whose mothers cared for them full-time. Demographically, these two groups of mothers were similar in terms of age and socioeconomic status, differing only in terms of education, with in-home care mothers being more educated. Their babies were also similar in age, birthweight, and gender distribution. Experientially, of course, the two groups of mothers differed in that, nonemployed mothers spent every day caring for their babies, but in-home care mothers left their babies multiple times each week for extended periods. Although number of hours in childcare was unrelated to emotional relationships in both mothers and caregivers, it is possible that characteristics of the experience with maternal absence, other than sheer amount of time spent apart, relate to infants' emotional relationships with their mothers. For example, it may be that the experience of repeated separations from and reunions with mother heightens an infant's tendency to engage with mother when the two are together. This having been proposed we did *not* find that infants cared for in family childcare settings were more Involving of and Responsive to their mothers than were infants of full-time caregiving mothers. That is, there appears to be something unique about the experience of in-home care as it relates to heightened infant emotional engagement of mother.

Examination of the relationships of the two groups of infants in FNN care with their mothers and caregivers is revealing. Emotional availability of the two groups of mothers did not differ, nor did emotional availability of the two groups of caregivers. Furthermore, emotional availability scores for mothers and caregivers were uncorrelated in both groups. In both groups, however, mothers were more Sensitive and more highly Structuring than were caregivers with these differences being largely attributable to the higher educational levels of mothers. Despite the fact that infants in both groups were receiving care on a regular basis that differed (to the same degree) in quality, infants in the two groups varied in how they related to mother vs. caregiver. Infants in family childcare were equally Responsive to and Involving of mother and caregiver even though the mothers were more emotionally available than caregivers. In-home care infants, by contrast, differentiated between mother and caregiver, responding more optimally to their mothers.

Overall, our data suggest that some feature of in-home childcare supports or facilitates heightened emotional availability of the infant with his or her mother. This result cannot be attributed to differences in the emotional quality of the daytime emotional availability experienced by the infants because the three groups of daytime caregivers did not differ in their emotional relationships with the infants in their care. It also cannot be attributed to differences in the emotional availability of mothers who choose the two kinds of FNN care that we investigated. It appears not to be linked to the number of hours of substitute care that babies received either. Perhaps other characteristics of the specific experiences that infants have in substitute care animate this difference. The baby whose mother is away during the workday has the experience of separating from and reuniting with her each day that she is away. That baby also has the experience of having to adapt to one or more non-maternal caregivers. At 5 months, infants are in the process of forming attachments to those who care for them, with the attachment to parent usually becoming primary. The settings in which those relationships are molded may influence the form that they take.

Experiences with the substitute caregivers are very different in family childcare and in-home care. Family childcare is more novel, more stimulating, and more variable than in-home childcare. The infant is moved from his or her home to an entirely different setting each day, one that has different smells, varied sleeping arrangements, and multiple other people, including children of varying ages. In some cases, family childcare also involves more than one caregiving adult. The environment is filled with human speech, other sounds, and movement. Because she is caring for multiple children, the FCC caregiver may spend less time or less focused time with each infant in this type of setting than in the home setting. In the case of in-home care, the baby's schedule and environment do not change, and mother is replaced by another single figure whose responsibility is to that baby alone. It is possible that, in these two contrasting settings, the processes whereby the baby differentiates between and relates to mother vs. caregiver differ in how and at what pace they proceed. This variation, in turn, may result in differing patterns in emotional relationships with mother and caregiver. Future research should investigate the situational complexity as well as the behavioral interactions of infants and caregivers in all three care settings that we have parsed in this study. Subtle differences in their effects on infant emotional processing and development may be observed.

The findings of this study contribute in a number of ways to the literature on childcare selection and infant experiences and development. First, they augment what is known about how infant-mother relationships are affected when mothers choose whether and how to combine employment and parenting with childcare. Some researchers have noted that employed and nonemployed mothers behave similarly with their children, whereas others have emphasized that employed mothers pay more attention, vocalize more, and express more positive emotions to their children than do homemaker mothers. Our data clearly demonstrate that the emotional relationship that a mother has with her infant is not adversely affected if she chooses to work and uses home-based childcare. Dyads in which mothers provide exclusive maternal care were not more emotionally involved than those in which mothers were employed; indeed, emotional relationships were better in employed mothers using in-home childcare than in homemaker mothers. The IHC-FCC results also underscore the need to differentiate among various kinds of nonfamilial childcare arrangements, at least when investigating process. Given the widespread use of childcare, investigations aimed at explicating factors involved when mothers make decisions about the type of care to provide to their infants while they are working are warranted and will contribute to understanding the complex dynamics operating when mothers combine parenthood with employment.

Decisions about and arrangements for children's care and supervision are among the oldest problems faced by human society. Our species is one in which a balance between allocation of time and energy among childcare, provisioning, and other survival-relevant activities has always been necessary. The present study offers valuable information about two types of childcare that are widely used today but seldom studied and suggests that leaving infants with nonrelatives in home settings can successfully meet the emotional needs of young infants during maternal absences. In our samples, an infant's interpersonal experience with his or her primary daytime caregiver was comparable whether that caregiver was mother, in-home caregiver, or family childcare provider. Sociobiologists have admonished that biologically unrelated care providers may be less motivated than relatives to meet children's

needs (Daly & Wilson, 1995). At the very least, our data call that assumption into question in the domain of emotional relationships and demonstrate the value of the unique methodological approach that we took to examining process questions in our samples.

The current study also offers intriguing information about mothers' choices of specific caregivers. Regardless of their educational backgrounds, parents of infants and toddlers (as opposed to parents of preschoolers) tend to emphasize health and well-being and thus seek childcare environments likely to minimize stress rather than those that maximize educational opportunities (Britner & Phillips, 1995; Cryer & Burchinal, 1997). A caregiver's warmth and attention to an infant are important to parents (Pungello & Kurtz-Costes, 1999), and mothers are likely drawn to caregivers who interact with children in ways that mothers feel are appropriate. Given these factors, it was surprising that mothers in the present study either did not try or were not able to choose caregivers who more closely matched their own emotional style with their baby. The nonsignificant correlations indicated that only 1–9% of the variance in infant-mother and infant-caregiver dyads' emotional relationships was shared.

At the same time, it must be remembered that, while parents use FFN and other forms of home-based childcare for reasons that surely include knowing and trusting the caregiver and attempting to arrange for personalized care for the baby, they also must factor in other, more pragmatic considerations, such as limiting disruption in the baby's established schedule, flexible hours, the convenience of close-by locations, accommodation of nonstandard work hours, and cost. Some parents use FFN care out of necessity rather than preference. Mutually supportive relationships between parents and caregivers are a core feature of high-quality childcare arrangements (Powell, 2008). Relationships between childcare providers and parents in home-based arrangements have long been identified as more supportive than relationships in center care (Hughes, 1985). Clearly, a variety of factors related to the needs of both children *and* parents operates when mothers select infant care providers. Ideal qualifications and pragmatic considerations likely compete so that the emotional style of the caregiver becomes only one of many factors mothers consider when making hiring decisions.

It is also possible that mothers find it difficult to accurately gauge the emotional style of a caregiver in order to match it to their own. It seems plausible that a more emotionally involved mother may have more insight into her own and others' behavior, and may be able to identify caregivers who match her style, but mothers seldom have a great deal of relevant information about caregivers on which to make judgments prior to hiring them. Mothers do not typically witness caregivers with their children except (perhaps) for relatively brief periods at the start and the close of each working day (Maital & Bornstein, 2003), and they never see the caregiver alone with the baby. Caring for a single infant or multiple children also affects how caregivers engage a target child. Thus, a mother's ability to match her own parenting style with that of a caregiver poses challenges. These issues have not, to our knowledge, been adequately investigated, but offer an area for research that could contribute importantly to understanding childcare arrangements made for children and their potential consequences in child development. It is an area of research that could also lead to meaningful interventions designed to promote the provision of high-quality care.

That said, an implication of our finding of a lack of congruence in infant-mother and infant-caregiver emotional relationships is that many infants in childcare are likely faced with adapting to differing emotional styles and relationships in the course of a day. Howes and Smith (1995) reported that, although 68% of infants are securely attached to their mothers (and fathers), only 50% are securely attached to their childcare providers/teachers, suggesting that at least half of young children may be spending a large portion of their very early development in less emotionally secure contexts. Clearly, there is a compelling need to focus on the crucial intersection between the care provided by parents and infants' other regular caregivers, and their complementary impact on young children's socialization and development.

Strengths and Limitations

The following features distinguish the present study: infants, mothers, and caregivers in two prominent but neglected types of home-based FFN childcare arrangements were observed; the qualities of interactions of the same infant with both mother and caregiver were independently assessed; male and female infants in each arrangement were represented in small but adequate sample sizes for detecting large effects; infant age and birth order were held constant across groups; sociodemographic and social status characteristics of participants were controlled; and a standard validated observational methodology was used to evaluate emotional relationships during naturally occurring hour-long behavioral interactions. Although the generalizability of our findings is limited to educated, married, European American families with healthy first-born infants, the majority of the population of the United States is of European American descent (Humes et al., 2011), the two types of nonmaternal care that we investigated are frequently used (and understudied), and the emotional relationships construct we investigated is likely to be universal among parents and young children (Biringen et al., 2014). Although the procedures for mother/caregiver-infant interactions were the same across settings, other children were present when the infant was observed in the family childcare setting. FCC caregivers have to divide their attention among more children, and the hour of observation was structurally different depending on the caregiver and context. These differences are indigenous to the contexts of MC, IHC, and FCC infant care.

Conclusions

Any effects of childcare likely work through changes in the home environment as well as the nature of the child's experiences in caregiving contexts (Leibowitz, 2005). Care provided in home settings—by friends, neighbors, and other nonfamilial caregivers—has received the least amount of research attention. The present study was designed to address this relative void in the childcare literature, and our results develop a clearer, if still nuanced, picture of these research-neglected but common types of infant care. This study also contributes to understanding critical interpersonal processes that impinge on young infants in all care settings by focusing on emotional relationships that develop between infants and their mothers and nonfamilial caregivers. When childcare providers are sensitive and emotionally available, children exhibit behaviors indicative of security and tend to make themselves emotionally available in turn (Zimmerman & Fassler, 2003). In addition, children in childcare exhibit stronger cognitive growth when their childcaregivers are more sensitive

(Loeb, Fuller, Kagan, & Carrol, 2004). Both the Cost, Quality, and Outcomes Study and the NICHD Study of Early Child Care have indicated that children display higher levels of social skills on standardized assessments shown to predict school success when caregivers were more sensitive and stimulating (Burchinal & Cryer, 2003).

Today, the highly diverse groups of persons involved in providing home-based childcare make a substantial contribution to the nation's childcare needs. Unfortunately, they are also groups with limited access to conventional resources supporting optimal child outcomes. Because of the importance of emotional competence for social and academic achievement, and because infants and young children are spending more and more time with nonfamilial caregivers and teachers, it is recommended that caregiver training programs focusing on facilitating social competence in children be developed. Training childcare providers effectively enhances sensitivity and improves children's attachments (Howes, Galinsky, & Kontos, 1998) which, in turn, relates to positive child outcomes. Surely, it is in the nation's best interests to support and explicitly promote these goals.

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Table 1

Demographic characteristics of infants, mothers, and caregivers

	Exclusive Mother Care (n = 31)		In-Home Childcare Providers (n = 32)		Family Childcare Providers (n = 29)		
	M	***SD***	***M***	***SD***	***M***	***SD***	F/χ^2
Infants							
Gender (% female)[a]	54.84		43.75		44.83		.93
Age (days)	162.16	5.62	162.53	7.03	164.69	5.38	1.50
Birthweight (g)	3520.99	379.03	3521.52	442.96	3405.35	500.43	.68
Weekly hours in childcare	0.63_a	.00	43.98_b	9.96	41.83_b	8.96	249.47***
Number of other infants in childcare	0.00_a	.00	0.00_a	.00	3.10_b	1.63	113.96***
Mothers							
Age (years)	30.99_{ab}	3.51	32.43_a	3.03	30.24_b	3.75	3.21*
Education[b]	5.94_a	.63	6.41_b	.71	5.86_a	.80	5.37**
SES[c]	55.95_{ab}	3.14	59.08_a	7.54	53.02_b	6.02	8.11***
Hours of employment	0.00_a	.00	36.48_b	8.41	37.47_b	5.23	422.32***
Caregivers							
Age (years)	--	--	31.01	12.11	34.47	8.34	1.35
Education	--	--	4.52	1.29	4.83	1.11	.86
Caregiver experience (years)	--	--	4.37	3.64	3.61	3.14	.63
Number of own children	--	--	1.03	1.62	2.00	.88	6.92*
Marital status (% married)[a]	--		31.25		88.00		22.51***
Ethnicity[a]							9.09
European American (%)	--		45.16		75.00		
African American (%)	--		35.48		4.16		
Latin American (%)	--		6.45		8.33		
Asian American (%)	--		9.68		12.50		
Indian/Alaskan American (%)	--		3.23		0.00		

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

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[a] Test of group difference is a Chi-square.

[b] Measured by the Hollingshead (1975) education scale: 1 = less than 7th grade, 2 = 7th– 9th grade, 3 = partial high school, 4 = high school graduate, 5 = partial college or specialized training, 6 = standard college or university degree, 7 = graduate/professional training.

[c] Measured by the Hollingshead (1975) scale: range = 8–66.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

Table 2

Descriptive statistics of infant-mother/caregiver emotional relationships

	Mothers			Caregivers			
Emotional Relationships	***M***	***SD***	***range***	***M***	***SD***	***range***	***r***
Mothers who Provided Exclusive Care							
Composite Scale[a]	−.15	.93	−1.99 – 1.57	--	--	--	--
Sensitivity (1–9)	6.27	1.17	4.0 – 8.0	--	--	--	--
Structuring (1–5)	4.16	.61	3.0 – 5.0	--	--	--	--
Responsiveness (1–7)	4.89	.85	3.0 – 6.5	--	--	--	--
Involvement (1–7)	4.85	1.01	3.0 – 6.5	--	--	--	--
Mothers and In-Home Childcare Providers							
Composite Scale[a]	.52	.69	−.94 – 2.06	−.10	.86	−1.55 – 1.54	−.27
Sensitivity (1–9)	6.88	.90	5.0 – 8.5	6.17	1.15	4.5 – 8.5	−.28
Structuring (1–5)	4.52	.45	3.5 – 5.0	4.09	.67	2.5 – 5.0	−.30
Responsiveness (1–7)	5.61	.61	4.5 – 7.0	5.09	.71	3.5 – 6.5	−.10
Involvement (1–7)	5.58	.66	4.0 – 7.0	5.05	.71	3.0 – 6.5	−.11
Mothers and Family Childcare Providers							
Composite Scale[a]	.11	1.13	−2.48 – 1.91	−.42	.78	−2.10 – 1.11	.24
Sensitivity (1–9)	6.43	1.41	3.0 – 8.5	5.87	1.09	3.0 – 7.5	.15
Structuring (1–5)	4.26	.76	2.0 – 5.0	3.81	.71	2.0 – 5.0	.22
Responsiveness (1–7)	5.21	1.07	3.0 – 7.0	4.83	.74	3.5 – 6.0	.23
Involvement (1–7)	5.10	1.13	2.0 – 7.0	4.76	.70	3.5 – 6.0	.28

[a] *Z* score ($M = 0$, $SD = 1$).