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Shared Caregiving: Comparisons Between Home and Child-Care Settings

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The experiences of 84 German toddlers (12–24 months old) who were either enrolled or not enrolled in child care were described with observational checklists from the time they woke up until they went to bed. The total amount of care experienced over the course of a weekday by 35 pairs of toddlers (1 member of each pair in child care, 1 member not) did not differ according to whether the toddlers spent time in child care. Although the child-care toddlers received lower levels of care from care providers in the centers, their mothers engaged them in more social interactions during nonworking hours than did the mothers of home-only toddlers, which suggests that families using child care provided different patterns of care than families not using child care. Child-care toddlers experienced high levels of emotional support at home, although they experienced less prompt responses to their distress signals. Mothers' ages were unrelated to the amounts of time toddlers spent with them, but older mothers initiated more proximity.

In the past two decades, many researchers have attempted to evaluate the role of extrafamilial child care in the lives of very young children, and many have explored the ways in which families moderate and modulate the associations between child care and children's adaptation (see review by Lamb, 1998). However, researchers have not explained how families and child-care centers actually share child care, nor have they described children's everyday experiences. Surprisingly few researchers have systematically studied the experiences that the same children have at home and in child-care centers; indeed, many researchers have implicitly failed to recognize that child-care children are exposed daily to an additional set of experiences in child-care settings while also having experiences at home that differ from those enjoyed by peers who do not attend child care (for discussion, see Clarke-Stewart, 1989, and Richters & Zahn-Waxler, 1990). In the present study, we compared the daily experiences of two groups of 12–24-month-old German toddlers, some of whom attended child-care centers, by observing the toddlers throughout their waking hours. By describing their typical weekdays, we sought to determine how the everyday lives of child-care toddlers and home-only toddlers were structured and what patterns of care they experienced.

Several previous studies have been designed to address some of the issues we sought to elucidate. In an early study, Rubenstein and Howes (1979) compared the experiences of a group of 18-month-olds in child-care centers that had an exceptional (1:3) adult:child ratio with those of a group of home-only toddlers observed interacting with their peers and their mothers at home. Levels of verbal and cognitive stimulation, as well as responsiveness to the infants' social behaviors, were comparable in the two groups; in that study, positive affective exchanges (including those that involved reciprocal smiling, holding–hugging, and mutual play) were more common in child care. Furthermore, Goossens and van IJzendoorn (1990) rated child-care providers in one-on-one free play sessions as more sensitive than the mothers of the same 12-month-olds, although sensitivity appeared to decrease significantly in child-care settings (Goossens & Melhuish, 1996). In addition, Bornstein, Maital, and Tal (1997) reported that care providers (*metaplot*) of Israeli 5-month-olds living on kibbutzim provided less interpersonal (rocking, kissing, smiling, and vocalizing) and cognitive (providing opportunities to observe, to imitate, and to learn) stimulation than did either those same infants' mothers or city mothers who cared exclusively for their infants at home. During 2-hr-long observations of 10 infants with their nonemployed mothers and of 10 infants with either their employed mothers or their care providers, Stith and Davis (1984) reported that the employed mothers displayed more positive affect and stimulated their 6-month-olds more in the evenings than did the care providers, who cared for the infants as well as an average of two other children in their homes. Rubenstein, Pedersen, and Yarrow (1977) compared the social experiences of 6-month-olds in the care of sitters when their mothers went to work with those of a matched

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sample in the care of their nonemployed mothers during two 3-hr observation periods. Although more than half of the sitters were relatives, they provided less stimulation and shared less positive affect than did the mothers of home-only infants.

Employed mothers have less time to spend with their infants, but they are not less sensitive to their infants' needs than nonemployed mothers are (Bornstein et al., 1997; Easterbrooks & Goldberg, 1985; Stith & Davis, 1984). In fact, Caruso (1989, 1996) found that mothers whose children were in child care appeared more sensitive to their infants' cues in structured tasks than did mothers in a matched home-only group. Other studies have found that employed mothers directed more attention and vocalizations toward their infants (Schubert, Bradley-Johnson, & Nuttal, 1980), displayed more positive emotions (Schwartz, 1983), and appeared more sensitive (Crockenberg & Litman, 1991) in comparison with nonemployed mothers. The behavior of employed and nonemployed mothers appears to vary as a function of the situations observed, however, with nonemployed mothers scoring better than employed mothers on some measures (Crockenberg & Litman, 1991; Zaslow, Pedersen, Suwalsky, & Rabinovich, 1989).

Comparisons across these studies are complicated by the use of widely differing approaches to assessing care and to the timing of observations. Because we observed across an entire weekday both toddlers who were and toddlers who were not enrolled in child care, we were able to describe the full range of social interactions occurring at home and in child care on those days. By equating certain periods of time and comparing the experiences both of the same infants at different times and of different infants at the same time, at home and/or in child-care settings, we were able to evaluate and compare the care provided by nonemployed mothers, employed mothers, and care providers.

We predicted that mothers who used child care might expect nonparental care providers to provide stimulation and communication rather than emotional exchanges and intimacy. As a result, instead of emphasizing cognitive stimulation in their own interactions, mothers of child-care toddlers might intensify their focus on affective responses, including responses to their infants' distress. Alternatively, mothers of child-care toddlers might decide not to share certain responsibilities with nonparental providers and might thus attempt to provide as much stimulation, communication, and emotional exchange as nonemployed mothers do, by reserving time for these activities during nonworking hours. We were also interested in the amount of care provided in child-care centers and in the similarities and differences between home and group-care settings. We assumed that because affective sharing is more individualized than stimulation, group care and home care might permit equivalent levels of stimulation and communication, whereas the levels of emotional exchange might differ.

We also explored individual differences among mothers with respect to their investment in and solicitude toward their children. Because nonparental child care permits parents to raise children while also pursuing career goals, some authorities question the ability of young parents who have just started their careers to invest adequately in both tasks, and consequently these authorities view the search for convenient care as an index of lower investment in children (see Greenberger & Goldberg, 1989, for discussion). Fein, Gariboldi, and Boni (1993) indeed observed that younger mothers who were seeking child care provided less stimulating care at home and offered more negative judgments of their children's emotional reactions than did older mothers. Evolutionary psychologists concur, suggesting that maternal age might be related to mothers' degree of investment in child rearing. They propose that the parental rearing history of older mothers might have led to their late pubertal development and the late birth of their children (Belsky, Steinberg, & Draper, 1991; Chisholm, 1996). Because female reproductive value diminishes with age (Daly, McConnell, & Glugosh, 1996; Daly & Wilson, 1995), older mothers may value each child more, and hence the magnitude of parental investment should increase with maternal age. Although some researchers have considered maternal age in studies of child care (e.g., Erdwins & Buffardi, 1994; Joesch, 1998; McKim, Stuart, & O'Connor, 1996), none have explored associations between maternal age and the amount of time that children spend in child care or the nature of parental care when children are at home. A second goal of our study was therefore to determine whether younger and older mothers invested differently in their children.

Method

Participants and Recruitment

Toddlers. This study of 84 firstborn 12–24-month-old toddlers was carried out in East Berlin between 1993 and 1997. Forty of the toddlers (22 boys and 18 girls) were cared for exclusively in their families, whereas 44 of the toddlers (22 boys and 22 girls) had attended child-care centers for a minimum of 6 months when the study began. Most (77%) were enrolled for 35 to 40 hr per week, although some attended for as few as 20 hr per week. The average age of the home-only toddlers when the study began was 19.1 months (SD = 4.7), whereas the average age of the toddlers attending child care was 19.7 months (SD = 4.3). All toddlers were healthy and were born full term. Bayley (1993) Mental Development Index (MDI) scores averaged 102.8 (SD = 18.8) for the home-only toddlers and 103.3 (SD = 11.9) for the child-care toddlers.

Families. The Berlin Registration Office, which registers every birth in Berlin and maintains Berlin's demographic statistics, assisted in the recruitment of a sample in which all participants were firstborn children from middle-class families, with no group differences in the average levels of parental education and occupation.[1] At the time that the study was conducted, however, primiparous mothers in Berlin tended to be in either their early or late (but not middle) twenties. Over the course of 1 year, therefore, the office identified all firstborn 1-year-olds in the Eastern districts whose mothers were either between 20 and 22 or between 27 and 29 years of age. From each monthly list, 12 families (6 younger and 6 older mothers) were randomly chosen and were contacted by phone. Because we had no control over whether or not they had enrolled their toddlers in child care, only 6 to 8 families were recruited into the study each month in pairs matched with respect to the toddlers' care experience, sex, maternal age, parental education, and occupation. Only 2 families declined to be involved. Tod-

[1] Thirty percent of the mothers and 29% of the fathers had finished high school, as was typical of the middle class in Berlin at the time (Statistisches Landesamt Berlin, 1994). Incomes were not reported to the Registration Office, but occupations were. Using Featherman and Hauser's (1978) classificatory system, we determined that the distribution of occupations in the overall sample was also typical for the Berlin middle class: 7% of the parents were students; 21% were skilled tradesmen; 24% were officials, accountants, bank clerks, and so forth; 37% had supervisory positions in companies or institutions; and 11% managed their own small companies (fewer than 10 employees). When both parents of the child-care toddlers were employed, we used the higher status occupation to characterize the family.

dlers who were new to child care, family moves or important life events that interrupted their daily routines, and scheduling conflicts ensured that the enrollment of some participants was delayed. The toddlers' ages thus ranged between 12 and 24 months. Mothers averaged 24.0 (SD = 3.2) years of age and fathers 27.9 (SD = 5.1) years of age in the home-only group, whereas mothers averaged 24.7 (SD = 3.5) years and fathers 26.4 years (SD = 3.8) in the child-care group. The families excluded from the monthly lists of 12 potential participants did not differ from the actual participants with respect to parental age, education, or occupation.

All families lived in nuclear family units. Single mothers were rare (11.4% in the child-care group and 5% in the home-only group) relative to overall statistics indicating that, in 1993, 30% of the preschoolers in East Berlin lived with single mothers (Statistisches Landesamt Berlin, 1994). Interviews revealed that parents in both groups maintained regular contact with members of their extended families, with 32% and 48% of the children in the child care and home-only groups, respectively, having regular contact with grandparents. Twenty-eight percent and 30% of the grandparents regularly cared for the children in the child care and home-only groups, respectively, although only a quarter of the grandparents were actually observed because many of the toddlers (especially those in the child-care group) met their grandparents on weekends, which were entirely excluded from the observations. There were no differences between the groups with respect to maintaining contact with grandparents or being supported by them. Care was seldom provided by other relatives, friends, or sitters. According to mothers' reports during interviews, the majority of fathers (85% and 80% in the day-care and home-only groups, respectively) were said to be "very involved" in their toddlers' care.

Almost all (98%) of the parents had experienced child care during their own infancies. In the interviews, all mothers anecdotally expressed thoughts about the advantages of child-care experiences. Specifically, it was repeatedly mentioned (a) that children need contact with other children and that raising isolated children would impair social development and (b) that education-like care as offered by the centers would enhance cognitive development. Consequently, only a few (9%) of the mothers who had not enrolled their toddlers in child care planned to continue to remain at home throughout the preschool years.

Child-care centers. All child-care centers in Berlin are licensed by the Senat, which provides curricula and conducts routine checks and supervisory visits to ensure high-quality care, with emphasis placed on personalized basic care (Tietze, Cryer, Bairrao, Palacios, & Wetzel, 1996). In 1993, the Berlin Senat provided center-based care for nearly 130,000 preschoolers throughout Berlin, although predominantly in East Berlin, for historical reasons (Ahnert, 1998). At the time of the study, there were more center-based care facilities in the Eastern districts available than there were preschoolers to fill them, whereas in West Berlin only 41% of the applicants could be accommodated in centers. Family-based child-care settings were thus sought by parents in West Berlin, but because these were rarely visited by Senat regulators and were seldom licensed we chose to study toddlers from East Berlin.

In the present study, 32 child-care centers in East Berlin participated. The centers chosen by the families in the study were open from 6:00 a.m. to 6:00 p.m. throughout the year and could accommodate between 50 and 120 children. The target children received care in groups of between 7 and 18 children (M = 11.0, SD = 2.7), with age differences within the groups ranging from 4 to 56 months.

We observed from 1 to 3 primary care providers (M = 1.7 providers, SD = 0.6) per target child in each center, using their proximity within reach (3 ft [0.9 m]) as a criterion for identifying them as primary care providers. Overall, from 1 to 7 nonparental caregivers (M = 3.8 providers, SD = 1.4) were observed in interaction with each of the target children, with some of the caregivers encountered when toddlers played with children from other groups. The care providers were all women from middle-class backgrounds. Almost all (98%) of them were trained in 3-year courses at special colleges for care providers. Levels of experience ranged from 1 to 30 years (M = 14.3 years).

Procedure

Overall procedure. The study started with two visits to each family's home to interview the parents and to obtain information regarding the family's socioeconomic status, everyday life, social networks and support systems, as well as the mother's personality, life approach, child-rearing beliefs, and stress levels. We also evaluated the toddlers' development (Bayley, 1993) and scheduled the observations to include all the time between waking up and going to bed. Exceptions were made only when nap times were fixed and those times could thus be excluded from the observation schedule. Special events—such as holidays, birthdays, field trips, and guest performances in the centers—as well as vacations and weekends were also excluded from observation. Consequently, the toddlers were visited in their homes and in their child-care centers only on "normal weekdays." The same research assistant administered the Bayley scales, conducted the interviews, and made the observations in each family, so that she or he was able to develop trusting relationships with all family members.

Each visit included a 2-hr observation session that was randomly scheduled so that all weekdays were included and all of the children's waking hours were covered. To interfere with naturalistic conditions as little as possible, we placed instructional emphasis on the child's behaviors and experiences, and no constraints were placed on the adults. Parents were told to continue with their everyday routines and to ignore the presence of the observers as much as possible. Parents were free to stay inside or to leave their homes. In the child-care centers, the care providers continued with their normal routines. Observers engaged parents and care providers in friendly interaction before the observation session but explained that they had to concentrate during the session because they had to attend to "the instructions through the headphones." The observation procedure was designed to influence the situation as little as or less than videotaping procedures in which participants are aware of being observed but are not able to interact with the observer. Overall, 499 observation sessions were conducted (252 in the home-only group and 247 in the child-care group), with between 4 and 8 visits (M = 5.9 visits, SD = 0.8) per toddler, covering between 7 and 12 waking hours per child (M = 9 hr 38 min 42 s, SD = 1 hr 10 min 12 s).

Family and maternal measures. Family and maternal measures were conceptually created and were computed using the parents' responses to both interview and questionnaire items, namely, the Freiburger Personality Inventory (FPI; Fahrenberg, Hampel, & Selg, 1983), the Toddler's Family Situation Questionnaire (TFS; Ahnert, Zeibe, & Lilie, 1989), and the Parental Stress Index (PSI; Abidin, 1986). Coefficients of internal consistency (Cronbach's alphas) for the FPI ranged from .70 to .83, and for the TSF they ranged from .67 to .73. Cronbach's alphas for the German version of the PSI were comparable to those reported by Abidin (1986); they ranged between .65 and .80.

Socioeconomic status was a composite measure that summed the scores for the parents' education (a 5-point Likert scale ranging from *less than high school* to *postcollege education*), parental or paternal occupation (a 5-point scale ranging from *skilled work* to *own company,* which followed Featherman and Hauser's [1978] classificatory system), and satisfaction with income and governmental benefits (a five-level variable rated from *poor* to *excellent*); the Cronbach's alpha for this composite measure was .94. We assessed the quality of *everyday life* using the indices of available living space (a five-level variable rated from *small* to *big*) and the standard of household utilities and facilities (a 5-point Likert item rated from *poor* to *excellent*); these measures correlated .82 and were averaged. In addition, we created a measure of *social network and support* by averaging the scores on two PSI scales (r = .76)—father's support and social isolation (reverse-scored)—to assess the extent to which the mothers felt socially isolated from their partners, peers, relatives, and other possible sources of

support. A composite measure of *maternal life approach* was created by averaging two FPI scores ($r = .72$): life satisfaction (the extent to which the mother indicated that she was happy, was healthy, and felt valued) and commitment (the extent to which she was organized, goal oriented, and determined to succeed). *Maternal personality* refers to two other FPI scores ($r = .89$): tolerance for frustration (the extent to which the mother was emotionally regulated and forgiving) and aggression (the extent to which she was consistently annoyed and pursued her own goals aggressively [reverse-scored]). The measure of *maternal child-rearing beliefs* was created by summing scores on three scales from the TFS: toddler's integration into daily life (the extent to which the toddler's needs distracted daily family life [reverse-scored]), maternal tolerance of the toddler's behaviors and demands, and daily solicitude (the extent to which the mother felt that care could be provided by others); Cronbach's alpha for the composite measure was .69. *Maternal stress* was measured by summing scores on four PSI scales ($\alpha = .80$): unhappiness (the extent to which the mother feared maternal responsibilities), emotional distance (the extent to which she felt close to the child and able to read the child's feelings and/or needs accurately [reverse-scored]), restrictions imposed by maternal role (the extent to which the mother felt controlled and dominated by her child's needs), and the mother's perceived sense of competence (reverse-scored).

Observations. The observational procedure was adapted from the scheme originally developed by Belsky and his colleagues (Belsky, Gilstrap, & Rovine, 1984; Belsky, Rovine, & Taylor, 1984; Belsky, Taylor, & Rovine, 1984; Isabella & Belsky, 1991). We chose 35-s units as time-sampling periods: 15-s observe/20-s record intervals, with the beginning and end of each record interval signaled by a beep over a headphone. The observers took 15-min breaks after each 45 min of observation. The codes (see Table 1) were listed on the record sheets, with 154 columns representing all time-sampling periods during the usual 2-hr session. Observers recorded the locations, the adults present, and the behaviors occurring in each 35-s unit and noted the time at which each observation session began.

Before conducting the observations, we trained six observers extensively using both videotaped and real-life observations of children at home and in child-care centers. Following the training, we assessed reliability by having observers independently code 45-min videotapes of behavior in both home and child-care settings using headphones and record sheets, without rewinding or slowing the videotapes. The location, the identity of those present, and the behaviors observed were coded independently by randomly chosen pairs of observers whose ratings were then compared on a code-by-code basis. High levels of intercoder agreement were attained, with Cohen's kappas ranging from .65 to .99 (see Table 1).

Data Treatment

Quantification of the observational data. Data recorded in the 35-s units on various days (including nap times) were placed in a single time-sequenced behavioral record for each toddler in order to represent the toddlers' typical day. The observational measures quantifying the amounts of time the toddlers spent in various locales with various adults, as well as the toddlers' experiences with those adults, were then prorated for the total amount of waking time (in percentages).

To reduce the size of the behavioral data sets, we factor analyzed all the prorated adult behavior scores, noting that the correlation matrix had a

Table 1
Observed Caregiving Behaviors, Toddler Distress Behaviors, Adults Present, and Locations

Observational codes	Factor pattern matrix[a]					Interobserver reliability[b] (Cohen's kappa)
	Factor 1: Attention, Communication, Stimulation	Factor 2: Soothing	Factor 3: Emotional Display	Factor 4: Proximity	Factor 5: Basic Care	
Individual caregiving behaviors						
(01) Mutual visual orientation	.85					.68–.78
(02) Watches/checks child	.83					.74–.78
(03) Speaks with child	.77					.94–.95
(04) Answers	.77	−.50				.80–.82
(04a) Speaks with group [in child care]	.76					.97–.99
(05) Stimulates with object	.76					.69–.76
(06) Stimulates without object	.73					.65–.69
(07) Soothes with bodily contact		.90		−.52		.89–.91
(08) Soothes with substitute object		.69				.87–.89
(09) Soothes nonphysically		.63				.69–.76
(10) Smiles		−.52	.83			.65–.68
(11) Expresses disapproval			.77			.67–.69
(12) Physical affect: touching, hugging			.83	−.67		.82–.85
(13) Expresses positive affect verbally			.74			.78–.79
(14) Distance within reach				.65		.80–.83
(15) Feeding, dressing, washing, diapering					.59	.95–.99
Toddlers' distress behaviors						
(16) Child whines						.67–.70
(17) Child cries						.90–.95
Adults present						
(18) Mother, father, grandparents, neighbors, friends, care providers, strangers, or others						.98–.99
Locations						
(19) Home, center, shop, playground, at friends, at hairdresser, on lap, in arm, or other places						.95–.99

[a] Factor loadings below .5 in absolute value are not displayed. [b] Ranges of six values were computed by comparing pairs of observations made by randomly chosen observers.

measure of sample adequacy of .75, which was satisfactory. A principal components analysis with varimax rotation explained 72% of the variance with a five-factor solution. Factor 1, which explained 31% of the variance, was a general social interaction factor that included measures of the adults' Attention (how often the adults watched and checked the toddler, mutual visual orientation between toddler and adult), Communication (speaking to and answering either the specific toddler or the group), and Stimulation (with or without objects). Factor 2, Soothing, which explained 17% of the variance, described physical and nonphysical soothing techniques as well as the use of pacifiers or toys. Factor 3, Emotional Display, which explained 10% of the variance, captured smiling, verbal and physical expressions of positive affect, and expressions of disapproval. Factors 4 and 5, explaining 8% and 6% of the variance, respectively, reflected the amounts of time spent in Proximity (providers within reach as opposed to within earshot or visual range of the toddlers) and Basic Care (feeding, dressing, washing, diapering, and providing health care). Cronbach's alphas for these factors ranged between .72 and .84.[2]

We based the data analyses on these factors by summing together the individual caregiving measures. However, we deconstructed Factor 1 into measures of Attention, Communication, and Stimulation for conceptual reasons because we wished to differentiate among these aspects of social interaction. These scales had Cronbach's alpha coefficients of .89, .77, and .90, respectively, revealing high levels of internal consistency. Because we were also interested in the amount of support toddlers received when they were distressed, we examined the amount of time that toddlers whined or cried and the adult responses as a function of their co-occurrence with the toddlers' signals of distress. To quantify adult responsiveness to toddlers' distress, we calculated the overlap in periods of toddlers' whines or cries and adults' responses. Scores on this index of promptness thus ranged from 100 (total co-occurrence) to 0 (no co-occurrence).

Division of the day into three periods. To permit comparisons between toddlers who did and toddlers who did not experience child care, we matched each child with an individual toddler in the other group with respect to age, sex, maternal age, parental education, and parental occupation. Fourteen toddlers could not be matched: 4 of those in the child-care group had no matching toddler in the home-only group because subsample sizes were unequal, 3 toddlers could not be matched because of their mothers' ages, 3 could not be matched because of their own ages, and 4 child-care toddlers whose parents worked on shifts received care at home from different adults in the mornings and evenings. We then ranked the 70 remaining toddlers (35 in each group, 18 boys and 17 girls) according to their total amount of waking time. Total waking times varied among toddlers because of differences in individual needs for night sleeps and naps during the day. Thirty-five pairs of toddlers (one toddler from each group in each pair) with comparable amounts of waking time were identified. The mean total waking time was 9 hr 45 min 36 s (SD = 1 hr 7 min 48 s) for child-care toddlers and 9 hr 31 min 48 s (SD = 1 hr 12 min 36 s) for home-only toddlers, with an average difference of only 18 min 20 s (SD = 10 min 4 s) between each toddler and his or her match. For 32% of the pairs, the waking hours covered almost the same time window throughout the day; that is, the mean difference between the exact hours during which toddlers and their matches were observed was only 10 min 54 s (SD = 9 min 36 s). For 17% of the pairs, the home-only toddlers began the day an average of 1 hr 25 min (SD = 30 min 54 s) earlier than did their matches in the child-care group. In nearly half of the pairs (51%), however, the child-care toddlers began their daily routines an average of 1 hr 45 min 10 s (SD = 43 min 15 s) earlier than their matched home-only toddlers.

The time-sequenced behavioral records of the 35 toddlers in the child-care group were then divided into three parts demarcated by using the individual time schedules for each toddler: before child care (Time 1; M = 1 hr 26 min 7 s, SD = 38 min 15 s), during child care (Time 2; M = 4 hr 38 min 34 s, SD = 1 hr 29 min 11 s), and after child care (Time 3; M = 3 hr 42 min 59 s, SD = 1 hr 9 min 6 s). The times when parents and care providers were both present during drop-offs or pickups were excluded. We used the same procedure to divide the days of the 35 home-only toddlers, with the day of each home-only toddler being divided as was that of his or her match in the child-care group. The amounts of time in each part of the day for these children averaged 1 hr 24 min 50 s (SD = 38 min 17 s) for Time 1, 4 hr 26 min 59 s (SD = 1 hr 22 min 5 s) for Time 2, and 3 hr 39 min 53 s (SD = 1 hr 9 min 55 s) for Time 3. The days of the home-only toddlers were artificially divided in this way so that the care received by child-care toddlers before, during, and after their time at the centers could be compared with the care received by their home-only matches during comparable time periods. The timing and length of the three periods varied greatly among the child-care toddlers, depending on their mothers' work schedules, and the matching procedure was therefore designed to maximize the comparability of the three different portions of the day. The behavioral measures for each portion of the day were then prorated on the basis of the amount of waking time during each period. For example, the frequency with which each toddler was stimulated during Time 2 was converted into a percentage based on the total duration of Time 2 for that toddler. In this way it was possible to compare the amount of care received by each toddler during Time 2 despite the varying durations of this time period. Because toddlers were in different care settings at Time 2, we were thus able to compare the care that child-care toddlers received at the centers with the care that home-only toddlers were receiving at home. During Times 1 and 3, all toddlers were in their homes, which allowed us to compare the care provided by mothers who used child-care services with the care provided by mothers who did not.

Results

Controlling for Family and Maternal Measures

To determine whether the selection of nonparental child care was associated with any of the seven family and maternal measures described above, we compared the children in the two groups on these characteristics. In the event of significant group differences, we would have to control for the effects of these measures in later analyses. We subjected all data from the family and maternal measures to a two-factorial multivariate analysis of variance (MANOVA) with group (child care vs. home only) and maternal age (younger vs. older mothers) as factors. There was no multivariate effect either for group, $F(7, 75) = 0.5$, $p > .10$, or for age, $F(7, 75) = 1.1$, $p > .10$, although there was a near-significant Group × Maternal Age interaction, $F(7, 75) = 1.8$, $p < .10$. Subsequent univariate F tests revealed significant Group × Maternal Age interactions in analyses of socioeconomic status, $F(1, 80) = 7.1$, $p < .05$, and everyday life, $F(1, 80) = 6.8$, $p < .05$, with older mothers in both groups scoring higher on these measures. That is, older mothers held a higher position at work, had better living conditions, were better educated, and were more satisfied financially than were younger mothers.

[2] Belsky, Taylor, et al. (1984) reported a factor pattern that differentiated two factors resembling our first and second factors. Observing 1-, 3-, and 9-month-olds interacting with their parents, Belsky, Taylor, et al. thus confirmed that caregiving behaviors such as Attending, Communicating, and Stimulating are based on different correlation patterns than Soothing. However, measures of positive affection were intercorrelated with Factor 1, whereas in our study, positive affect loaded on a different factor (Emotional Display). The Feed and Caregive factor in Belsky, Taylor, et al.'s study—comparable to our Basic Care factor—did not have an eigenvalue greater than 1. Differences in factor patterns are probably due to differences between the checklists used, differences in the ages studied, and differences in the length of the observations and the functional contexts sampled.

Observed Differences Between the Diurnal Patterns of Child-Care and Home-Only Toddlers

There were striking differences between the diurnal patterns evident in the two groups (see Table 2). Seventy-seven percent of the child-care toddlers awoke between 5:00 a.m. and 7:00 a.m., whereas only 38% of the home-only toddlers were awake at that time. Although there were no significant group differences in the numbers of toddlers awake between 9:00 a.m. and 11:00 a.m., scheduled naps consistently interrupted the waking time of toddlers in child care between 12:00 p.m. and 2:00 p.m., whereas 33% to 63% of the home-only toddlers were still active at that time. Bedtime also came significantly earlier for the child-care toddlers. Overall, then, there were differences in the timing of everyday routines; child-care toddlers started and ended their days much earlier than the toddlers who stayed at home, and their days were interrupted regularly by nap time around noon. In addition, there were some differences with regard to maternal age in the child-care group but not in the home-only group: 50% of the child-care toddlers with older mothers (compared with 13% of those with younger mothers) were already awake at 6:00 a.m., and 70% as opposed to 42% of those toddlers were still active at 7:00 p.m. In compensation, 75% of the toddlers with older mothers (compared with 54% of those with younger mothers) took naps of 2 hr or more. The amounts of time that toddlers with older mothers spent in child-care centers averaged 5 waking hours, compared with an average of 4 hr 1 min 4 s waking time for toddlers with younger mothers, although the difference was not statistically significant (power = 36%) when compared using an independent-sample *t* test. (In order to reject the null hypothesis with a power of 80%, sample sizes of 65 in each group would have been necessary [see Borenstein, Rothstein, & Cohen, 1997; Murphy & Myors, 1998]). By contrast, waking hours before and after child care appeared equivalent, with 1 hr 3 min versus 1 hr 1 min 4 s, and 3 hr 4 min 2 s versus 3 hr 4 min 1 s on average for toddlers with younger as opposed to older mothers, respectively. Overall, the days of child-care toddlers with older mothers were longer because of their earlier waking times and longer naps.

Table 2
Percentages of Child-Care Toddlers and Home-Only Toddlers Awake Over the Course of the Day

Time of day	Child-care toddlers (n = 44)	Home-only toddlers (n = 40)	χ^2
5:00 a.m.	6.8	0.0	2.8*
6:00 a.m.	29.5	12.5	3.6*
7:00 a.m.	77.3	37.5	13.6**
8:00 a.m.	100	87.5	5.8*
9:00 a.m.	100	95.0	2.3
10:00 a.m.	100	97.5	1.1
11:00 a.m.	97.7	90.0	2.3
12:00 p.m.	6.8	62.5	29.2**
1:00 p.m.	0.0	32.5	16.9**
2:00 p.m.	90.9	70.0	5.9*
3:00 p.m.	95.5	92.5	0.3
4:00 p.m.	100	97.5	1.1
5:00 p.m.	100	95.0	2.2
6:00 p.m.	93.2	95.0	0.1
7:00 p.m.	54.5	75.0	3.8*
8:00 p.m.	11.4	30.0	4.5*
9:00 p.m.	0.0	2.5	1.1

Note. Chi-square values reflect results of Pearson's chi-square statistic, one-tailed.
* $p < .05$. ** $p < .001$.

Differences in Adult Behavior Over the Course of the Day

A two-factorial repeated measures MANOVA with factors of group (child-care vs. home-only toddlers) and time of day (Time 1, Time 2, or Time 3) was performed first with all the adult caregiving measures as dependent variables. There were no significant group differences, $F(7, 62) = 0.97$, $p > .10$, but there were significant effects for time of day, $F(14, 55) = 15.57$, $p < .001$, and significant Group × Time of Day interactions, $F(14, 55) = 10.78$, $p < .001$. Subsequent repeated measures analyses of variance (ANOVAs) revealed significant effects for time of day on attention, communication, stimulation, emotional display, soothing, proximity, and basic care, as well as significant Group × Time of Day interactions on each of these measures (see Figure 1). Overall, the diurnal pattern was largely accounted for by the child-care toddlers: Levels of caregiving behavior experienced by toddlers at home did not vary over the course of the day, whereas for the toddlers in the child-care group levels of caregiving declined between Time 1 and Time 2 before increasing in the afternoon and evening (Time 3). Concerned that time shifts might have influenced the frequencies of adults' caregiving behaviors, we checked the 32% of the pairs (n = 11) whose Times 1, 2, and 3 occurred at equivalent times of day (see Method section). In all three time sections there were no significant differences on each of the measures when these 11 pairs were compared with the 35 pairs as a whole.

To obtain further insight into the care the toddlers received, we next distinguished among the different adults who interacted with the complete sample, rather than the subsample of matched pairs (see Table 3). In the child-care group, mothers and primary care providers together interacted with the children as much as mothers alone did in the home-only group. Fathers' contributions in the two groups were equivalent, whereas the grandparents of the home-only children were observed much more often than the grandparents of the child-care children. Care was seldom provided by other relatives, friends, and neighbors. Because fathers, relatives, and friends made relatively minor contributions to the toddlers' overall care experiences, we focused our attention on the experiences provided by mothers and primary care providers, thereby excluding from consideration the contributions of occasional or irregular care providers in both contexts.

Comparisons Between Primary Care Providers and Mothers

Further analyses focused on differences between the child-care toddlers' experiences in child care and the home-only toddlers' experiences at home during the same times of day (Time 2); independent-sample *t* tests were used to compare the behaviors of mothers and primary care providers, and Bonferroni corrections were made to accommodate the number of statistical analyses (Holland & Copenhaver, 1988). There were no significant group differences in the levels of attention, basic care, and stimulation,

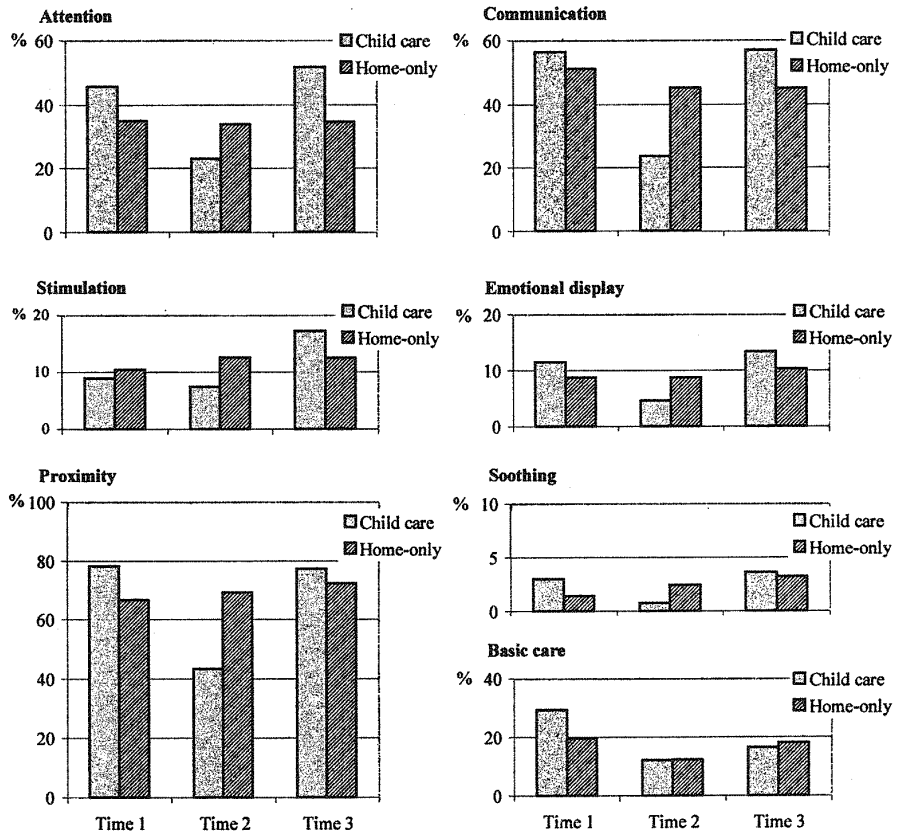

Figure 1. Caregiving by all adults over the course of the day. Because some behaviors may co-occur, the total time for all adult behaviors may sum to more than 100%. There were significant ($p < .001$) time effects and Group × Time interactions, respectively, on attention, Fs(2, 136) = 28.98 and 25.87; communication, Fs(2, 136) = 63.27 and 46.26; stimulation, Fs(2, 136) = 19.48 and 14.77; emotional display, Fs(2, 136) = 19.97 and 12.08; soothing, Fs(2, 136) = 6.21 ($p < .001$) and 4.90 ($p < .05$); proximity, Fs(2, 136) = 27.99 and 27.55; and basic care, Fs(2, 136) = 39.80 and 10.19.

but clear differences were evident in the extent of communication to individuals (not to the group; $M = 22.4$, $SD = 8.9$ vs. $M = 38.5$, $SD = 16.9$), $t(68) = 5.05$, $p < .001$, soothing ($M = 0.7$, $SD = 1.2$ vs. $M = 2.3$, $SD = 2.2$), $t(68) = 4.10$, $p < .001$, and proximity ($M = 40.8$, $SD = 13.9$ vs. $M = 58.8$, $SD = 20.1$), $t(68) = 4.56$, $p < .001$, with care providers ranking below mothers in each case. Nonparental care providers also engaged in less frequent emotional exchanges with the target children than mothers did

Table 3
Averaged Contribution (%) of Different Adults to the Total Level of Care and Social Interaction Experienced Over the Course of the Day

	Child-care toddlers (n = 44)			Home-only toddlers (n = 40)		
Adult behavior	Mother / care provider	Father	Grandparents	Mother	Father	Grandparents
Attention	48.1 / 26.6	17.7	1.9	66.0	20.4	9.9
Communication	54.6 / 29.6	10.9	0.6	63.9	12.0	18.8
Stimulation	52.6 / 17.5	17.5	0.0	73.2	16.3	8.1
Emotional display	62.9 / 11.2	14.6	1.1	72.4	15.3	10.2
Soothing	72.8 / 8.8	14.6	0.0	80.0	12.0	4.0
Proximity	48.5 / 32.2	14.4	0.8	62.3	18.1	19.4
Basic care	56.5 / 32.7	7.1	0.0	76.0	9.4	12.9

(M = 4.3, SD = 3.3 vs. M = 7.7, SD = 4.6), $t(68) = 3.52$, $p < .05$.

Differences in the Levels of Maternal Behavior Experienced by Toddlers in the Mornings and Afternoons

Because the total levels of caregiving behavior did not differ by group, we might assume that the mothers of children in child care compensated for their children's daytime experiences by providing higher levels of social interaction before taking their toddlers to and after picking them up from child care. A two-factorial repeated measures MANOVA with factors of group (child care toddlers vs. home-only toddlers) and time of day (Time 1 vs. Time 3) and all maternal behaviors as dependent variables revealed significant effects for group, $F(7, 62) = 2.89$, $p < .05$, and time of day, $F(7, 62) = 8.02$, $p < .001$, as well as a significant Group × Time of Day interaction, $F(7, 62) = 3.15$, $p < .05$. Subsequent repeated measures ANOVAs showed that mothers in the child-care group provided more communication, more soothing, and more proximity and initiated more emotional exchanges than did the mothers of home-only toddlers during these times of day. Univariate tests also showed significant effects for time of day on the levels of communication and soothing as well as on the levels of stimulation and basic care. In both groups, communication and basic care occurred more often in the mornings, whereas stimulation and soothing were more likely in the afternoons. Significant Group × Time of Day interactions appeared in the levels of stimulation and basic care. Mothers of child-care toddlers provided more basic care in the mornings than did the mothers of home-only toddlers because they had to prepare the toddlers for child care. In the afternoons, the child-care mothers provided even more stimulation than did mothers who cared for their toddlers at home all day (see Figure 2). In a multivariate analysis of covariance in which the effects of

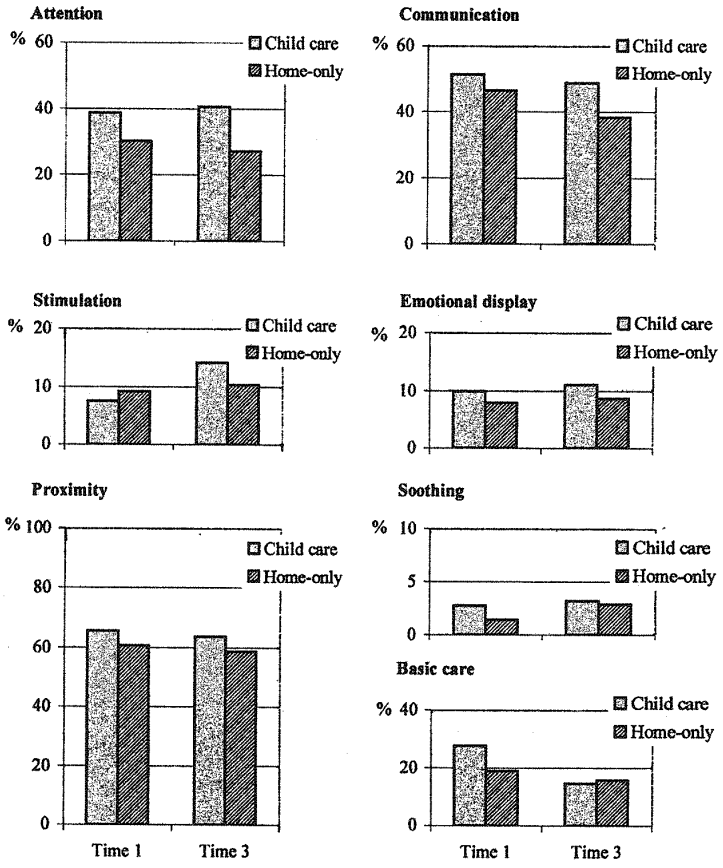

Figure 2. Maternal behavior directed to child-care toddlers and home-only toddlers in the mornings and afternoons. Because some behaviors may co-occur, the total time for all maternal behaviors may sum to more than 100%. There were group effects on emotional display, $F(1, 68) = 4.37$, $p < .001$, and proximity, $F(1, 68) = 3.17$, $p < .05$; both group and time effects, respectively, on communication, $Fs(1, 68) = 3.73$ ($p < .05$) and 5.47 ($p < .001$), and soothing, $Fs(1, 68) = 3.16$ ($p < .05$) and 3.00 ($p < .001$); and both time effects and Group × Time interactions, respectively, on stimulation, $Fs(1, 68) = 15.52$ ($p < .001$) and 7.71 ($p < .001$), and basic care, $Fs(1, 68) = 29.50$ ($p < .001$) and 11.24 ($p < .001$). Bonferroni corrections are included.

Table 4
Toddlers' Whining and Crying and Adults' Responses

	Child-care toddlers (n = 35)						Home-only toddlers (n = 35)						Effects[a]		
	Time 1		Time 2		Time 3		Time 1		Time 2		Time 3				Group ×
Distress and responses	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Group[b]	Time[b]	Time[c]
							Frequencies								
Whining	3.3	2.9	1.7	2.0	8.8	6.1	1.6	1.9	6.7	3.9	6.3	4.0		36.97**	24.16**
Crying	0.7	1.1	1.1	1.5	2.3	2.6	0.2	0.6	1.6	2.0	1.5	1.7		13.58**	
Responses to whining	1.4	0.8	0.6	1.0	3.8	2.1	1.0	0.9	3.6	2.2	3.6	2.5	14.63**	18.12**	
Responses to crying	0.4	0.3	0.6	1.1	1.4	0.9	0.1	0.3	1.0	1.5	1.0	1.0			
							Promptness index[d]								
Promptness of responses to whining	47.8	36.2	36.7	41.2	41.1	31.2	67.3	43.8	58.2	35.8	57.7	35.1	26.36**		
Promptness of responses to crying	65.0	42.5	59.2	45.4	63.9	38.5	40.0	54.8	68.0	38.9	82.1	29.6	41.22**		9.19*

[a] Bonferroni corrections included. [b] Only significant F values with dfs = (1, 68) are reported. [c] dfs = (2, 136) in each case. [d] Based on the co-occurrence of mothers' or care providers' responses to toddlers' whines and/or cries, indexes range from 100 (total co-occurrence) to 0 (no co-occurrence).
* $p < .05$. ** $p < .001$.

socioeconomic status and everyday life were controlled and Bonferroni corrections were included, older mothers in both groups, compared with younger mothers, were close to their toddlers more often, $F(1, 64) = 4.61$, $p < .05$, and spent more time preparing their toddlers for child care in the mornings, $F(1, 64) = 4.72$, $p < .05$.

Toddlers' Distress

Toddlers' expressions of distress were of special interest, even though distress, especially crying, was seldom observed. The frequencies of whining and crying throughout the entire day averaged 19.6 (SD = 11.5) and 7.8 (SD = 3.2), respectively, in the child-care group and 20.8 (SD = 10.9) and 6.6 (SD = 3.3) in the home-only group. This similarity in the overall patterns of distress was confirmed when we explored the three different periods of the day (see first two rows of Table 4). Repeated measures ANOVAs revealed no significant group differences in the levels of whining or crying throughout the day, although both whining and crying were more common later as opposed to earlier in the day. Significant Group × Time interactions revealed a distinctive pattern of whining; that is, child-care toddlers whined more in the evenings than in either the mornings or during the day (in the centers), whereas home-only toddlers whined more during the day and evenings than in the mornings.

Responses to Toddlers' Distress

Our analyses were also concerned with the frequency and promptness of responses received by toddlers (a) during specific portions of the day and (b) from specific caretakers (i.e., mothers or care providers). We integrated both into the research design to measure the level of promptness from the toddlers' point of view. For the child-care toddlers, however, Time 2 represents the behavior of child-care providers and Times 1 and 3 represent the behavior of mothers. Thus, we subjected the response data to repeated measures ANOVAs and used the polynomial contrasts of the statistical model to conduct pairwise comparisons of within-group effects.

With regard to the frequency of adult responses, we found that home-only toddlers were more likely than child-care toddlers to elicit responses to their whining, whereas there were no group differences in the frequency of responses to crying (see second two rows in Table 4). Time had a significant effect on responses to toddlers' whining, $F(1, 68) = 18.12$, $p < .001$. Polynomial contrasts of Times 1 and 3 (when toddlers were with their mothers) revealed that more responses to whining were experienced in the evenings than in the mornings by both child-care toddlers, $t(68) = 3.9$, $p < .05$, and home-only toddlers, $t(68) = 4.3$, $p < .05$. In addition, child-care toddlers experienced fewer responses to their whining in the centers (Time 2) than to their whining at home in the mornings (Time 1), $t(68) = 3.6$, $p < .05$, and in the evenings (Time 3), $t(68) = 5.6$, $p < .001$.

With regard to the promptness of adult responses, whining child-care toddlers experienced lower levels of promptness whether they were in the centers or at home with their mothers than did whining and crying home-only toddlers, who experienced more prompt responses throughout the day (see Table 4, last two rows). Within-group differences revealed an unbalanced pattern of promptness for the home-only group, who experienced the lowest levels in the mornings, $t(68) = 4.3$, $p < .05$ (coefficients down to 40%), and the highest levels in the evenings, $t(68) = 4.3$, $p < .05$ (coefficients up to 82%).

Discussion

Because little is known about the way that parents and nonparental care providers share the care of young children, we sought to describe the basic structure of these German toddlers' lives by

making repeated visits to their homes and (where relevant) their child-care centers. The middle-class sample we recruited was representative of the socioeconomic status and family size (1 child) enjoyed by 69% of the preschoolers in East Berlin in 1993 (Statistisches Landesamt Berlin, 1994). We controlled for characteristics likely to affect the toddlers' everyday routines, such as family background variables, maternal characteristics, and child-care center quality. First, when the sample was split into two subsamples on the basis of the parents' decisions regarding child care, subsequent analyses confirmed that the families in the two groups were similar in socioeconomic status, social networks and support, and lifestyle characteristics. Second, when we focused on mothers as primary caretakers in the families, it appeared that maternal personalities, life approach, stress, and child-rearing beliefs were also equivalent across the two groups. Maternal age was correlated with socioeconomic status and lifestyle characteristics, however, and it appeared to be important that maternal age was matched when the two groups were compared.

Structures of the Everyday Lives of Home-Only and Child-Care Toddlers

Differences between the everyday experiences of toddlers in the two groups reflected basic diurnal patterns that were much clearer and more regular in the child-care group than in the home-only group. In the child-care group, not only were the toddlers' days divided into three periods of different lengths—1–2 hr in the morning and 2½–4½ hr in the afternoon and evening at home, along with 3–5 hr (and additional 1–2-hr-long naps) in their centers—but their days also started and ended earlier than the days of children in the home-only group. In addition, child-care toddlers were more likely to take naps at a regular time in the middle of the day and got as much sleep at night as the home-only toddlers, even though their days were structured by their mothers' work schedules. That was especially obvious when the mothers' ages were taken into account; the schedules of younger mothers in the child-care group appeared more flexible and less demanding for the toddlers, often starting later in the day than those of older mothers. This is not surprising because maternal age was confounded with family socioeconomic status; all students (7% of the overall sample) were in the group of younger mothers, whereas all company owners (11% of the overall sample) and most of the mothers with supervisory positions belonged to the group of older mothers, who were also better educated. As in other studies (Andersson, 1989; Symons & McLeod, 1994; Volling & Belsky, 1993), older mothers also enrolled their toddlers in child care for more hours. In the present study, however, these mothers found ways to spend as much time with their toddlers as the younger mothers did. By contrast, the schedules of home-only toddlers' days were unaffected by their mothers' ages even though younger mothers had less comfortable lifestyles than older mothers and we expected that they would thus spend less time with their children.

Outside of the centers, most of the toddlers' interactions were with their parents, and social interactions with others were surprisingly rare. Although grandparents were observed more often in the home-only group, mothers in the child-care group reported equivalently extensive contacts with the grandparents, which probably took place on weekends. Unfortunately, we did not collect observational data on weekends, which would have allowed similar insights into the toddlers' social experiences when no parents were working. Even though the intra- and extrafamilial networks may differ on the weekends, in both groups mothers reported that the children were seldom cared for by other relatives, friends, and neighbors, even when the mothers were single (see also Feiring, Fox, Jaskir, & Lewis, 1987). This suggests that, at least in Berlin, child-care centers are the primary source of nonmaternal care. Not surprisingly, mothers and nonmaternal care providers largely shared the care of the toddlers in the child-care group, and the two provided as much care as mothers alone did in the home-only group during the week.

Patterns of Care

In the present study, we relied on a time-sampling frequency-count procedure originally developed by Belsky and his colleagues (Belsky, Gilstrap et al., 1984; Belsky, Rovine et al., 1984; Belsky, Taylor et al., 1984; Isabella & Belsky, 1991) that we further developed to create time-sequenced behavioral records for each toddler that covered all waking and napping hours. The division of those records into three periods of the day, representing the child-care toddlers' times before, during, and after child care, permitted analysis of time-of-day and type-of-care provider variations in the toddlers' social experiences. To minimize the variability in the observational data, we controlled for the effect of varying sleep–wake cycles by matching and prorating. Thus, we identified clear and meaningful patterns of the everyday experiences of toddlers who were and toddlers who were not enrolled in child care. Although the child-care children were exposed to an additional set of experiences during child care, as well as to different experiences at home, our analyses revealed remarkable similarities in the overall levels of care and social interaction experienced by toddlers over the course of the day regardless of whether or not they spent time in child care; the two groups of toddlers received comparable amounts of basic care and overall attention, were involved in communication and stimulation, exchanged emotional affect, and were in proximity to and soothed by their mothers or other familiar adults.

Of course, the care providers were unable to provide the same amounts of individual attention that the mothers at home with their toddlers provided (Bornstein et al., 1997; Caruso, 1989; Stith & Davis, 1984). Likewise, when Schaffer and Liddell (1984) examined adult–child interaction under dyadic and polyadic (1 adult with 4 children) conditions, they reported that adults received more bids from children in polyadic than in dyadic settings and thus coped with the increased demands by ignoring the less urgent demands. Furthermore, the NICHD Early Child Care Research Network (1996), Howes and her colleagues (Howes, 1983; Howes & Rubenstein, 1985), and Vandell, Henderson, and Wilson (1988) all reported associations between group size and care provider involvement, confirming that levels of involvement with individual children are lower when competing demands are made of the care providers by other children in a group. One might also speculate that differences between mothers and care providers may reflect differences between the nature of care provided to one's own children as opposed to someone else's children, but this does not necessarily appear to be the case. When Rubenstein and Howes (1979) added peers from the neighborhood to mother–child dyads in order to increase the total number of children being cared for at

any one time, the care providers with whom the mothers were compared appeared much better on some measures when the adult–child ratio was 1:3. Rubenstein and Howes argued that, compared with mothers at home, care providers in child-care centers have more specified responsibilities that are associated with specific skills, such as playing with and cognitively stimulating children (see also Goossens & van IJzendoorn, 1990).

In the present study, toddlers in child care received the same amounts of stimulation, basic care, and attention as did home-only toddlers, but they experienced communication on an individual level, care-provider-initiated proximity, emotional exchanges, and soothing less often than did the toddlers at home. Our focus on families with only 1 child might make the contrast more striking, however, and even though most preschoolers in Berlin experience such conditions, it would be valuable to determine whether the same differences would have been evident if the toddlers had siblings. In addition, the reduced exposure to adult input in the child-care centers was of course associated with increased opportunities to interact with peers. It would thus be inappropriate to assume that the experiences of children in child-care settings were exhaustively described in this study. The children in child care assuredly received attention from many peers and were also exposed to a broader variety of toys, but neither of these sources of stimulation was studied.

The mothers of the child-care toddlers seemed to compensate for the differences reported above by engaging in higher levels of social interaction during the times that the toddlers were at home with them. During the morning and afternoon/evening periods, mothers of child-care toddlers thus spent more time in communication with and in proximity to their toddlers, soothing and engaging them in emotional exchanges more than did home-only mothers. In this way, they provided levels and types of intimacy at home that were unlikely to be obtained in child care. Even though child-care mothers might count on the centers to provide stimulation and communication, they spent significant amounts of time in those activities as well. Mornings were more extensively used for communication and basic care by all mothers, whereas evenings were preferred for stimulation and soothing, with bedtime routines often used as opportunities to seek intimacy through the provision of particularly high levels of emotional exchange. Mothers of child-care toddlers appeared even more actively engaged in the early morning hours, preparing their children for child care, whereas in the afternoon and evening hours they focused more stimulation on their children and compensated for the hours they had been apart. Our findings are consistent with those of other researchers who have reported that employment status affects maternal behavior at home (see Caruso, 1989, 1996; Crockenberg & Litman, 1991; Schubert et al., 1980; Schwartz, 1983; Zaslow et al., 1989).

Maternal age generally appeared to have a less striking effect on the toddlers' experience than we expected, although older mothers were more likely to be in proximity to their children and provided more basic care in the mornings. Even though their days started earlier than those of younger mothers, older mothers apparently used the mornings to adapt their toddlers to their early schedules. In other words, older mothers used child care more extensively but also compensated more intensively by providing more basic care and proximity. These higher levels of mother-initiated proximity might change and intensify the emotional meaning of some interaction patterns, but more research is needed on this topic.

Toddlers' Distress

Examinations of the toddlers' distress (particularly whining, because crying occurred so rarely) revealed no group differences in the overall levels of distress but striking differences in the diurnal patterns. Whereas home-only toddlers achieved and maintained fairly consistent levels of whining following low levels during the first 1 or 2 morning hours, child-care toddlers were more likely to whine in the mornings and again during the afternoons and evenings when they were with their mothers. Clearly, when maternal work schedules force child-care toddlers to go to child-care centers in the morning, they are much fussier than home-only toddlers, who do not have similar routines. During the day, however, the level of distress in the home-only group increased, presumably because these toddlers had less regular and shorter naps than did the child-care toddlers, whose levels of distress significantly increased after reunion with their mothers. These differences in the levels of distress depending on whether or not the toddlers experienced nonparental child care are consistent with findings reported by Nelson and Garduque (1991) and Rubenstein and Howes (1979). The findings suggest that child-care toddlers behave more negatively when interacting with their parents than with their nonparental care providers, even when parents and providers agree about basic child-care issues.

Crying was as likely to elicit a response when the child was at home as when the child was in child care. Care providers responded to the toddlers' whining less frequently (not to crying) than mothers did. Mothers in the two groups responded with similar frequency, although there were group differences in the promptness of responses. Child-care toddlers received less prompt responses to whining, whereas the responses of home-only mothers in the afternoons and evenings most closely paralleled their toddlers' distress signals, confirming Zaslow et al.'s (1989) findings that homemaking mothers tend to pay more attention to their 1-year-olds when fathers are also present. Because we do not know whether the maternal responses were appropriate, however, our understanding of the distress-relief sequences is necessarily incomplete, and further research on distress in naturalistic situations is clearly warranted. The limitations of the study, particularly our failure to observe on weekends, should also be recognized when generalizing from our findings concerning the mothers' responses to distress. Interestingly, it appeared that mothers of more distressed toddlers were not necessarily less likely to respond. Instead, mothers' responses seemed to be associated with the type of distress (mothers responded to cries more than to whines) and maternal employment status (home-only mothers responded more promptly). Low levels of promptness may reflect the consequences of stress at work or the competing demands of other chores (e.g., Belsky, Woodworth, & Crnic, 1996; Greenberger, O'Neil, & Nagel, 1994; Repetti & Wood, 1997), differing maternal interpretations of the distress signals (with crying being viewed as more serious than whining, or both interpreted as manifestations of temper), or differences in the appropriateness of maternal responses depending on the amount of time that mother and child spent together.

The present study illustrates the ways in which toddlers' behavior varies throughout their daily schedules and the ways in which maternal behavior varies as a consequence of whether weekday parenting is or is not shared with a child-care provider. At first glance, it might seem that the findings suggest that mothers of child-care toddlers provide compensatory care when they are with their children in the mornings and evenings. As a result, child-care toddlers experienced about the same amount of total caregiving interactions as home-only toddlers, despite the observed lower levels of care provided in child-care centers during the day. However, if one looks at the findings more carefully, it is evident that mothers who used care providers did not merely compensate for the specific types of care their toddlers missed at the centers. Rather, these mothers used their time at home with toddlers in the mornings and evenings as an opportunity to provide their children with all aspects of care. Not only did care patterns at home differ from care patterns at the centers, but, more surprisingly, homes that shared caregiving responsibility with centers provided care that was different from that provided by homes that did not share such responsibility. One might speculate that the child-care toddlers themselves prompted these caregiving patterns. The increased frequency of distress signals that these toddlers displayed in their mothers' presence suggests that child-care toddlers may place greater demands on their mothers than on their care providers. Consequently, the higher levels of emotional contact that child-care mothers provide may actually be a response to their toddlers' increased demands. Collectively, these findings suggest that social interaction may be intensified within mother–child dyads that use child care because employed mothers set aside time for interaction during nonworking hours that their children demand and enjoy.

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