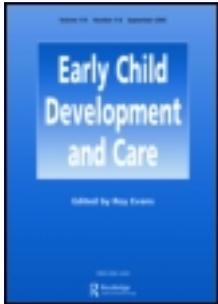


This article was downloaded by: [Yale University Library]

On: 24 January 2013, At: 09:01

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Early Child Development and Care

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/gecd20>

### Mothers' and caregivers' interactive and teaching behavior with toddlers

Pnina S. Klein<sup>a</sup> & Ruth Feldman<sup>a</sup>

<sup>a</sup> Bar-Ilan University, Israel

Version of record first published: 05 Apr 2007.

To cite this article: Pnina S. Klein & Ruth Feldman (2007): Mothers' and caregivers' interactive and teaching behavior with toddlers, *Early Child Development and Care*, 177:4, 383-402

To link to this article: <http://dx.doi.org/10.1080/03004430600551682>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

# Mothers' and caregivers' interactive and teaching behavior with toddlers

Pnina S. Klein\* and Ruth Feldman

*Bar-Ilan University, Israel*

Interactive behavior of 90 Israeli toddlers was observed with mothers and caregivers in one-on-one free play interactions. Children were examined with the Bayley Scales of Infant Development, and adults completed self-report measures. Observations were coded for both the quality of adult-child interactive behavior and for the quality of adults' teaching behavior. Toddlers' one-on-one interactions with their caregivers and mothers did not differ in sensitivity, intrusiveness, limit-setting and positive involvement and on measures of teaching behavior, with the exception of affecting, which was higher in caregiver-child interactions. Interactions with caregivers included more focusing and negative teaching behaviors (i.e. mismatches and commands). Whereas mothers' more sensitive, responsive, less intrusive interactions were related to children's Bayley scores, caregivers' higher rates of intrusiveness were associated with lower Bayley scores. Younger toddlers with lower psychomotor scores, who were perceived by caregivers as fussy and unpredictable, received more intrusive and less sensitive care with less teaching behavior in interactions with caregivers. Different combinations of child and adult variables predicted interactive and teaching behaviors of mothers and caregivers.

Keywords: *Parent-child interaction; Teaching behavior; Toddlers; Childcare; Bayley*

## Introduction

There is increasing agreement among researchers that in order to untangle the effects of childcare on child development one has to take into consideration home, child and childcare variables. Yet, relatively few studies focused on both home and childcare experience and examined their differential and combined contributions to child development (see review by Lamb, 1997). Most research includes comparisons between children who attend non maternal childcare and those who are cared for by their mothers (Richters & Zahn-Waxler, 1990; Clarke-Stewart, 1998). In a study

---

\* Corresponding author. Bar-Ilan University, Ramat-Gan 52900, Israel.  
Email: pninak@mail.biu.ac.il

involving a sample of middle-class German children (Ahnert *et al.*, 2000), mothers of children in out-of-home care were found to compensate their children by interacting with them more intensely in the morning and afternoon hours. Mothers made sure to provide intimate interactions with the children, but also spent time providing stimulation and communication. They also reported that toddlers in childcare displayed higher levels of distress around the time they were picked up by their parents as compared with the times they were in the center. Similarly, Nelson and Garduque (1991) and Rubenstein, Howes & Boyle (1981) suggest that toddlers behave more negatively when interacting with their parents than with caregivers, possibly confirming findings of the NICHD Early Child Care Research Network (1999) that mothers' sensitivity was negatively related to the number of hours spent by their children in daycare. Despite the importance and apparent complexity of the subject, it is surprising that there is still a scarcity of data on how families and childcare centers share childcare and on the actual experiences of the same children at home and in childcare.

Questions regarding the interplay between parental and non-parental care and their effects on infants and very young children have been triggered recently by two research studies, the NICHD Early Child Care Research Network (2003) study and the Watamura *et al.* (2003) study. The first reported that time spent by children in daycare was associated with difficulties in socioemotional adjustment. The other study (Watamura *et al.*, 2003) reported morning-to-afternoon increases in cortisol concentrations for infants and toddlers at childcare, affecting children's stress levels. Both studies raise the possibility of relating time spent in daycare with higher cortisol levels as the cause of children's socioemotional difficulties. An alternative possible explanation, involving the interplay between home and daycare, was suggested by Lamb (1997) and Scarr (1998) and more recently by Ahnert and Lamb (2003)—suggesting that difficulties in socioemotional adjustment of daycare children may not reflect the direct effects of daycare, but indirect ones through the inability of parents to buffer the stress experienced by their children in daycare. In line with this explanation, experiences at home continue to affect the children in daycare although non-parental care has its effects on childcare at home (for example, Clarke-Stewart, 1989; Richters & Zahn-Waxler, 1990). Ahnert and Lamb (2003) suggest that parental care be characterized by stress reduction and emotional regulation, and caregivers' behavior by cognitive stimulation and regulation of child's behavior.

In Israel, Borenstein *et al.* (1997) found that infant care providers in kibbutzim, considered providers of quality early care, included less sensitive interpersonal and cognitive stimulation than the infants' mothers. The poor quality of care provided to Israeli infants and toddlers in daycare centers (Koren-Karie & Sagi, 2000) was attributed primarily to the high infant to caregiver ratio (1:6–1:8). The major objectives of the current study were: to explore the interactive experiences of toddlers with their mothers at home and with their caregivers in daycare, in one-on-one interactions; and to compare the variability in quality of care and teaching behavior provided by both mothers and caregivers in relation to child's age, gender, mental and motor development, and temperament, as well as some basic caregiver and mother variables.

More specifically, since caregivers have to divide their attention and relate to many children, they may be unable to respond promptly and effectively to each child, (Goosens & Van IJzendoorn, 1990; Goosens & Melhuish, 1996). In addition, behavior of caregivers is less individualized than parents' behavior since it is shaped more by intentions to interact with a group of children than with individuals (Sagi *et al.*, 1994).

In contrast, mothers typically spend more time than caregivers in one-on-one interactions with their children and are more invested in their children's future than caregivers; consequently, it may be assumed that mothers know their children more intimately and could provide more sensitive, responsive, less intrusive interactions with them. The major research question posed was: do toddlers' individual characteristics (i.e. level of mental development, age and type of temperament) relate differently to the interaction variables and teaching behavior they receive in interactions with their mothers and their caregivers. It was hypothesized that: mothers provide more sensitive, less intrusive behavior, more positive and less negative teaching behavior in one-on-one interactions with their children as compared with caregivers; and children's levels of mental development and temperament are more related to interaction variables and teaching behavior of mothers as compared with caregivers.

## Method

### *Participants*

Participants were 90 toddlers, 52 boys and 38 girls (mean = 26.4 months, standard deviation (SD) = 3.69), recruited from 16 randomly selected childcare centers in the central region of Israel. These centers are considered standard daycare centers run by national women's organizations. Children normally stay in these centers from 7:30 a.m. to 4:00 p.m. daily except for Saturday and until 1:00 p.m. on Friday. The average adult to child ratio is one main caregiver caring for six to eight toddlers in groups varying in size from six to 18 toddlers. The caregivers participating in this study had a mean age of 40.56 years (SD = 13.26), had completed an average of 12.5 years of education (SD = 1.59), had an average of 13.0 years (SD = 8.27) of experience working with young infants and were working in the same daycare center for an average of 4.12 years (SD = 3.39).

All the participating toddlers came from middle-class two-parent families. Both parents were at least high-school graduates; mothers' average years of schooling was 13.9 years (SD = 2.17) and fathers' was 14.26 years (SD = 2.57). Most of the mothers (57%) worked as skilled professionals (e.g. teachers, social workers and physiotherapists) and 25% were employed as unskilled workers (e.g. secretaries and teachers' aids); the rest were unemployed. Of the fathers, 52% were employed as skilled professionals, 15% were self-employed and the others were non-skilled or manual workers. The average number of children per family was 2.56, and 28% of the children in the current study were first born. Most of the participating toddlers (63%) entered daycare prior to their first birthday. The average age of entry to daycare was 12.83 months (SD = 5.43). In answer to the question of why they placed

their children in daycare, 36% stated the need to go out to work, 24% mentioned children's need or social interactions with peers, 18% related to the need to provide their children with a stimulating environment and 7% stated that they had no choice. The following were some of the reasons provided by the parents for selecting a care center for their child: recommendations by friends (30%), location of the center (14%), previous experiences with other children at the same center (12%), the center's educational approach (12%), visited other centers and made the choice (8%) and had no choice (13%).

### *Procedure*

Each child was videotaped for a period of two hours at home and in daycare. In daycare, children were videotaped in one-on-one interactions with their caregivers. All observations in daycare were carried out between 9 and 11 a.m., a time in which the staff is mostly involved in play interactions with the children (around noon, activities are centered around feeding, cleaning, putting children to sleep, etc.). One-hour observations of free play interactions were videotaped. The caregivers were instructed to 'Play with the child as you normally do everyday, chose whatever toy or object you wish, try to ignore us'. The following toys were presented: a doll, a box (bed), a blanket, plastic cups, plates, plastic stackings a container with liquid soap for soap bubbles, a small car with a removable toy person, 10 wooden blocks and an animal picture-book.

The videotaped observations were divided into 10-minute episodes for coding. In each daycare, observations took place every morning for about two weeks. The observations of mother-child interactions followed the same procedures as the one-on-one caregiver-child interactions except for the fact that they were carried out in the early afternoon hours when the children return from daycare and were videotaped at home.

The Bayley scales were administered by a licensed psychologist. Each child was tested individually in a quiet room in the daycare center. Following the two weeks of observations and testing, individual meetings were set for each caregiver, in the afternoon hours (when most children are asleep). During these meetings, caregivers were interviewed and asked to respond to questions pertaining to themselves (i.e. age, ethnic origin, education, years at work, philosophy of education, etc.) as well as questions pertaining to the child, including child's perceived temperament (Infant Characteristics Questionnaire (ICQ)), and were asked to rank children's cognitive development on a 5-point scale ranging from exceptionally poor (1) to exceptionally high (5). Test retest reliability of this item was 0.89.

## **Measures**

### *Coding observed interactions*

*Adult-child interactive behavior.* The adult-child free play sessions were coded with the Coding Interactive Behavior (CIB) (Feldman, 1998), a global coding system for

adult-child interactions. The CIB includes 42 scales rated on a 5-point Likert scale: 25 are parent (adult) codes, 16 are child codes and seven are dyadic codes, which are aggregated into six composites. The CIB has been validated in several studies and has shown sensitivity to variations in social behavior related to child age, parent gender, cultural background, biological risk and social-emotional risk conditions (Feldman *et al.*, 1997, 2001; Feldman, 2000; Keren *et al.*, 2001). Four factors were used in the present study. The factors and the codes included in each factor were as follows:

- *Adult sensitivity* (alpha mother = 0.92 and alpha caretaker = 0.89). Adult's acknowledgement of child's interactive signals, positive affect, warm and clear vocal quality, appropriate range of affect, creativity-resourcefulness, adult supportive presence and adaptation to child's needs and changing communications.
- *Adult intrusiveness* (alpha mother = 0.80 and alpha caretaker = 0.70). Physical manipulation of child, overriding, adult's expressed anger, hostility and adult's criticism of child.
- *Limit-setting* (alpha mother = 0.78 and alpha caretaker = 0.74). Provision of encouragement. Adult limit-setting, provision of adequate framework for play, persistence, consistency in adults' style of interaction and child behavior, child's compliance, asking adult for assistance.
- *Child involvement* (alpha mother = 0.78 and alpha caretaker = 0.83). Child alertness and enthusiasm, vocal output, child initiation, child competent use of environment, creative-symbolic play, child joint attention, fluency of interaction. Reliability was conducted for 25 adult-child interactions (10 with each mother and caretaker). Reliability on all codes exceeded 85%, Intraclass  $r$  = averaged 0.92 (range = 0.85-0.97).

Maternal teaching behavior was assessed using the Observing Mediational Interaction (Klein *et al.*, 1987; Klein & Alony, 1993; Klein, 1996).

The observation focuses on the following basic behaviors of adults attempting to teach young children: focusing, affecting, expanding encouraging and regulating behavior. Focusing includes behaviors reflecting attempts to focus the child's attention on something or someone in the environment. It may include handing objects to a child, bringing the child closer to something, exaggerating, covering distracters, and so on. Affecting involves attempts to endow things with meaning, to express enthusiasm about things or people. Affecting can be expressed verbally or non-verbally. Expanding relates to behaviors that attempt to associate, compare, contrast or view from a different perspective, things the child experiences at present.

Encouraging includes behaviors that are meant to convey feelings of competence regarding what the child has done. Encouraging includes behaviors that occur immediately following the child's actions and clarify verbally or non-verbally why it was a success. Behaviors rated as unspecified encouragement include behaviors such as saying the words 'good', 'nice', 'yes' without relating them directly or specifically to the child's actions.

Regulation of behavior includes actions directed towards instructing the child how to do things. For example, doing things forcefully or gently, planning and sequencing steps prior to acting, considering alternatives, and so on. In addition to the criteria of teaching behavior, several other behaviors considered as negative teaching behavior were coded: commands, relating to behaviors that are aimed at having the child carry out a specific task with no explanation or association with any educational objective and which is not followed by encouragement. For example, 'Bring me the paper', 'Close the door', 'Lift your foot'. Mismatches represent the mother's attempt to initiate an interaction that is ignored by child or, vice versa, child's attempts to initiate an interaction, ignored by the mother. Focusing (isolated) attempted to draw children's attention without actually continuing to do something further with that attention. For example saying 'Look here', 'listen' without associating it with anything meaningful such as pointing at something, naming it, relating to other experiences or expressing affect.

Of all the videotaped interactions, interactions for 20% of the children were randomly chosen for independent coding by two observers. The percentage of agreement (Kaye & Fogel, 1980), calculated as the number of agreements divided by the mean number of events, recorded by the two observers (the average number of events coded per observation was 103) yielded 87%.

The Bayley Scales of Infant Development, second edition (Bayley, 1993), was administered individually, in daycare, as a general measure of cognitive performance.

Adult perception of child temperament was assessed using the ICQ (Bates *et al.*, 1979). The ICQ yields the following dimensions: fussy-difficult, inadaptable-adaptable, dull-lively and unpredictable-predictable. Only the first two dimensions were used in light of previous research that found these measures reliable (Bates *et al.*, 1979; Maysless & Scher, 2000). The alpha rates of the questionnaire for the different dimensions ranged between 0.35 and 0.50, 0.22 and 0.39, 0.65 and 0.75, and 0.79 and 0.89. In the current study, Cronbach's alpha values were 0.87 for fussy-difficult, 0.51 for inadaptable-adaptable, 0.47 for unpredictable-predictable and 0.10 for dull-lively. Only the first three dimensions were considered in the current study.

## Results

### *Do mother-child and caregiver-child one-on-one interactions differ?*

Comparisons between mother-child and caregiver-child were conducted using *t* tests for matched samples. Contrary to the expected, no significant differences were found between mother-child and caregiver-child interactions on the CIB interaction measures of sensitivity, intrusiveness, limit-setting and child involvement (see Table 1). Similarly, no difference in frequency of most teaching behaviors were found between mothers' interactions with their children at home and caregivers' one-on-one interactions with the same children at daycare, with the exception of affecting, which was provided more frequently by caregivers as compared with mothers ( $t = 2.32$ ,  $df = 84$ ,  $p < 0.05$ ).

Table 1. Mother–child interaction and teaching behavior at home as compared with caregiver interaction with the same child in daycare

	Mother–child		Caregiver–child		<i>n</i> = 84	
	Mean	SD	Mean	SD	<i>t</i>	<i>p</i>
Factor of interaction						
Sensitivity	3.290	0.511	3.224	0.472	0.996	0.322
Intrusiveness	0.421	0.351	1.469	0.342	−1.019	0.311
Setting of limits	3.318	0.304	3.407	0.341	−1.853	0.068
Positive child involvement	3.236	0.325	3.138	0.477	1.772	0.080
Teaching behavior						
Focusing	6.41	3.62	7.409	5.108	1.338	0.185
Affecting	14.988	6.628	17.53	8.415	2.317*	0.023
Expanding	6.445	5.931	7.241	6.464	1.113	0.269
Encouraging	7.12	3.394	7.000	3.913	−0.209	0.835
Regulation of behavior	4.024	3.547	4.771	3.677	1.303	0.196

\**p* < 0.05.

*Are mothers' and caregivers' behaviors related to similar variables?*

Children's Mental Development Index (MDI) scores on the Bayley's mental scales were related to mother–child interaction variables. Infants who had more sensitive, responsive, less intrusive interactions with their mother, with more setting of limits and more positive involvement, had higher scores on the Bayley scales (see Table 2). In caregiver–child interactions, sensitive and responsive care with setting of limits was not associated with children's Bayley scores. However, more intrusiveness in caregiver's behavior was associated with lower Bayley scores. As for teaching behavior, commands were negatively related to Bayley scores in interactions with both mothers and caregivers (see Table 2). Namely, children with lower Bayley scores received more commands from both mothers and caregivers and more focusing from caregivers. Children's age appeared to be associated more with caregivers' behavior than with mothers' behavior. As can be seen in Table 2, child's age was not related to any of the observed variables in the mother–child interactions. In caregiver–child interactions older children (26–34 months) showed more involvement in play and experienced less focusing than younger children (18–26).

Whereas no significant relations were found between mother's rating of her child's mental ability and her interaction with her child, significant relations were found between caregivers' ratings of children's mental ability and their interaction with these children (Table 2). Children rated by their caregivers as more mentally capable were more involved in play with the caregivers, and received more expansion and fewer commands.

Multiple regression analysis carried out separately for mothers and caregivers, with all child variables as predictors and child's perceived mental ability as the predicted

Table 2. Mother-child and caregiver-child interactions and teaching behavior in relation to children's Bayley scores and children's age

Variable	Interaction			
	Child's age		Bayley scores	
	Mother	Caregiver	Mother	Caregiver
Sensitivity	-0.19	0.01	0.26	0.13
Intrusiveness	0.08	0.04	-0.32**	-0.36***
Setting of limits	-0.18	0.05	0.22*	0.11
Child involvement	-0.01	0.29**	0.28*	0.08
Teaching behavior				
Focusing	0.06	-0.23*	-0.02	-0.28**
Affecting	-0.21	-0.12	-0.17	-0.05
Expansion	0.03	0.18	0.01	0.07
Encouragement	-0.12	-0.16	0.20	-0.04
Regulation of behavior	-0.07	-0.06	0.04	0.17
Commands	0.09	-0.17	-0.31**	-0.28**

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

variable, revealed that 39% of the variability in caregiver's rating of child's mental ability and 17% of the variability in mother's rating of the same were predicted by the child's age. The difference between the two was significant ( $F = 31.2$ ,  $df = 2,77$ ,  $p < 0.001$ ).

As can be seen in Table 3, dimensions of child's temperament as perceived by the caregiver and by the mother seem to be significantly related to more factors of the caregivers' interactive behaviors as compared with the mother's interactive behaviors. It should be noted that no significant relations were found between mothers' and caregivers' ratings of children's temperament. Children rated above the mean on the fussy-calm dimension were labeled fussy and those rated below the mean as calm. Similarly, children were divided into groups of high and low on the predictability dimension. Univariate tests revealed that children rated by caregivers as fussy and unpredictable received less sensitive and more intrusive interactions with less positive child involvement and less teaching behavior, including affecting, expanding, and regulating behavior. Multivariate analysis of covariance for the general factors of interaction, child age, mental ability and temperament revealed that the child variables most predictive of caregivers' interactive behavior were child's age ( $F = 7.48$ ,  $df = 4,56$ ,  $p < 0.000$ ;  $\beta = 0.31$ ), child's mental score ( $F = 4.30$ ,  $df = 4,56$ ,  $p < 0.00$ ;  $\beta = 0.20$ ) and fussy-calm temperament dimension ( $F = 4.03$ ,  $df = 4,56$ ,  $p < 0.00$ ;  $\beta = 0.19$ ). Tests of between-subjects effects for these variables revealed that child's age was associated with child's positive involvement, older children being more involved in the interaction as compared with younger ones ( $F = 11.53$ ,  $p < 0.000$ ). Children

Table 3. Pearson correlations between of child's temperament variables and factors of mothers' and caregivers' interactive and teaching behavior

	Perceived Temperament		
	Fussy-calm	Inadaptable-adaptable	Unpredictable-predictable
<b>Factors of interaction</b>			
Sensitivity			
Mother	-0.07	-0.01	-0.20
Caregiver	-0.30**	-0.17*	-0.01
Intrusiveness			
Mother	0.08	0.05	0.10
Caregiver	0.11	0.23*	0.02
Setting of limits			
Mother	-0.03	0.01	-0.23*
Caregiver	-0.15	-0.23*	-0.16
Child involvement			
Mother	-0.06	-0.11	-0.09
Caregiver	-0.16	-0.18*	-0.03
<b>Teaching behavior</b>			
Focusing			
Mother	-0.05	0.01	-0.19
Caregiver	-0.15	-0.02	0.00
Affecting			
Mother	0.21	0.17	0.01
Caregiver	-0.30**	-0.09	-0.34***
Expanding			
Mother	0.11	0.01	0.04
Caregiver	-0.30**	-0.11	-0.13
Encouraging			
Mother	-0.13	0.03	-0.11
Caregiver	-0.09	-0.02	-0.10
Regulating			
Mother	-0.04	-0.01	-0.09
Caregiver	-0.36***	-0.18*	-0.18*

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

with higher Bayley scores received less intrusive interactions ( $F = 15.56$ ,  $df = 1,56$ ,  $p < 0.000$ ) and children rated by their caregivers as more fussy, experienced less sensitivity and responsivity ( $F = 5.16$ ,  $p < 0.05$ ) and less setting of limits ( $F = 6.96$ ,  $p < 0.01$ ) in their interactions with their caregivers.

Children perceived by caregivers as fussy and unpredictable received the least encouragement (mean = 5.13, SD = 3.36) as compared with fussy and predictable (mean = 8.22, SD = 3.30), calm unpredictable (mean = 8.54, SD = 4.56) or calm and predictable (mean = 7.08, SD = 3.87).

*Predictors of caregivers' interactive behavior*

As can be seen in Table 4, 41% of the variability in caregivers' intrusiveness was predicted by both child and caregiver variables as follows: child's Bayley motor score (18%) and child's unpredictability/predictability (4%), caregiver's age and years of education (19%). Lower Bayley motor scores, more perceived unpredictability and, contrary to the expected, an older more educated caregiver were associated with more intrusive behavior in caregivers' interaction with the toddlers.

Variability in sensitivity and responsivity of the caregivers was explained by child's fussiness (explaining 11% of the variability), caregiver's workload (i.e. number of weekly working hours), her years of experience and her education, explaining 16% of the variability on this factor. Children perceived as fussier received less sensitive and

Table 4. Multiple regression analysis for interaction factors as predicted by child and caregiver variables

Predicted variables	Predictors in order of entry	$\beta$	$t$	$p$	% of explained variability ( $r^2$ )
Sensitivity and responsivity	Fussy-calm	-0.25	-2.42*	0.02	11
	Work load	-0.28	-2.64**	0.010	5
	Caregiver's experience	-0.32	-2.88	0.005	5
	Caregiver's education	-0.27	-2.45*	0.016	6
	Total	$F = 6.51***$	$df = 4,70$	$< 0.001$	$R^2 = 27%$
Intrusiveness	Bayley motor score	-0.39	-4.22***	0.000	18
	Caregiver's education	0.33	3.57***	0.001	11
	Caregiver's age	0.26	2.82**	0.006	8
	Unpredictable-predictable	0.21	2.248*	0.03	4
	Total	$F = 12.13***$	$df = 4,70$	0.01	$R^2 = 41%$
Setting of limits	Inadaptable-adaptable	-0.24	-2.07*	0.04	6
	Total	$F = 3.29*$	$df = 1,73$	0.04	$R^2 = 6%$
Child involvement	Child's age	0.31	2.86**	0.006	9
	Caregiver's experience	-0.25	-2.27*	0.026	6
	Total	$F = 6.41**$	$df = 2,72$	0.00	$R^2 = 15%$

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

responsive care. Contrary to the expected, caregivers who had more years of experience and higher education, as well as those who worked more hours, provided less sensitive and responsive care.

A relatively small part of the variability in child involvement and setting of limits was predicted by child and caregiver variables. Child's involvement in the interaction was associated with child's age (9%) and years of caregivers' experience (6%). Older children and less experienced caregivers were associated with more positive child involvement. Setting of limits in the interaction was predicted by the inadaptable/adaptable dimension of the child's temperament (6%).

#### *Predictors of caregivers' teaching behavior*

As can be seen in Table 5, child and caregivers' variables explain a moderate share (37%) of variability in caregivers' focusing. It was found that older, more mentally capable children, less educated parents and caregivers who work more hours are associated with less focusing.

The amount of expanding provided by the caregiver was predicted, albeit minimally, by her perception of the child's fussiness, the more fussy children receiving

Table 5. Multiple regression analysis for caregivers' teaching behavior as predicted by child and caregiver variables

Predicted variables	Predictor	$\beta$	$t$	$p$	% of explained variability ( $r^2$ )
Focusing	Bayley mental	-0.29	-2.94**	0.004	10
	Father's education	0.43	4.39***	0.000	12
	Child's age	-0.30	-3.16**	0.002	9
	Caregiver's work load	-0.25	-2.49*	0.015	6
	Total	$F = 10.27***$	df = 4,70	0.000	$R^2 = 37\%$
Affecting	Unpredictable-predictable	-0.27	-2.46*	0.016	8
	Bayley motor	-0.25	-2.31*	0.024	6
	Total	$F = 6.1**$	df = 2,70	0.004	$R^2 = 14\%$
Expanding	Fussy-calm	-0.29	-2.57*	0.012	8
	Total	$F = 6.62*$	df = 1,73	0.012	$R^2 = 8\%$
Encouragement	Caregiver's age	0.23	2.02*	0.048	5
	Total	$F = 4.06*$	df = 1,73	0.048	$R^2 = 5\%$
Regulation of behavior	Fussy-calm	-0.41	-3.89***	0.000	12
	Caregiver's education	0.34	3.26**	0.002	12
	Total	$F = 11.16***$	df = 2,72	0.000	$R^2 = 24$

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

less expansion. Child variables explained 14% of the variability of affecting provided by caregivers—the more unpredictable children as well as children with higher motor Bayley scores received less affecting. Children’s fussy–calm temperament dimension, as perceived by the caregivers, explained 5% of the variability in the frequency of encouraging behavior of the caregivers. Children perceived as fussier received more unfocused encouragement. Having in-service training determined 24% of the variability in caregivers’ commands. On the other hand, caregivers’ general level of education explained only 9% of the variability. Caregivers who received in-service training used fewer commands in interactions with the children. However, contrary to expectation, more educated caregivers used more commands but less regulation of behavior. Caregivers’ education and children’s fussiness explained 24% of the variability in caregivers’ regulation of the child’s behavior in the interaction.

*Predictors of mothers’ interactive behavior*

As can be seen in Table 6, variability in maternal sensitivity and responsiveness was partially explained (25%) by child and mother variables. Younger children and children with higher Bayley mental scores experience more sensitivity and responsiveness in their interactions with their mothers. In addition, mothers’ country of origin explained 8% of the variability in her sensitivity. Mothers who were Israeli native-born scored higher on this factor as compared with newcomers from both western and eastern countries (mean = 3.00, SD = 0.70 for mothers not born in Israel, and mean = 3.35, SD = 0.45 for mothers born in Israel). (It should be noted that no differences were found between the groups of mothers based on their country of

Table 6. Multiple regression with mothers’ interactive behavior as predicted variables, and child and mother variables as predictors

Predicted variables	Predictor	$\beta$	$t$	$p$	% of explained variability ( $r^2$ )
Sensitivity and responsiveness	Bayley mental	0.28	2.48*	0.016	10
	Child’s age	-0.34	-2.97**	0.004	7
	Mother’s origin	0.29	2.50*	0.015	8
	Total	$F = 6.62***$	df = 3,62		$R^2 = 25\%$
Intrusiveness	Bayley mental	-0.37	-3.15**	0.00	13
	Total	$F = 9.89**$	df = 1,64		$R^2 = 13\%$
Setting of limits	Unpredictable–predictable	-0.28	-2.34*	0.22	8
	Total	$F = 5.49*$	df = 1,64		$R^2 = 8\%$
Child involvement	Child’s gender	-0.32	2.69**	0.009	10
	Total	$F = 7.24*$	df = 1,64		$R^2 = 10\%$

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

origin.) The child's Bayley mental score explained 13% of the variability of mothers' intrusiveness. Mothers were more intrusive with children who had lower mental scores. Child's perceived temperament hardly played a role explaining the variability in her interactive and teaching behavior. Only the unpredictable–predictable dimension of temperament explained 8% of the variability of setting of limits in the mother–child interactions. Mother's perception of her child as more unpredictable was related to more setting of limits in the interaction with that child. The only finding related to children's gender was as follows: child's gender emerged as a variable explaining 10% of variability in positive child involvement. Girls showed more positive involvement in their interactions with their mothers as compared with boys (mean = 3.34, SD = 0.33 for girls, and mean = 3.16, SD = 0.29 for boys).

#### *Predictors of mothers' teaching behavior*

As can be seen in Table 7, variability in mother's teaching behavior was predicted by a few variables, only two of which were child variables (i.e. child's Bayley motor score and child's age). Children with lower Bayley motor scores received more affecting, and younger children received more encouragement. Father's rather than mother's years of education and ethnic origin contributed to the variability in mother's teaching behavior. Specifically, children whose fathers were either Israeli or of western origin had higher education, received more expansion and fewer commands, than children whose fathers had fewer years of education and were of a different origin. Mismatches in mother–child interactions were explained partially by Bayley mental scores—children with lower Bayley mental scores experienced more mismatches in their interaction with their mothers as compared with others.

Table 7. Multiple regression with mothers' teaching behavior as predicted variables, and child, mother and father variables as predictors

Predicted variables	Predictor	$\beta$	$t$	$p$	% of explained variability ( $r^2$ )
Focusing	Bayley mental	-0.27	-2.36	0.03	8
		$F = 5.23$	$df = 1,64$	$< 0.05$	$R^2 = 8\%$
Affecting	Bayley motor	-0.29	-2.42*	0.02	8
	Total	$F = 5.86^*$	$df = 1,64$	$< 0.05$	$R^2 = 8\%$
Expansion	Father's education	0.26	2.16*	0.04	7
	Total	$F = 4.65^*$	$df = 1,64$	$< 0.05$	$R^2 = 7\%$
Encouragement	Father's origin	0.27	2.33*	0.02	7
	Child's age	-0.25	-2.13*	0.04	6
	Total	$F = 4.64^*$	$df = 2,63$	$< 0.05$	$R^2 = 13\%$
Regulation of behavior	Bayley mental	0.29	-2.46*	0.02	8%
	Total	$F = 5.83$	$df = 1,64$		$R^2 = 8\%$

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Demographic variables such as number of children in the family and number of rooms at home did not relate significantly to any of the interaction variables. Prior to data analysis, gender-related differences were examined and were not found for any of the study variables.

## Discussion

Earlier research on the quality of childcare in Israel (Koren-Karie & Sagi, 2000) revealed that infants and toddlers were subjected to care characterized by lack of sensitivity, and responsiveness. These findings were explained primarily in relation to the child-caregiver ratio, which averaged about six to eight infants or toddlers to caregiver, lower education and poor training of caregivers.

In the current study, no significant differences were noted between the quality of interaction and teaching behavior provided by caregivers as compared with mothers in one-on-one interactions, on all factors of the interaction and teaching behavior. Furthermore, caregivers were found to provide more affect as compared with mothers (i.e. more expressions of affect in relation to objects and experiences in the environment). These findings support those reported by Gossens and Van IJzen-doorn (1990) that caregivers in one-on-one interactions with children expressed even more affect than the children's mothers.

Caregiver-child interactions did not differ from mother-child interactions on most variables of teaching behavior consistently found in previous studies to predict variables indicating children's positive cognitive outcome (for example, Klein *et al.*, 1987; Klein & Alony, 1993; Klein, 1996, 2003), but, at the same time, caregiver-child interactions contained more behaviors that were consistently negatively related to the same developmental outcome variables (Klein, 1996). It is possible that the caregivers who view 'teaching' as a respectable component of their work (Koren-Karie & Sagi, 2000), in a one-on-one interaction with a young child, attempt to 'overdo' (i.e. to initiate various activities while the child is involved in something else (mismatch)), to encourage the child using unfocused encouragement (i.e. saying 'yes', 'good girl' or 'good') in a way that is unrelated specifically or clearly to anything the child did or said at a particular moment (undifferentiated encouragement). These findings suggest that, despite the importance of the caregiver to child ratio as a major determinant of quality of care, one-on-one interactions with the caregiver may contain more positive as well as negative components of interaction and teaching behavior.

Several interesting findings emerged with regard to variables explaining variability in mothers' and caregivers' behavior. These findings suggest that even when one-on-one interactions with caregivers appear similar to those with mothers, they were predicted by different patterns of child and adult variables and that not all children received similar care.

Caregivers' behavior was related to their perception of the children's fussiness and unpredictability. Children perceived by caregivers as fussy and unpredictable tended to have less sensitive and responsive interactions, more intrusiveness and less setting of limits and child involvement. Mothers' behavior was almost completely unrelated

to these variables. It may thus be concluded that these variables have little, if any, effect on mothers' general interaction or teaching behavior.

Children's mental ability, assessed by the Bayley's mental scales, was related to all variables of mother-child but not to caregiver-child interactions. There is a general consensus in the early childcare literature that more sensitive, responsive, less intrusive interactions with the mothers are basic characteristics of quality care and positively affect infant development. In the current study, these findings coincide with those of the NICHD Early Child Care Research Network (1998) study, suggesting that mothering was a more consistent predictor of child outcome measures than childcare variables. Similarly, in another recent study on the same population it was suggested that patterns of infant compliance were established at home in mother-infant interactions and were carried over to caregiver-infant and toddler interactions (Feldman & Klein, 2003). Children's mental ability, although not related with those caregivers' behaviors that are commonly associated with better child outcome measures, were found to be negatively associated with caregivers' behaviors such as intrusiveness, commands, mismatches and undifferentiated encouragement, all of which were associated with lower scores on cognitive child outcome measures (Klein, 1996, 2003).

Whereas children's mental score was related to more variables of mothers' as compared with caregivers' behavior, children's age appeared to be associated more with caregivers' behavior than with mothers' behavior. Child's age was not related to any of the observed variables in the mother-child interactions; however, in caregiver-child interactions, older children (26-34 months old) showed more involvement in play and experienced less focusing than younger children (18-26 months old). The latter is expected since children become more independent as they grow and may thus require less focusing. The differences between mothers and caregivers with regard to the variables predicting their behavior may possibly be related to the fact that mothers relate to their children more as unique individuals and attend to their immediate behavior in relation to their intimate knowledge of their child; caregivers rely more on generalizations about children's development particularly in relation to the child's age. These findings are not surprising in light of previous reports concerning less individualized care provided by caregivers as compared with mothers in Israel (Sagi *et al.*, 1994). The latter is also supported by the finding that, in the same population, 39% of the variability in caregiver's ratings of child's mental ability as compared with 17% of the variability in mother's ratings of the same was predicted by child's age (Saltzman, 2001).

Perhaps caregiver's focus on the child as part of a group increased their emphasis on children's age. Age is most frequently presented as a major factor in training of developmentally appropriate practices in childcare. Knowledge about child's age and educational objectives regarding what 'should' be done with children at each age determined caregiver's behavior more than the child's mental ability. Children's motor ability (rather than mental ability) was probably more readily perceived by the caregivers than mental ability as an indicator of maturity (i.e. age) and thus could possibly have affected the level of intrusiveness in their interaction with the children,

as did child's age. These findings were supported by informal interviews conducted with caregivers and mothers. Mothers related more to the individual characteristics of their child and described their attempts to 'go with the child', whereas caregivers referred more to their general knowledge about developmental timetables as to what children of a certain age need, can and should do. They frequently said 'one year olds can already ... so we give them or let them ...'. Caregivers' behavior was more related to children's perceived temperament as compared with mothers. Children's temperament dimensions of fussy-calm, unpredictable-predictable and inadaptably-adaptable were related to several of the caregivers' behaviors and not to mothers' behaviors. Children who were perceived as being fussy or unpredictable received less sensitivity and responsiveness and more intrusive behavior as compared with others. These findings did not support the hypothesis that mothers are more affected by children's temperament than caregivers. As stated earlier, age was found to be a predictor of caregivers' intrusive behavior; young children received more intrusive behavior. Thus, young children perceived by their caregiver as fussy received the most intrusive and least sensitive and responsive interactions in daycare. Recently reported variations in morning-to-afternoon cortisol levels of infants and toddlers in daycare suggest that children who respond more negatively or intensely to new or frustrating experiences may become more stressed than others following many hours in daycare. It seems that some of those children are jeopardized twice, once by their inability to regulate their sensation and behavior, and then again, rather than receiving sensitive care that may modulate their arousal and reduce their stress (Harper & Huie, 1998), are involved in interactions with caregivers who are even more stressed as children show increasing signs of stress.

It may be concluded that the general similarity between mother-child and caregiver-child interactions found in this study may not accurately represent the experience of some individual children in those same daycare settings. Average group estimates may inadvertently cover up possible risk indicators for differential treatment of young children in daycare. In the current study, for example, children who were perceived as fussy, unpredictable and inadaptably were subjected to more intrusive and less sensitive care than other children. In addition to the apparent differences behind the similar average frequencies of various behaviors of mothers and caregivers interacting with the same children, it should be noted that one-on-one caregiver-child interactions hardly occurred in daycare, and when they occurred they were fleeting (may have lasted a second or two; i.e. when infant's diaper was changed). The latter was observed in another ongoing study in which miniature cameras were attached to a sweatband worn on the infants' foreheads (Klein & Givon, 2001).

The findings of the current study could be understood within the general framework of the ecological approach to child development. Interactions of infants and toddlers with the adults caring for them are complex, dynamic configurations consisting of many interrelated variables, none of which can be expected to predict most of the variability of any one of the behaviors observed. Variability of mothers, caregivers' and children's behavior could be explained by a combination of some of the child,

caregiver and parent variables considered in the current study. The configuration of these variables and their relative contribution to the variability differ for parents as compared with caregivers and from one behavior predicted to another. For example, variability in caregivers' sensitivity and responsiveness was partially explained by their perception of children's fussiness, their own workload, experience and education. Children's fussiness was associated with less sensitive and responsive care from caregivers, even in one-on-one interactions. Variables such as caregivers' workload, experience and education had negative, albeit low, predictability of sensitive and responsive care as well as intrusiveness (in relation to caregivers' education only) and caregivers' experience (in relation to child involvement). It is understandable that fatigue from working many hours with many children could have a negative effect on caregivers' sensitivity. However, the finding that more educated and more experienced caregivers provided less sensitive and responsive care was somewhat surprising and contradictory to expectations. It is possible that higher levels of education could be related to feelings of being overqualified and less satisfied with work. In line with the NICHD Early Childcare Research Network (2002), the interactive behavior of caregivers with higher education and more years of experience may perhaps be related to their tendency to be more authoritarian; that is, knowing what needs to be done with and for the children and thus making less effort to attend and respond to the children's signals and initiatives. Variability in mothers' sensitivity was predicted by their child's mental ability (10%), age (7%) and her ethnic origin (8%). More sensitive and responsive care was associated with children's higher Bayley mental scores and child's age. Mothers appeared to be less sensitive and responsive and more directive with younger children. The latter may perhaps be explained in view of some of the research on mothers' interactions with children who have special needs. Research on mother-child interactions in a population of children with developmental difficulties or retardation reveals that their mothers show what may appear as less sensitivity but is actually more rigorous attempts at eliciting responses from their children who are more passive and unresponsive (Marfo, 1992) and are generally more directive than mothers of typically developing children (Roach *et al.*, 1998).

Intrusiveness in caregiver-child interactions was predicted by both child and caregiver variables: children's level of motor development (18%) and predictability (4%), caregiver's education (11%) and caregiver's age (8%). Lower levels of children's motor development and unpredictability were associated with more intrusive behaviors of the caregiver. More educated and older caregivers provided more intrusive behavior. Variability in mothers' intrusiveness was associated only with child's mental ability. Less mentally capable children experienced more intrusive behavior in interaction with their mother. Sensitivity and intrusiveness are two of the major indicators of quality of infant care. More sensitivity and less intrusiveness have been consistently associated with various positive indicators of child development. Thus, the findings of the current study may suggest that fussy infants and toddlers who are not well developed motorically may be developmentally at risk since they may be likely candidates for less sensitive and responsive care with more intrusive behavior from their caregivers in daycare. At home, in interactions with the mother, the younger the child,

the more sensitive and responsive care he/she receives. Children's temperament is perceived differently by caregivers and mothers. Mothers' interactions with their children are not affected by their child's fussiness—setting of limits is affected by the child's perceived unpredictability.

It is interesting to note that fathers' rather than mothers' education was found to explain variability in mothers' expansion and commands (see Tables 6 and 7). Having more educated fathers was associated with fewer commands and more expansion behaviors in interactions with the mothers. The relationship between parental education and both expansion and commands was expected since these variables were found to be commonly related in previous studies in traditional as well as western cultures (Klein, 1996); however, it was somewhat surprising to find that fathers' rather than mothers' education was a better predictor of variability in a mother's interactive behavior with her child. One possible explanation may be related to the larger variability in fathers' as compared with mothers' education found in the current study. In addition, in Israel, particularly in families with young children, the father's education is a better indicator of the family's socio-economic status and educational aspirations for the children. Mothers are most often at least partially compromising their academic aspirations, find less attractive positions and are frequently paid less than their husbands. It is thus fathers' rather than mothers' education that represents the family's general academic environment and may better explain variability in education and care provided to the children.

In addition, caregivers' education was found to play a lesser role than in-service training—whereas 24% of the variability in the frequency of commands was explained by caregivers' in-service training and only 9% of it by their years of education. This finding highlights the importance of in-service training.

In summary, the findings of the current study call attention to the fact that even in one-on-one child-caregiver interactions when the mean frequencies of mother-child and caregiver-child interactive behavior are similar, differential treatment of very young children may still occur. Young toddlers, rated by their caregivers as fussy and unpredictable, were found to be at risk for receiving less sensitive and more intrusive care with more negative forms of teaching behavior. Mothers' behavior was found to be more related to children's mental ability whereas caregivers' behavior was associated more with children's age, their fussiness, inadaptability and unpredictability.

Differences were found between the general interaction variables and the teaching variables in terms of their relations with most child and mother or caregiver variables considered in the current study, suggesting the importance of focusing on both of these variables in studies of early childcare.

## References

- Ahnert, L. & Lamb, M. E. (2003) Shared care: establishing a balance between home and child care settings, *Child Development*, 74(4), 1044–1049.
- Ahnert, L., Rickert, H. & Lamb, M. E. (2000) Shared care-giving: comparisons between home and child-care setting, *Developmental Psychology*, 36, 339–351.

- Bates, J. E., Freeland, C. A. B. & Lounsbury, M. L. (1979) Measurement of infant difficultness, *Child Development*, 50, 794–803.
- Bayley, N. (1993) *Manual for the Bayley Scales of Infant Development* (2nd edn) (San Antonio, TX, Psychological Corp).
- Bornstein, M. H., Maital, S. L. & Tal, J. (1997) Contexts of collaboration in caregiving: infant interactions with Israeli kibbutz mothers and caregivers, *Early Child Development and Care*, 135, 145–171.
- Clarke-Stewart, K. A. (1989) Infant day care: maligned or malignant?, *American Psychologist*, 44, 266–273.
- Clarke-Stewart, K. A. (1998) Parent's effects on children's development: a decade of progress?, *Journal of Applied Developmental Psychology*, 9, 41–84.
- Feldman, R. (1998) *Coding of interactive behavior*. Unpublished manual, Ramat-Gan, Bar Ilan University, Department of Psychology.
- Feldman, R. (2000) Parent's convergence on sharing and marital satisfaction, father involvement, and parent-child relationship at the transition to parenthood, *Infant Mental Health Journal*, 21(3), 176–191.
- Feldman, R. & Klein, P. S. (2003) Toddlers' self-regulated compliance to mothers, caregivers, and fathers: implications for theories of socialization, *Developmental Psychology*, 39, 680–692.
- Feldman, R., Greenbaum, C. W., Mayes, L. C. & Erlich, S. H. (1997) Change in mother-infant interactive behavior: relations to change in mother, the infant and the social context, *Infant Behavior and Development*, 20(2), 151–163.
- Feldman, R., Masalha, S. & Nadam, R. (2001) Cultural perspective on work and family: dual-earner Israeli Jewish and Arab families at the transition to parenthood, *Journal of Family Psychology*, 15(3), 492–509.
- Gossens, F. & Van IJzendoorn, M. (1990) Quality of infants attachment to professional caregivers: relation to infant-parent attachment and daycare characteristics, *Child Development*, 61, 550–567.
- Gossens, F. & Melhuish, E. C. (1996) On the ecological validity of measuring the sensitivity of professional caregivers: the laboratory versus the nursery, *European Journal of Psychology of Education*, 11, 169–176.
- Harper, L. V. & Huie, K. S. (1998) Free play use of space by preschoolers from diverse backgrounds: factors influencing activity choices, *Merrill-Palmer Quarterly*, 44, 423–446.
- Kaye, K. & Fogel, A. (1980) The temporal structure of face communication between mothers and infants, *Developmental Psychology*, 16(5), 454–464.
- Keren, M., Feldman, R. & Tyano, S. (2001) Diagnoses and interactive patterns of infants referred to a community-based infant mental health clinic, *Journal of American Academic of Child and Adolescent Psychiatry*, 40(1), 1–9.
- Klein, P. S. (1996) *Early interventions: a cross cultural application of mediational approach* (New York, Garland).
- Klein, P. S. (2003) A mediational approach to early intervention in Israel: mediational intervention for sensitizing caregivers (MISC) of typically developing and hard to reach children, in: S. Odam, M. Hanson & J. Blackman (Eds) *International perspectives on early intervention* (Baltimore, MD, Brookes), 69–90.
- Klein, P. S. & Alony, S. (1993) Immediate and sustained effects of maternal mediation behaviors in infancy, *Journal of Early Intervention*, 71, 177–193.
- Klein, P. S. & Givon, D. (2001) *A closer look of what happens in day care* (in Hebrew) (Tel Aviv, Reches Publications).
- Klein, P. S., Wieder, S. & Greenspan, S. I. (1987) A theoretical overview and empirical study of mediated learning experience: prediction of preschool performance from mother-infant interaction patterns, *Infant Mental Health Journal*, 8, 110–129.
- Koren-Karie, N. & Sagi, A. (2000) Parental conflicts regarding infant care, in: P. S. Klein (Ed.) *Infants, toddlers, parents and care-givers: research on child development* (in Hebrew) (Tel Aviv, Reches Publications), 119–142.

- Lamb, M. E. (1997) Nonparental child care: context, quality, correlates, and consequences, in: I. E. Sigel & K. A. Renniger (Eds) & W. Damon (Series Ed.) *Handbook of child psychology* (Vol. 4). *Child psychology in practice* (5th edn) (New York, Wiley), 73–134.
- Marfo, K. (1992) Correlates of maternal directiveness with children who are developmentally delayed, *American Journal of Orthopsychiatry*, 62(2), 219–233.
- Maysless, O. & Scher, A. (2000) Mother's attachment concerns regarding spouse and infant's temperament as modulators separation anxiety, *Journal of Child Psychology and Psychiatry*, 41(7), 917–926.
- Nelson, F. & Garduque, L. (1991) The experience and perception of continuity between home and day care from the perspectives of child, mother and caregiver, *Early Child Development and Care*, 68, 99–111.
- NICHD Early Child Care Research Network (1998) Early child care and self control, compliance and problem behaviors at twenty-four and thirty-six months, *Child Development*, 69(4), 1145–1170.
- NICHD Early Child Care Research Network (1999) Child outcomes when child care center classes meet recommended standards of quality, *American Journal of Public Health*, 89(7), 1072–1077.
- NICHD Early Child Care Research Network (2002) The interaction of child care and family risk in relation to child development at 24 and 36 months, *Applied Developmental Science*, 6, 144–156.
- NICHD Early Child Care Research Network (2003) Does amount of time spent in child care predict socio-emotional adjustment during the transition to kindergarten?, *Child Development*, 74(4), 976–1005.
- Richters, J. E. & Zahn-Waxler, C. (1990) The infant daycare controversy: current status and future directions, in: N. Fox & G. G. Fein (Eds) *Infant day care: the current debate* (Norwood, NJ, Ablex Publishing), 87–104.
- Roach, M. A., Stevenson-Barratt, M., Miller, J. F. & Leavitt, L. A. (1998) The structure of mother-child play: young children with down syndrome and typically developing children, *Developmental Psychology*, 34(1), 77–87.
- Rubenstein, J. L., Howes, C. & Boyle, P. (1981) A two-year follow-up of infants in community-based day care, *Journal of Child Psychology and Psychiatry*, 22, 209–218.
- Sagi, A., van IJzendoorn, M. H., Aviezer, O., Donnell, F. & Maysless, O. (1994) Sleeping out of home in a kibbutz communal arrangement: it makes a difference for infant-mother attachment, *Child Development*, 65, 992–1004.
- Saltzman, J. (2001) *Quality of adult-child interaction at home and at day care in relation to child's language development*. Unpublished dissertation, Bar-Ilan University, Ramat-Gan, Israel.
- Scarr, S. (1998) American child care today, *American Psychologist*, 53, 95–108.
- Watamura, S. E., Donzella, B., Alwin, J. & Gunnar, M. R. (2003) Morning to afternoon increases in cortisol concentrations for infants and toddlers at child care: age differences and behavioral correlates, *Child Development*, 74(4), 1006–1020.