

# Enhancing Home-Based Child Care Quality Through Video-Feedback Intervention: A Randomized Controlled Trial

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In the present randomized controlled trial, the effectiveness of video-feedback intervention to promote positive parenting–child care (VIPP-CC) was tested in home-based child care. Forty-eight caregivers were randomly assigned either to the intervention group or to the control group. Global child care quality improved in the intervention group but not in the control group. The program did not change observed caregiver sensitivity. After the intervention however, caregivers in the intervention group reported a more positive attitude toward sensitive caregiving than caregivers in the control group. The study shows that the family-based intervention can be applied with some minor modifications in a professional group setting as well. The brief VIPP-CC program is an important tool for enhancing quality of home-based child care.

*Keywords:* home-based child care, quality of care, randomized controlled trial, sensitivity, video-based intervention

Home-based child care has become a commonly used type of care. The National Institute of Child Health and Human Development Early Child Care Research Network (NICHD ECCRN) reported that 24% of the children in their sample attended home-based child care at entry in child care (NICHD ECCRN, 1997). In the Netherlands, the number of children attending home-based child care has been increasing rapidly. Whereas in 2006, 70,000 children attended home-based child care, this number had increased to 140,000 children 1 year later (Statistics Netherlands, 2008). Home-based child care is provided from a caregiver's home and is, in the Netherlands, restricted to a maximum of 6 children under the age of 4, which makes the daily environment more similar to a child's home than center-based child care. The quality of care these caregivers provide is crucial for the children's feeling of security and their development (NICHD ECCRN, 2005; Vandell, Belsky, Burchinal, Steinberg, Vandergrift, & the NICHD ECCRN, 2010). In this study, a video intervention is implemented in home-based child care using a randomized controlled design with the aim to enhance child care quality. Two indicators of child care quality are central: global quality and caregiver sensitivity.

Global quality refers to the stimulation and support available to children in the child care environment; for example, organization of the environment, (learning) materials available to the children, and variety in events and environments. In general, children who attend higher quality child care homes or centers have better cognitive and social skills than children experiencing lower quality child care (Peisner-Feinberg et al., 2001). Sensitive caregiving facilitates children to build a secure relationship with their caregiver. According to attachment theory, children use their caregivers as a haven of safety, from which they can explore the environment (Bowlby, 1969). Parental sensitivity is a determinant of children's attachment security (De Wolff & Van IJzendoorn, 1997) and can be defined as the ability to accurately perceive the child's signals and to respond promptly and adequately to these signals (Ainsworth, Blehar, Waters, & Wall, 1978). Several studies have shown (a) that children form attachment relationships not only with their parents but also with professional caregivers in child care and (b) that attachment security was predicted by caregiver sensitivity (Elicker, Fortner-Wood, & Noppe, 1999; Goossens & Van IJzendoorn, 1990).

## Role of Caregiver Education and Training

Several studies have shown that caregiver education is a predictor of caregiver sensitivity and quality of care in child care homes (Clarke-Stewart, Lowe Vandell, Burchinal, O'Brien, & McCartney, 2002; Doherty, Forer, Lero, Goelman, & LaGrange, 2006). In the Netherlands, most caregivers in home-based child care have limited or no education in child care. In a recent Dutch study, only 30% of the caregivers in home-based child care reported to have completed an education in child care, whereas all caregivers

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in center-based child care completed a vocational education directed at various domains of care (Groeneveld, Vermeer, Van IJzendoorn, & Linting, 2010). For center-based child care, Burchinal, Cryer, Clifford, and Howes (2002) showed that not only caregivers with formal education in early childhood but also caregivers who attended informal workshops scored higher on caregiver sensitivity and quality of care. The importance of caregiver training, beyond caregiver education, has also been demonstrated in home-based child care (Burchinal, Howes, & Kontos, 2002; Clarke-Stewart et al., 2002). In the present study, we implemented a caregiver training to enhance child care quality in home-based child care. Before selecting an effective intervention for child care homes, several existing interventions were reviewed, focusing on families and child care homes.

### Interventions in Families

Programs aimed at enhancing parental sensitivity have been studied more often than programs directed at professional caregivers' sensitivity. Bakermans-Kranenburg, Van IJzendoorn, and Juffer (2003) conducted a meta-analysis of 80 studies to test the effectiveness of various types of interventions for enhancing maternal sensitivity. They showed that randomized interventions appeared effective in changing insensitive parenting ( $d = 0.33$ ) and infant attachment insecurity ( $d = 0.20$ ). Interventions with video feedback were more effective ( $d = 0.44$ ) than interventions without this method ( $d = 0.31$ ). Interventions with fewer than 5 sessions were as effective ( $d = 0.42$ ) as interventions with 5 to 16 sessions ( $d = 0.38$ ), but interventions with more than 16 sessions were less effective ( $d = 0.21$ ) than interventions with a smaller number of sessions. On the basis of this meta-analysis, a short-term, behaviorally focused intervention program was developed: video-feedback intervention to promote positive parenting and sensitive discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2008). Based on both attachment theory (Ainsworth et al., 1978; Bowlby, 1969) and coercion theory (Patterson, 1982), the goal of VIPP-SD is to enhance parental sensitivity as well as sensitive discipline. Mother and child are videotaped during daily situations at home. Videotaped episodes are discussed with the mother, focusing on various parts of sensitivity as defined by Ainsworth (Ainsworth et al., 1978). First, during the videotaped episodes, the intervener focuses on observing the child's signals in an accurate way. Second, through positive reinforcement of the mother's sensitive behavior shown on the videotape, the mother is reinforced to respond to the child's signals in an adequate and prompt way.

Studies using the VIPP approach showed positive effects on parental sensitivity in intervention groups compared with control groups in various samples: insecure mothers (Klein Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, 2006), insensitive mothers (Kalinauskienė et al., 2009), mothers with eating disorders (Stein et al., 2006), adoptive mothers (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005b), and mothers of children with external-

izing problems (Van Zeijl et al., 2006; for an overview, see Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2009).

### Interventions in Home-Based Child Care

We found four studies investigating the effectiveness of programs in home-based child care. The effectiveness of the project Rural Early Childhood Educational Institute (REACH) was tested in a group of caregivers from child care homes ( $n = 62$ ) and child care centers ( $n = 39$ ; Espinosa, Mathews, Thornburg, & Ispa, 1999). This training program was individualized, as caregivers decided themselves how often they attended the training and whether they preferred group workshops and/or received home visits. Immediately after the project, improvements were present in global quality, sensitivity, and caregiver attitudes. However, during follow-up 10 months later, a decline in global quality was present although global quality was still higher than it was before the intervention. No control group was present. Aguirre and Marshall (1998) tested the effectiveness of a self-instructional training program for home-based caregivers ( $n = 437$ ) directed at health and safety, business management, child development, and nutrition, which combined written material and videotaped material. They found that the program was successful in increasing caregiver knowledge and in changing caregiver-reported behavior. These authors did not measure (changes in) caregiver behavior through observations. As in the REACH project (Espinosa et al., 2009), no control group was present.

Kontos, Howes, and Galinsky (1996) observed global quality of care and sensitivity of caregivers ( $n = 95$ ) in home-based child care after a broad training. This family-to-family training involved 15 to 25 hr of classes (duration and number of sessions varied per site) and home visits. No randomization took place because caregivers enrolled themselves in the training. The comparison group ( $n = 112$ ) consisted of caregivers who did not enroll themselves in the training program. Although the training had a positive effect on business practices (e.g., providing a parent-caregiver contract, emergency authorization forms), planned activities, and global quality, the training did not affect caregiver sensitivity.

Recently, a randomized controlled trial was published evaluating the Carescapes program, a video-based training program for home-based caregivers to promote positive social development in young children (Rusby, Smolkowski, Marquez, & Taylor, 2008). The intervention consisted of three meetings that demonstrated, with the use of a video model, (1) how to support the social development of children, (2) how to manage their behavior, and (3) how to understand and deal with problem behavior. Although the use of effective behavior management practices increased in the intervention group ( $n = 33$ ), compared with those in the waiting-list control group ( $n = 30$ ), the use of strategies did not maintain over time: Eighteen weeks later, this increase had disappeared.

As described earlier, family-based intervention studies showed that interventions tend to be more effective when they have a narrow focus, have a fixed curriculum, make use

of video feedback, and are short term (Bakermans-Kranenburg et al., 2003). Do the four reported studies in home-based child care meet these criteria? Three of four reported intervention studies in child care homes had a very broad focus on health and safety, child development, and business management (Aguirre & Marshall, 1998; Espinosa et al., 1999; Kontos et al., 1996). All four programs consisted of fewer than 16 sessions, and two (Aguirre & Marshall, 1998; Rusby et al., 2008) of four programs used video, but this was based on a videotaped model, not on video feedback on the caregivers' behavior itself. Although all programs had a (short-term) positive effect on (reported) caregiver behavior, no control group was present in three of four studies (Aguirre & Marshall, 1998; Espinosa et al., 1999; Kontos et al., 1996), which makes it difficult to exclude alternative explanations of the effect of treatment (e.g., testing, history, Hawthorne effect).

### The Present Study

The VIPP-SD satisfies the criteria of a narrow focus, a fixed curriculum, the use of video feedback, and a limited number of sessions and has already shown positive effects on parental attitudes and sensitivity in various settings (see Juffer et al., 2008). In the present study, the intervention program VIPP-SD is minimally adapted for home-based child care and tested with home-based caregivers. This study is unique in its kind, because (1) we make use of individualized video feedback (instead of a videotaped model), (2) we observe child care quality and caregiver sensitivity (in addition to reported caregiver attitudes), and (3) we conduct a randomized controlled trial. We expect the intervention program to be effective in (1) enhancing global child care quality and caregiver sensitivity, and (2) positively changing caregiver attitudes toward sensitive caregiving and limit setting. In addition, we evaluate caregiver satisfaction with the program.

### Method

#### Participants and Randomization

Participants in this randomized, controlled, parallel-group study were recruited from 23 home-based child care organizations in the western region of the Netherlands from both urban and rural areas. Inclusion criteria were as follows: (1) Caregivers took care of at least two children under the age of 4, (2) caregivers were not biologically related to these children, and (3) caregiving took place in the caregiver's own home. Invitation letters were sent to approximately 1,000 caregivers. In total, 157 caregivers refused to participate: At least 20% refused because they did not meet the inclusion criteria described in the invitation letter. Other frequently mentioned reasons were that caregivers felt uncomfortable with video recordings or were too busy. Registration for the study was closed after agreement to participate from 120 caregivers. The flow chart (see Figure 1) shows participant progress through the phases of the randomized trial, which lasted for 6 months including selection

(baseline), pretest assessment, intervention (or control condition), and posttest assessment. All measurements and the intervention took place at caregivers' homes during child care.

In September 2008, all caregivers were invited for the baseline visit. Seventeen caregivers were not eligible for the study because inclusion criteria were not met. All other 103 caregivers were visited between November 2008 and January 2009 by an observer who measured caregiver sensitivity using the Caregiver Interaction Scale (CIS; Arnett, 1989). We excluded caregivers who scored highly on caregiver sensitivity ( $CIS > 3$ ,  $n = 37$ ). As a result, 66 caregivers were selected for our study. On the basis of our pilot study, we anticipated a refusal rate of about 25% (e.g., because of changes in the child care arrangement, such as children leaving). Therefore, we included an extra group of caregivers to avoid selective attrition. The 66 caregivers were randomly assigned to the intervention group ( $n = 25$ ), the control group ( $n = 25$ ), or the extra group ( $n = 16$ ). Because of the availability of interveners, the number of participants in the intervention group and the control group was restricted to 25. Following simple randomization procedures (random numbers), participants were randomly assigned to one of these three groups by Marleen G. Groeneveld (see demographic information in Table 1).

The 50 caregivers in the intervention group and the control group received a letter revealing whether they were assigned to the training (intervention) group or the telephone (control) group. Eight caregivers in the intervention group and 4 caregivers in the control group refused to participate. Caregivers from the extra group were randomly assigned to the intervention group ( $n = 8$ ) or the control group ( $n = 4$ ). Of these caregivers, again 4 caregivers withdrew from the study, and caregivers from the extra group were again randomly assigned to the intervention ( $n = 3$ ) or the control group ( $n = 1$ ). Of this group, only one caregiver (in the intervention group) discontinued because all the children she was taking care of had gone. The caregivers who withdrew from the study ( $n = 17$ ) did not differ on caregiver sensitivity from caregivers who remained in the study,  $t(63) = -1.66$ ,  $p = .11$ . In addition, caregivers who withdrew from the intervention group ( $n = 12$ ) did not differ on caregiver sensitivity from caregivers who withdrew from the control group ( $n = 5$ ),  $t(15) = -0.34$ ,  $p = .74$ . The allocation phase resulted in two groups of caregivers: 24 caregivers in the intervention group and 25 caregivers in the control group.

All 49 caregivers received a pretest home visit. The posttest took place from May to July 2009, after which the trial was ended. One caregiver in the control group did not complete the posttest because she cancelled all appointments. This caregiver's scores on all measures, both during baseline and pretest, did not differ from the other caregivers' mean scores in the control group. To control for the effect of removing this caregiver from the study, we ran duplicates of all analyses: We found no differences in outcomes after imputing missing scores in the posttest (with the mean of the control group) or after (multiple) random deletion of one caregiver from the intervention group. The

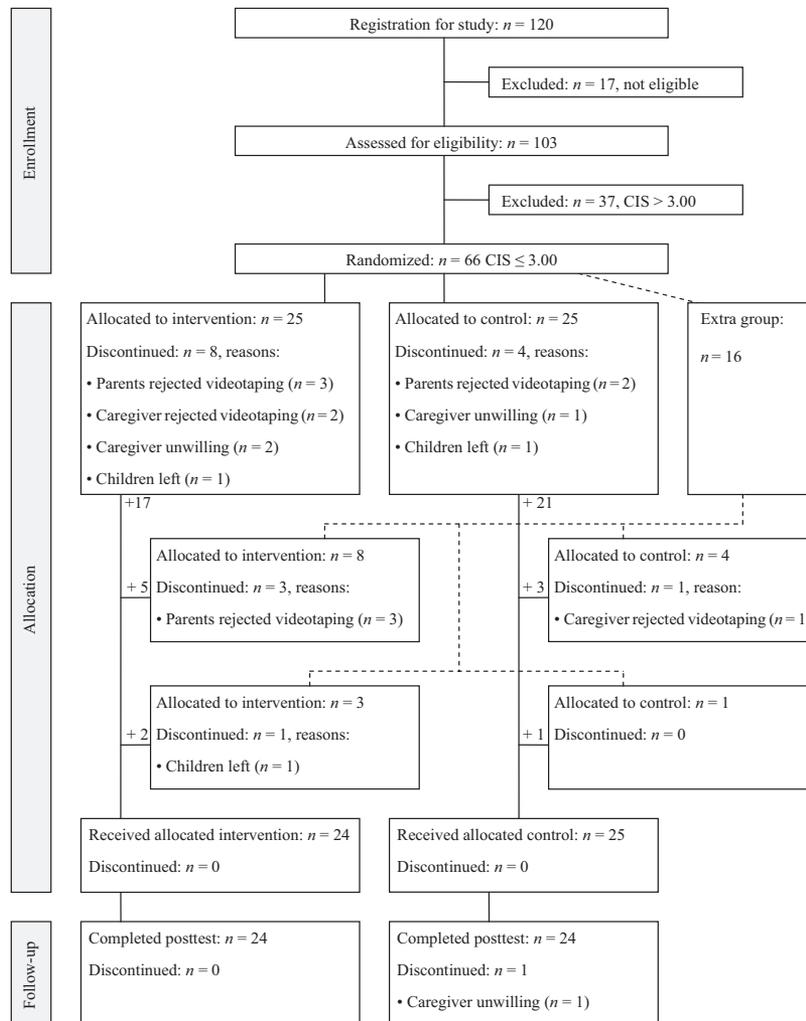


Figure 1. Flow chart. CIS = Caregiver Interaction Scale (Arnett, 1989).

final sample included 48 participants: 24 caregivers in the intervention group and 24 caregivers in the control group. Demographic information of caregivers is summarized in Table 1. Caregivers' age, education, number of working hours per week, and the number of children they were taking care of did not differ significantly between the two groups. Furthermore, caregivers' demographic backgrounds in this study are comparable with those of caregivers in a sample of a previous Dutch study in child care homes (Groeneveld et al., 2010) in which caregivers were, on average, 44.3 years of age and had, on average, 12.3 years of education.

**Procedure**

The procedure in this study meets with the CONSORT criteria (Begg et al., 1996). All procedures were conducted with the adequate understanding and written consent of caregivers and parents. Ethical approval for this study was provided by the Leiden Institute of Education and Child Studies. During baseline, each setting was visited by an

observer who spent a morning in the child care homes to administer the CIS and the Infant Toddler Child Care Home Observation for Measurement of the Environment inventory (IT-CC-HOME; Caldwell & Bradley, 2003). After the baseline visit, caregivers scoring low on sensitivity (CIS  $\leq$  3) were randomly assigned to either the control group or the intervention group. All 48 caregivers received a pretest visit, in which the observer videotaped three 10-min episodes of regular child care activities at predetermined time points (unstructured episodes) and two 5-min structured play episodes.

Caregivers in the intervention group received six home visits and, parallel in timing, caregivers in the control group received six telephone calls. Posttest visits took place approximately 6 months after baseline ( $M = 5.92$ ,  $SD = 1.14$ ). Again, the IT-CC-HOME was administered and three unstructured episodes and two structured play situations were videotaped. All videotaped episodes were rated afterward on caregiver sensitivity by coders who were unaware of the experimental condition and who met the criteria to

Table 1  
*Descriptive Statistics for the Intervention Group and the Control Group During Baseline/Pretest and Posttest*

Variable	Intervention group ( <i>n</i> = 24)			Control group ( <i>n</i> = 24)			Difference	
	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Baseline/pretest								
Age	43.30	9.23	1.92	40.36	8.80	1.88	1.09	.28
Education	12.57	1.80	0.38	11.86	2.10	0.45	1.20	.24
Hours/week working	34.74	9.36	1.95	37.55	9.69	2.07	-0.99	.33
No. of children in child care	6.82	3.92	0.84	6.91	3.85	0.82	-0.08	.94
Global quality	34.46	2.52	0.51	35.21	2.43	0.50	-1.05	.30
Observed sensitivity	4.60	0.83	0.17	4.98	0.66	0.13	-1.75	.09
Posttest								
Global quality	35.92	3.05	0.62	34.75	3.44	0.70	1.24	.22
Observed sensitivity	4.53	0.81	0.17	4.75	0.86	0.18	-0.91	.37
Caregiving attitudes	3.97	0.41	0.08	3.69	0.42	0.08	2.29	.03

reliably assess these scales. To obtain independency in ratings, observers who visited the child care setting did not rate caregiver sensitivity in this specific setting, and coders who rated the pretest caregiver fragments did not rate the fragments from the posttest, and vice versa. For the same reason, observers visited a specific child care setting only once.

### Intervention Program

**VIPP-CC.** The VIPP-SD (Juffer et al., 2008) was adapted for implementation in home-based child care: the video-feedback intervention to promote positive parenting: child care (VIPP-CC). The intervention trajectory is—like the VIPP-SD—divided into three phases, which all consist of two sessions. In the first phase, interveners build a relationship with the caregiver with an emphasis in their video feedback on child behavior. The themes of the first two sessions are (1) exploration versus contact seeking, (2) “speaking for the child.” The second phase focuses at improving caregiver behavior by showing at what moments strategies work. The themes of the two sessions in this phase focus on (3) sensitivity, how and when to use a sensitive time-out, and (4) empathy. The third phase consists of two booster sessions in which all feedback and information are reviewed. At the end of the intervention program, caregivers receive a brochure with information on key issues discussed during the home visits (for a detailed description of the VIPP-SD, see Juffer et al., 2008).

To implement the original VIPP-SD in child care, we adapted the program for caregivers taking care of a group of children by slightly modifying the procedure and materials of the home visits, as the situation in home-based child care differs from the home situation (e.g., more than one child present, professional child care). In the VIPP-SD, interveners first videotaped structured play sessions (for about half an hour) and then subsequently discussed the videotaped episodes from the last visit (for about an hour) on the basis of prepared comments (script). In the VIPP-CC, interveners first videotaped the structured play sessions and then left the home, allowing caregivers and children to have a quiet lunch. After the caregivers put (some of) the children into bed, interveners returned and discussed the videotaped ep-

isodes from the last visit. Furthermore, “speaking for the child” was not only directed to one child at a time but also to the entire group of children (“speaking for the children”), emphasizing caregivers’ attention for the signals of all children present. In addition, the toys that were used during structured play situations were adapted for a group setting, for example, by using a big box of Duplo bricks and large story books. A pilot study with eight caregivers (from whom five received the intervention program and three received the control condition) showed the feasibility of the VIPP-CC approach in the context of group care.

Interveners were graduate students (*n* = 7), who were first trained on the VIPP-SD during a full-time weeklong workshop by one of the VIPP-SD experts from the Centre for Child and Family Studies, Leiden University (Leiden, the Netherlands), including home assignments, which were provided with feedback from the VIPP-SD expert. After this training, interveners received further training on the adapted VIPP-CC. During the intervention period, four feedback sessions were held, in which videotaped structured play situations and scripts were discussed, as well as how to build and obtain a professional relationship with the caregiver.

**Control group.** To keep in contact with all caregivers and to prevent attrition, we gave caregivers in the control group a dummy intervention (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005a). Parallel to the intervention sessions, caregivers in the control group received six telephone calls. During these semistructured interviews (scripts), caregivers were invited to talk about general developmental topics (e.g., eating, talking, playing). These six telephone calls, which lasted between 15 and 30 min, were conducted by the same interveners who visited the intervention group. Interveners were trained before the study and supervised during data collection. The control group received no advice or information about sensitivity or child development. If caregivers would ask for advice or information, interveners were instructed to offer referrals to other services. To attain treatment protocol adherence, four feedback sessions were held during the intervention period, in which the progress of the phone calls was discussed.

## Measures

**Selection.** For selection purposes, caregiver sensitivity in the group setting was examined by direct observation with the CIS. The CIS consists of 26 items; for each item, a score is given, ranging from 1 (*not applicable*) to 4 (*very applicable*). In a Dutch study (Van IJzendoorn, Tavecchio, Verhoeven, Reiling, & Stams, 1996), two dimensions were found: sensitivity (14 items) and authoritarian caregiving (12 items). In the study reported here, the sensitivity subscale was used because of its close link with the aim of the intervention. Example items are, “Speaks warmly to the children,” and “Listens attentively when children speak to her.” Internal consistency (Cronbach’s alpha) of this scale was 0.84. The mean intraclass correlation of the observers (two-way mixed, absolute agreement) was .80 (range = .78 to .84).

**Global quality of child care.** The IT-CC-HOME (Caldwell & Bradley, 2003) is designed to measure the quality and quantity of stimulation and support available to a child in the child care home environment and covers various domains of child care: responsiveness, acceptance, organization, learning materials, involvement, and variation. A positive (1) or a negative (0) score is achieved for each of the 43 items. Two items were deleted from the scale: Item 21, “Child gets out of house at least four times a week,” and Item 42, “Caregiver and child visit or receive visits from neighbor or friends once a month or so.” These items were not applicable to the Dutch situation, because in the Netherlands children attend home-based child care, on average, 2 or 3 days a week in contrast to other countries. The total IT-CC-HOME score is a summation across the 41 item scores (0 or 1). Internal consistency (Cronbach’s alpha) of this scale was 0.60. Here, we do not report on data at the subscale level, because of low internal consistencies (range of Cronbach’s alphas = 0.12–0.48). Ten observers were trained before the study. After a general introduction, observers visited at least four caregivers in pairs to complete the IT-CC-HOME. Each observation was followed by an item-by-item debriefing with the trainer. Before this debriefing, interrater reliability was established to a criterion of 80% agreement.

**Caregiver sensitivity.** During pretest and posttest, three 10-min unstructured episodes (e.g., lunch, free play) and two 5-min structured play episodes were videotaped to code caregiver sensitivity. Both structured situations consisted of 10 min of play with Duplo bricks or a toy rollercoaster. Caregivers were asked to play with the children as they would normally do. Coding of videotaped episodes took place by means of a scale developed and validated by NCKO, the Dutch Consortium for Child Care Research (De Kruif et al., 2007). This group rating scale is based on scales developed to measure sensitivity in a parent–child context (Ainsworth, Bell, & Stayton, 1974; Erickson, Sroufe, & Egeland, 1985). Sensitivity ratings are presented on a 7-point scale ranging from (1) *very low sensitivity* to (7) *very high sensitivity*. Five observers were trained and became reliable on the same data set to assess caregivers’ sensitivity. Mean intraclass correlations (two-way mixed,

absolute agreement) was .73 (range = .69 to .75). Internal consistencies of this scale were .74 (pretest) and .83 (posttest). During data collection, sensitivity of 10 caregivers was doubly coded, resulting in an intraclass correlation of .95. Because scores on the three unstructured episodes and the two structured play episodes did not differ significantly, mean sensitivity scores were aggregated across these five episodes.

**Caregiving attitude.** Two weeks after the posttest, caregivers were sent a questionnaire regarding their attitude toward sensitive caregiving and limit setting (Bakermans-Kranenburg & Van IJzendoorn, 2003). They were asked to indicate their attitudes on 17 items, ranging from (1) *totally disagree* to (5) *totally agree*. Examples of items are, “In my opinion, I should praise my children in childcare at least once a day,” and “My children in childcare must learn that I will get angry when they do not listen to me” (reversed). Cronbach’s alpha was 0.64. Caregiving attitude was only assessed in the posttest to prevent a testing effect of caregivers being aware of the focus of the study.

**Caregiver feedback.** Two weeks after the posttest, we sent caregivers a questionnaire to evaluate the intervention regarding several topics; for example, usefulness, number of sessions, the video feedback, and the contact with the intervener.

## Data Analysis

To test whether changes in global quality of child care and observed caregiver sensitivity occurred, we conducted repeated measures analyses of variance (ANOVAs), controlling for the baseline (global quality) or the pretest (observed sensitivity) measures. An independent *t* test was used to compare caregiver attitude between the control group and the intervention group. Missing data were present at item level only: these missing item scores were filled in with caregiver mean scores on the other items from that particular scale. Interveners had comparable backgrounds in terms of education. They were all graduate students at the Centre for Child and Family Studies. We found no intervener effects in the intervention and control groups.

## Results

Descriptive statistics of the pretest, baseline, and posttest measures are shown in Tables 1 and 2. Intervention effects on global quality, observed sensitivity, and caregiving attitude are reported. In addition, caregiver feedback is evaluated (see Table 3).

## Descriptives

In Table 2, correlations are shown between the measures during pretest, baseline, and posttest. For the intervention group, a significant association was present between global quality during baseline and observed sensitivity during the posttest ( $r = .55, p < .01$ ) and between observed sensitivity during the pretest and global quality during posttest ( $r = .50, p < .01$ ). In the control group, global quality during

Table 2  
Pearson Correlations Between Baseline/Pretest and Posttest

Variable	Baseline/pretest		Posttest		
	Global quality	Observed sensitivity	Global quality	Observed sensitivity	Caregiving attitudes
Baseline/ pretest					
Global quality	—	0.33	0.56**	0.34	0.09
Observed sensitivity	0.04	—	0.32	0.43*	-0.10
Posttest					
Global quality	0.36	0.50*	—	0.40	0.11
Observed sensitivity	0.55**	0.40	0.36	—	-0.19
Caregiving attitudes	-0.14	-0.10	0.24	-0.10	—

Note. Correlations within the intervention group are displayed below the diagonal and correlations within the control group are displayed above the diagonal.

\*  $p < .05$ . \*\*  $p < .01$ .

baseline and posttest were significantly associated ( $r = .56$ ,  $p < .01$ ). Also, observed sensitivity during pretest and posttest were associated ( $r = .43$ ,  $p < .05$ ).

### Global Quality

To test whether the intervention resulted in changes in global quality, we conducted repeated measures ANOVAs on the IT-CC-HOME. No main effects were present for time, Pillai's  $F(1, 46) = 1.30$ ,  $p = .26$ ,  $\eta^2_{\text{partial}} = .03$ ; or group, Pillai's  $F(1, 46) = 0.09$ ,  $p = .77$ ,  $\eta^2_{\text{partial}} < .00$ ; but a significant interaction effect was found, Pillai's  $F(1, 46) = 4.76$ ,  $p < .05$ ,  $\eta^2_{\text{partial}} = .09$ . This interaction is shown in Figure 2: Global quality significantly increased in the intervention group but not in the control group.

### Observed Caregiver Sensitivity

No significant main effects of time, Pillai's  $F(1, 46) = 1.54$ ,  $p = .22$ ,  $\eta^2_{\text{partial}} = .03$ ; or group, Pillai's  $F(1, 46) = 2.42$ ,  $p = .13$ ,  $\eta^2_{\text{partial}} = .05$ ; were present for observed caregiver sensitivity. Also, no interaction effect emerged, Pillai's  $F(1, 46) = 0.39$ ,  $p = .54$ ,  $\eta^2_{\text{partial}} = .01$ .

### Caregiving Attitude

After the intervention, caregivers who received the intervention reported a more positive attitude toward caregiving and limit setting ( $M = 3.97$ ,  $SD = 0.41$ ,  $SE = 0.09$ ) than caregivers in the control group ( $M = 3.69$ ,  $SD = 0.42$ ,  $SE =$

$0.08$ ),  $t(46) = 2.29$ ,  $p < .05$ ; confirmatory fit index =  $0.03-0.52$ ,  $d = 0.69$ .

### Caregiver Feedback

Almost all caregivers reported that the VIPP-CC was useful (18/24) or very useful (4/24). The majority (19/24) of caregivers thought that the number of sessions was adequate. One of the caregivers thought that six sessions were too few (1/24), whereas four caregivers thought these were many (3/24) or too many (1/24). Almost all caregivers experienced the contact with the intervener as pleasant (14/24) or very pleasant (9/24). Only one of them was neutral about the contact with the intervener (1/24). None of the caregivers experienced the visits as interfering. Some caregivers responded they felt tense (9/24) or very tense (1/24) when looking at themselves on video. Nine felt neutral (9/24), and five of them responded that they did not feel tense (3/24) or not tense at all (2/24). Finally, most caregivers indicated that they found the intervention not very (12/24) beneficial to their own children (adjusted standardized residual = 4.3), but beneficial to the children in child care (18/24), the caregivers themselves (20/24), and the child care setting as a whole (21/24; see Table 3).

### Discussion

On the basis of the findings of previous intervention studies in families and child care, the VIPP-SD was selected

Table 3  
Caregiver Feedback on Whether the Intervention Was Beneficial

Beneficial for:	Not very beneficial	Beneficial	Very beneficial	Total
Children in child care	6 (-0.4)	13 (0.7)	5 (-0.4)	24
Caregiver	4 (-1.5)	13 (0.7)	7 (0.8)	24
Caregiver's own children <sup>a</sup>	12 (4.3)	3 (-2.8)	2 (-1.3)	17
Child care setting	3 (-2.0)	14 (1.1)	7 (0.8)	24

Note. Total number (adjusted standardized residuals).

<sup>a</sup> For 7 caregivers, this was not applicable, as they did not have (young) children themselves.

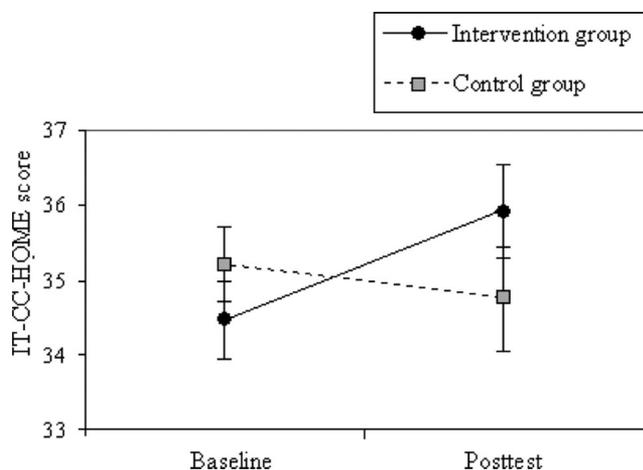


Figure 2. Global quality in the intervention group ( $n = 24$ ) and the control group ( $n = 24$ ) during baseline and posttest.

as an intervention to enhance global quality and caregiver sensitivity in home-based child care. A randomized controlled design showed that global child care quality had improved in the intervention group in comparison with the control group. In addition, caregivers in the intervention group showed a more positive attitude toward sensitive caregiving and limit setting than caregivers in the control group. The expected increase in observed sensitivity was not found.

### Global Quality

Global child care quality improved significantly through the intervention. The effect size ( $\eta^2_{\text{partial}} = 0.09$ ) of the interaction was 0.09, which is a medium ( $\eta^2_{\text{partial}} = 0.06$ )-to-large ( $\eta^2_{\text{partial}} = 0.14$ ) effect size (Kirk, 1996). Children who were attending caregivers in the intervention group were in a more stimulating environment after the intervention. This finding is important, because global child care quality has been found to affect children's cognitive and social development (Peisner-Feinberg et al., 2001). Other studies with the VIPP approach also showed medium-to-large effect sizes on parental sensitivity in various samples: insecure mothers ( $d = 0.49$ ; Klein Velderman et al., 2006), insensitive mothers ( $d = 0.78$ ; Kalinauskienė et al., 2009), and adoptive mothers ( $d = 0.64$ ; Juffer et al., 2005b). Bradley, Caldwell, and Corwyn (2003) assessed the quality of child care homes using data from the NICHD ECCRN (1996). They reported a mean total score of 34.76 ( $SD = 5.04$ ) on the IT-CC-HOME, based on 43 items. This means that, in total, 81% of the items were scored positively. In our study, 84% of the items were scored positively by caregivers in the intervention group before the intervention. This is comparable with the IT-CC-HOME scores in the NICHD ECCRN study. After the intervention, 88% of the items were scored positively. Our study confirms that the IT-CC-HOME is sensitive to intervention effects, not only in families (for an overview, see Bradley, 1993) but also in home-based child care.

The increase of 4% in our intervention group (compared with a 1% decrease in the control group) not only is a medium-to-large effect size in the conventional sense of randomized control trials but also has clinical relevance. First, we were able to enhance global quality of child care, even in a political climate in which the quality and appreciation of home-based child care in the Netherlands were under pressure. Second, clinical relevance is situated in the fact that this intervention study concerns a group setting with a multiplier effect. That is, an effective intervention focusing on one caregiver will be beneficial for many children under her care, now and in the future.

### Caregiver Sensitivity

Although, after the intervention, caregiving attitude toward sensitive caregiving was significantly higher for caregivers in the intervention group than in the control group, there was no significant difference in observed sensitivity. This may be explained by a ceiling effect because of the relatively high sensitive caregivers in our sample. We selected caregivers who scored a 3 or lower on the CIS (Arnett, 1989). A score of 3 on a 4-point scale, however, represents a relatively sensitive caregiver. In addition, the absence of an increase in observed sensitivity might be due to the ample child-rearing experience of caregivers in our sample. In the study of Stolk et al. (2008), the use of positive discipline strategies had increased after the VIPP-SD, but only for first-time mothers and not for multiparas. Because all caregivers in our intervention group already had experience as parents, we were not able to test whether caregivers taking care of a child for the first time benefited more from the intervention than caregivers with child-rearing experience.

Fukkink and Lont (2007) reported in their meta-analysis that experimental results were smaller in the domain of caregiver skills compared with the domain of caregiver attitudes and knowledge. Attitudes seem to be easier to change than caregiver behavior itself, and attitudinal changes may precede behavioral changes, which may require a longer period of training. However, in the domain of attachment-based family interventions, it has been shown that rather brief interventions (fewer than 16 intervention sessions) were more effective in improving caregiving behavior than long-term interventions (Bakermans-Kranenburg et al., 2003). Taking care of several same-aged children at the same time may be more difficult than interacting with one or two children in the same age range, as is the case in most families. In previous studies with the VIPP-SD, the intervention was directed at mothers interacting with only one child. It is quite possible that the improvement of sensitive caregiving in a group setting may require more intervention sessions.

In addition, the timing of the posttest may be problematic. Effects of interventions may lie dormant directly after the intervention (sleeping effect) but may become noticeable later on. In our study, the posttest took place 2 weeks after the last intervention session. Possibly, an effect on observed caregiver sensitivity could have been detected if the posttest had taken

place later. The more positive caregiving attitudes may be the first (necessary) step in changing caregiver behavior.

### Limitations

The sample size of this study is relatively small, which may have resulted in a lack of statistical power to detect a moderate intervention effect. Also, our small sample size prevented us from comparing subgroups of caregivers. Some caregivers might benefit more from the intervention than others. In addition, tests to evaluate how dropouts in the intervention and control groups differed from caregivers who stayed in the study were underpowered because of small sample sizes. As already mentioned, another limitation of the study is the relatively high level of sensitivity before the intervention, which may have caused the ceiling effect and might have decreased the intervention effects. Also, the low variance in observed sensitivity scores may have contributed to not having found significant intervention effects. Another limitation is the low internal consistency—although similar to what has been found in previous studies—of the IT-CC-HOME (Cronbach's alpha = 0.60) and the Caregiving Attitude questionnaire (Cronbach's alpha = 0.64). Except for the NICHD study (Vandell, 1996) in which an internal consistency of 0.81 was reported, we are not aware of other studies that used the IT-CC-HOME in home-based child care. The authors of the CC-HOME inventories stated, "We no longer report internal consistencies estimates for the HOME Inventories. The CC-HOMEs are composed of cause rather than effect indicators and reliability estimates such as the alpha coefficient assume effect indicators" (Bradley et al., 2003, p. 308).

In total, 17 caregivers (26%) dropped out after the selection phase, which may have resulted in a selection bias. However, attrition seems unavoidable in intervention studies in childcare even during the intervention phase. For example in the family-to-family study, 27% of the caregivers dropped out during the intervention phase (Kontos et al., 1996). In the individualized REACH program, 43% of the caregivers dropped out (Espinosa et al., 2009). Although we lost caregivers at the start of the intervention, we were able to retain all caregivers during the complete intervention phase of the study.

### Generalizability

Participation to this intervention study was voluntary. In the Netherlands, caregivers are not obliged to participate in education courses annually (as is the case in, e.g., Canada; Bigras et al., 2010). Caregivers in our intervention and control groups may have been relatively sensitive, high functioning, and motivated. Considering that our group of caregivers already offered relatively high-quality care, the evidence of the intervention effect found on global child care quality is even stronger: We expect a larger effect on caregivers scoring lower on sensitivity. As the intervention was implemented in caregivers of different ages and with various levels of experience and education in child care, the results indicate that the entire range of caregivers would

benefit from the intervention program. Our experience with implementing the VIPP-SD intervention, as well as testing its effectiveness, demonstrates that the intervention can be delivered cost-effectively in this child care setting.

### Implications

This study is a first step in adapting and testing the VIPP-SD, originally developed for interventions in families, in child care. The intervention was effective in enhancing the global quality of child care homes, a setting that is relatively similar to the home setting. Future studies might focus on adapting the intervention program even further for child care centers with larger groups of children. To bolster the intervention, it may be useful to focus on less sensitive caregivers and possibly increase the number of sessions to improve caregiver sensitivity in a group setting. Another improvement could be to focus even more on the group situation of child care by explaining how to equally divide caregivers' attention across all children present during child care. A next step will be to study the effects of the VIPP-CC on both caregivers and children to study the causal link from intervention through caregiver attitudes and skills to child behavior and development.

### Conclusion

The present study revealed that the short-term, behaviorally oriented VIPP-CC was effective in enhancing global quality in home-based child care. Although observed caregiver sensitivity did not increase after the intervention, caregiver attitudes toward sensitive caregiving were higher in the intervention group compared with the control group. This study shows that investing in the improvement of child care quality through video-feedback interventions is highly valuable for an increasing number of children attending this type of child care.

### References

- Aguire, B. E., & Marshall, M. G. (1988). Training family day care providers using self-study written video materials. *Child & Youth Care Quarterly, 17*, 115–127.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. (1974). Infant-mother attachment and social development. In M. P. Richards (Ed.), *The introduction of the child into a social world* (pp. 99–135). London: Cambridge University Press.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Arnett, J. (1989). Caregivers in day-care centers: Does training matter? *Journal of Applied Developmental Psychology, 10*, 541–552.
- Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2003). *Vragenlijst voor kennis en attitudes over de opvoeding* [Questionnaire concerning knowledge and attitudes towards parenting]. Unpublished manuscript, Leiden University, Leiden, the Netherlands.
- Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., & Juffer, F. (2003). Less is more: A meta-analysis of sensitivity and attachment interventions in early childhood. *Psychological Bulletin, 129*, 195–215.

- Begg, C., Cho, M., Eastwood, S., Horton, R., Moher, D., Olkin, I., et al. (1996). Improving the quality of reporting of randomized controlled trials: The CONSORT statement. *The Journal of the American Medical Association*, *276*, 637–649.
- Bigras, N., Bouchard, C., Cantin, G., Brunson, L., Coutu, S., Lemay, L., . . . Charron, A. (2010). A comparative study of structural and process quality in center-based and family-based child care services. *Child Youth Care Forum*, *39*, 129–150.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.
- Bradley, R. H. (1993). Children's home environments, health, behavior, and intervention efforts: A review using the HOME inventory as a marker measure. *Genetic, Social, and General Psychology Monographs*, *119*, 439–490.
- Bradley, R. H., Caldwell, B. M., & Corwyn, R. F. (2003). The Child Care HOME inventories: Assessing the quality of family child care homes. *Early Childhood Research Quarterly*, *18*, 294–309.
- Burchinal, M. R., Cryer, D., Clifford, R. M., & Howes, C. (2002). Caregiver training and classroom quality in child care centers. *Applied Developmental Science*, *6*, 2–11.
- Burchinal, M. R., Howes, C., & Kontos, S. (2002). Structural predictors of child care quality in child care homes. *Early Childhood Research Quarterly*, *17*, 87–105.
- Caldwell, B. M., & Bradley, R. H. (2003). *Home observation for measurement of the environment: Administration manual*. Little Rock: University of Arkansas Press.
- Clarke-Stewart, K. A., Lowe Vandell, D., Burchinal, M., O'Brien, M., & McCartney, K. (2002). Do regulable features of child-care homes affect children's development? *Early Childhood Research Quarterly*, *17*, 52–86.
- De Kruif, R. E. L., Vermeer, H. J., Fukkink, R. G., Riksen-Walraven, J. M. A., Tavecchio, L. W. C., Van IJzendoorn, M. H., & van Zeijl, J. (2007). *De nationale studie pedagogische kwaliteit kinderopvang: Eindrapport project 0 en 1* [The national study on child care quality: Final report projects 0 and 1]. Amsterdam: NCKO.
- De Wolff, M. S., & Van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, *68*, 571–591.
- Doherty, G., Forer, B., Lero, D. S., Goelman, H., & LaGrange, A. (2006). Predictors of quality in family child care. *Early Childhood Research Quarterly*, *21*, 296–312.
- Elicker, J., Fortner-Wood, C., & Noppe, I. C. (1999). The context of infant attachment in family child care. *Journal of Applied Developmental Psychology*, *20*, 319–336.
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high risk sample. *Child Development Monographs*, *50*, 147–166.
- Espinosa, L., Mathews, M. C., Thornburg, K. R., & Ispa, J. (1999). Training and rural child care providers: Results of Project Reach. *NHSA Dialog*, *2*, 361–388.
- Fukkink, R. G., & Lont, A. (2007). Does training matter? A meta-analysis and review of caregiver training studies. *Early Childhood Research Quarterly*, *22*, 294–311.
- Goossens, F. A., & Van IJzendoorn, M. H. (1990). Quality of infants' attachment to Professional caregivers: Relation to infant-parent attachment and daycare characteristics. *Child Development*, *61*, 832–837.
- Groeneveld, M. G., Vermeer, H. J., Van IJzendoorn, M. H., & Linting, M. (2010). Children's wellbeing and cortisol levels in home-based and center-based childcare. *Early Childhood Research Quarterly*, *25*, 502–514. doi:10.1016/j.ecresq.2009.12.004
- Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2005a). Enhancing children's socio-emotional development: A review of intervention studies. In D. M. Teti (Ed.), *Handbook of research methods in developmental science* (pp. 213–232). Oxford, England: Blackwell.
- Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2005b). The importance of parenting in the development of disorganized attachment: Evidence from a preventive intervention study in adoptive families. *Journal of Child Psychology and Psychiatry*, *46*, 263–274.
- Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2008). *Promoting positive parenting: An attachment-based intervention*. Mahwah, NJ: Erlbaum.
- Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2009). Attachment-based intervention: Heading for evidenced-based ways to support families. *ACAMH Occasional Papers NO. 29, Attachment: Current Focus and Future Directions*, 47–57.
- Kalinauskienė, L., Cekuoliene, D., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Juffer, F., & Kusakovskaja, I. (2009). Supporting insensitive mothers: The Vilnius randomized control trial of video feedback intervention to promote maternal sensitivity and infant attachment. *Child: Care, Health & Development*, *35*, 613–623.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Education and Psychological Measurement*, *56*, 746–759.
- Klein Velderman, M., Bakermans-Kranenburg, M. J., Juffer, F., & Van IJzendoorn, M. H. (2006). Effects of attachment-based interventions on maternal sensitivity and infant attachment: Differential susceptibility of highly reactive infants. *Journal of Family Psychology*, *20*, 266–274.
- Kontos, S., Howes, C., & Galinsky, E. (1996). Does training make a difference to quality in family child care? *Early Childhood Research Quarterly*, *11*, 427–445.
- National Institute of Child Health and Human Development Early Child Care Research Network. (1997). Child care in the first year of life. *Merrill-Palmer Quarterly*, *43*, 340–360.
- National Institute of Child Health and Human Development Early Child Care Research Network. (2005). Early child care and children's development in the primary grades: Follow-up results. *American Educational Research Journal*, *42*, 537–570.
- Patterson, G. R. (1982). *Coercive family process: A social learning approach*. Eugene, OR: Castalia.
- Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R., Culkin, M. L., Howes, C., Kagan, S. L., & Yazejian, N. (2001). The relation of preschool childcare quality to children's cognitive and social developmental trajectories through second grade. *Child Development*, *72*, 1534–1553.
- Rusby, J. C., Smolkowski, K., Marquez, B., & Taylor, T. K. (2008). A small-scale randomized efficacy trial of Carescapes: Enhancing children's social development in child care homes. *Early Childhood Research Quarterly*, *23*, 527–546.
- Statistics Netherlands. (2008). *Landelijke jeugdmonitor Kinderopvang 2008* [National Youth Monitor 2008]. The Hague, the Netherlands: Author. Retrieved May 18, 2010, from <http://www.cbs.nl/NR/rdonlyres/6A748BFC-80A3-4DFE-8D4C-B3F3A99CB605/0/2008k4jeugdmonitor.pdf>
- Stein, A., Woolley, H., Senior, R., Hertzmann, L., Lovel, M., Lee, J., . . . Fairburn, C. (2006). Treating disturbances in the relationship between mothers with bulimic eating disorders and their infants: A randomized, controlled trial of video feedback. *The American Journal of Psychiatry*, *163*, 899–906.
- Stolk, M. N., Mesman, J., Van Zeijl, J., Alink, L. R. A., Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., . . . Koot, H. M. (2008). Early parenting intervention: Family risk

- and first-time parenting related to intervention effectiveness. *Journal of Child and Family Studies*, *17*, 55–83.
- Vandell, D. L. (1996). Characteristics of infant child care: Factors contributing to positive caregiving. *Early Childhood Research Quarterly*, *11*, 296–306.
- Vandell, D. L., Belsky, J., Burchinal, M., Steinberg, L., Vandergrift, N., & the National Institute of Child Health and Human Development Early Child Care Research Network. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD Study of Early Child Care and Youth Development. *Child Development*, *81*, 737–756.
- Van IJzendoorn, M. H., Tavecchio, L. W. C., Verhoeven, M. K. E., Reiling, E. J., & Stams, G. J. J. (1996). De kwaliteit van de Nederlandse kinderopvang [Childcare quality in the Netherlands]. *Nederlands Tijdschrift voor Opvoeding, Vorming en Onderwijs*, *12*, 286–313.
- Van Zeijl, J., Mesman, J., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Juffer, F., Stolk, M. N., . . . Alink, L. R. A. (2006). Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behavior problems: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *74*, 994–1005.

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