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### Child care quality in the Netherlands: From quality assessment to intervention

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## CHAPTER 4

# Effects of the Caregiver Interaction Profile Training on Caregiver-Child Interactions in Child Care Centers



Foto: Joods Historisch Museum

Helmerhorst, K. O. W., Riksen-Walraven, J. M. A., Fukink, R. G., Tavecchio, L. W. C., & Gevers Deynoot-Schaub, M. J. J. M. (2014). *Effects of the Caregiver Interaction Profile Training on caregiver-child interactions in child care centers*. Manuscript submitted for publication.

**Abstract**

In this study we used a randomized controlled trial to examine the effects of a five-week video feedback training for caregivers in early child care centers aimed at improving six key interactive caregiver skills: Sensitive responsiveness, respect for autonomy, structuring and limit setting, verbal communication, developmental stimulation, and fostering positive peer interactions. The sample included 68 mixed-age groups from 33 child care centers (35 intervention groups and 33 control groups) with a total of 139 caregivers. Results at posttest indicate a significant positive training effect on all six caregiver interactive skills. Three months after the posttest, caregivers in the experimental group still scored significantly higher on sensitive responsiveness, respect for autonomy, verbal communication, and fostering positive peer interactions than caregivers in the control group. Possible ways to further improve the training and to implement it in practice and education are discussed.

## 4.1 Introduction

Numerous studies have demonstrated the importance of early child care quality for children's socio-emotional and academic development (for an overview see Belsky et al., 2007; Vandell & Wolfe, 2000; Vandell et al., 2010). The quality of caregiver-child interactions is generally acknowledged as a key aspect of quality (e.g., Vandell & Wolfe, 2000); high-quality interactions with adults have been characterized as proximal processes through which young children develop (Bronfenbrenner & Ceci, 1994). Therefore, it is important to monitor child care quality and improve it when needed. In The Netherlands, the quality of child care has been assessed repeatedly with the internationally widely used Infant/Toddler Environment Rating Scale-Revised (ITERS-R; Harms, Cryer, & Clifford, 2003) and Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford, & Cryer, 1998), which broadly and globally assess the quality of the child care environment. To get a more detailed picture of the caregiver-child interaction, we developed the Caregiver Interaction Profile (CIP) scales, to be applied in combination with the ITERS-R and ECERS-R. The CIP scales rate six key skills of caregivers for interacting with 0- to 4-year-old children: *Sensitive responsiveness*, *respect for autonomy*, *structuring and limit setting*, *verbal communication*, *developmental stimulation*, and *fostering positive peer interactions* (for background, development, and validation results, see Helmerhorst, Riksen-Walraven, Vermeer, Fukkink, & Tavecchio, 2014b).

In a next study, we applied the CIP scales in a large nationally representative sample of caregivers in Dutch child care centers (Helmerhorst, Riksen-Walraven, Gevers Deynoot-Schaub, Tavecchio, & Fukkink, 2014a). The results showed caregivers to score highest, on average, on the three more basic caregiving skills, i.e., sensitive responsiveness, respect for autonomy, and structuring and limit setting, although about one third of the caregivers scored inadequate or moderate on these skills, indicating that there is still room for improvement. Scores were clearly lower for the more "educational" skills, i.e., verbal communication, developmental stimulation, and fostering positive peer interactions, with the majority of the caregivers scoring in the moderate to inadequate range. These results are in line with findings in the United States (Guo, Piasta, Justice, & Kaderavek, 2010; La Paro et al., 2009; Mashburn et al., 2008; Thomason & La Paro, 2009), Australia (Tayler, Ishimine, Cloney, Cleveland, & Thorpe, 2013) and Spain (Sandstrom, 2012), and underscore the need to improve caregivers' skills by training and professional development (La Paro et al., 2009; LoCasale-Crouch et al., 2007; Mashburn et al., 2008). Based on the above results we therefore developed a training program for caregivers to improve the six interactive skills included in the Caregiver Interaction Profile. The present study examined the effects of this training using a randomized controlled trial.

*Earlier Studies of the Effects of Training Programs to Improve Caregiver-Child Interactions*

In designing the training program, we first reviewed earlier effect studies to identify effective features of training programs for improving caregiver-child interactions. In a meta-analysis of effect studies published between 1998 and 2005, Fukkink and Lont (2007) examined the effects of a broad set of training programs directed at caregivers in child care. They demonstrated that, on average, training significantly improved caregiver skills. However, not all training programs were effective. The largest effects were found for programs with a fixed curriculum and programs including fewer trainees. Large-scale programs designed for a variety of training formats and for a wide variety of learners were less effective. Furthermore, larger effects were reported in studies using outcome measures that were closer aligned with the training content. The meta-analysis included only four studies with a randomized controlled trial (RCT) design – the design that is now generally considered the “gold standard” for assessing intervention effects (Fantuzzo et al., 1996; Fantuzzo et al., 1997; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Weitzman, & Greenberg, 2004). All four studies used individualized video feedback and showed significant effects of training on caregivers’ interactions with children. Trained caregivers were more emotionally supportive (Fantuzzo et al., 1996; Fantuzzo et al., 1997) as well as more verbally supportive and better able to facilitate peer interactions (Girolametto et al., 2003; Girolametto et al., 2004).

Since the meta-analysis by Fukkink and Lont (2007), other RCT studies have been published which examined the effects of an intervention to improve caregiver interactive skills. We summarize the results of the five most relevant studies. First, Raver et al. (2008) demonstrated that preschool teachers who received five 6-hour training sessions in behavior management and weekly coaching by mental health consultants who provided individual on-site feedback to the teachers throughout the year, had higher scores for positive climate, teacher sensitivity, and behavior management as measured with the Classroom Assessment Scoring System (CLASS; La Paro, Pianta, & Stuhlman, 2004), than caregivers in a control group.

In a second study, Pianta, Mashburn, Downer, Hamre, and Justice (2008) evaluated the web-mediated MyTeachingPartner program (MTP), which includes video exemplars and individualized feedback targeted at caregivers’ own interactions with children. The MTP program is based on the conceptual framework of the CLASS (Pianta, LaParo, & Hamre, 2008) for defining classroom interactions. Pianta et al. (2008) demonstrated that teachers who received the individualized MTP consultation for an entire year showed significantly greater increases in the quality of their interactions than teachers in the web-only control condition who only had access to video clip examples of high-quality interactions.

In a third randomized controlled study, Domitrovich et al. (2009) examined the effects of a program for Head Start classroom teachers to improve teaching quality in both the emotional-behavioral and cognitive-linguistic domain. The one-year

program involved professional development workshops and weekly mentoring in the classroom by trained educational consultants. Domitrovich et al. (2009) showed that the program improved the teachers' language/literacy stimulation and emotional support to the children in their classroom.

Fourth, Piasta and colleagues (2012) evaluated the effects of a personal development program for preschool teachers to improve their conversational responsiveness. The program included workshops and, every two weeks, written individual feedback on the teachers' own videotaped classroom interactions. Piasta et al. (2012) demonstrated that the teachers who received the program showed significantly larger improvements in communication-facilitating strategies than teachers in a comparison group who received a comparable program that was not specifically focused on their conversational responsiveness.

Finally, a video feedback intervention in Dutch child care centers, aimed at improving caregiver sensitivity and – to a lesser extent - verbal stimulation, showed positive effects on the relevant caregiver interactive skills (Fukkink & Tavecchio, 2010). These effects remained visible at follow-up test, three months after the video feedback intervention. The program usually included four weekly or two-weekly individual sessions, during which trainer and caregiver together discussed videos of the caregivers' own interactions with the children in their group.

### *The Present Study*

Altogether, results from earlier effect studies show that it is possible to improve caregiver's interactive skills through training, although there is relatively little evidence for caregivers of very young children (0- to 2-year-olds). Most studies pertained to preschool teachers of 2- to 5-year-old children. Furthermore, although the studies are difficult to compare, their results allow several conclusions that are relevant for decisions regarding the content, method, and duration of the intervention that we aimed to develop.

First, with regard to the intervention method, individual video feedback on caregivers' own everyday interactions with the children in their group appeared to be an effective method. We decided to adopt this method, in combination with an introductory meeting to introduce and discuss the conceptual framework.

Second, with regard to the content of the training program, it is important to note that the largest effects were found in effect studies that used outcome measures that were closely aligned with the content of the program. Given that we aimed to improve the six caregiver interactive skills included in the CIP scales, which we therefore used as outcome measures in the present effect study, we based the training on the same conceptual framework that also underlies the CIP scales.

Third, with regard to the duration of the training, the programs reviewed above showed a broad variation in duration, from four sessions to an entire year. The effect studies demonstrated that even the relatively short program evaluated by Fukkink and Tavecchio (2010) was effective. This is in line with the conclusion by

Bakermans-Kranenburg, Van IJzendoorn, and Juffer (2003) from a meta-analysis of intervention programs aimed at improving parent-child interactions. They demonstrated that programs with a moderate number of sessions (less than 16) were more effective than programs with more sessions, and in addition that effectiveness of programs with less than 5 sessions was comparable to programs with 5 to 16 sessions. In line with this, we opted for a training with 5 weekly sessions.

In sum, based on our own earlier studies with the CIP scales in Dutch child care centers and on the results of prior effect studies of other intervention programs for caregivers and teachers, we developed a 5-week video feedback training for caregivers, based on the conceptual framework underlying the CIP scales and aiming to improve the 6 CIP skills. The present RCT study examined the effects of this CIP training program.

## 4.2 Method

### *Participants and Randomization*

Child care groups in this study were recruited from child care centers in and around the city of Amsterdam, The Netherlands. Directors of the child care centers responded to appeals in (digital) newsletters and announcements on child care websites.

Eligibility criteria were: (1) child care centers had to have mixed-age groups and (2) had to participate with an even number of groups to assign to the study. In The Netherlands, three types of child care groups are distinguished: infant groups (0- to 2-year-olds), preschool groups (2- to 4-year-olds), and mixed-age groups (0- to 4-year-olds). For this study we selected mixed-age groups to test the effects of the intervention in groups with children across the whole possible age range, and because mixed-age groups are most prevalent in The Netherlands (see Helmerhorst et al., 2014a). Per center, half of the participating groups were randomly assigned to the experimental condition and half to the control condition. When child care organizations participated with multiple centers, we randomly assigned half of the centers (with all participating groups) either to the experimental condition or to the control condition. All caregivers from the groups selected for the study were invited to participate using an informed consent procedure. Out of the invited caregivers, two caregivers – both in the control condition – did not want to be filmed and were therefore not included in the sample. The parents of the children in the selected care groups were also asked to give their informed consent for the filming procedures. Whenever parents did not give permission to film their children, we made sure that these children were not filmed. As a result, groups in which not all parents gave their consent were not excluded from the study.

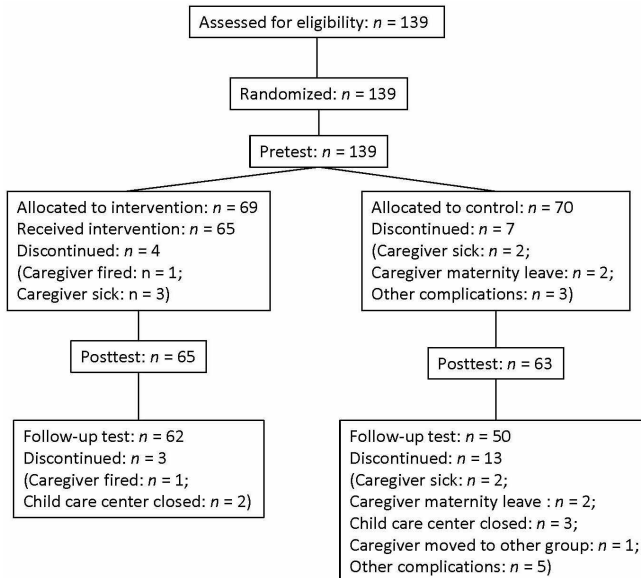
The final study sample included 68 mixed-age groups from 33 child care centers, with 35 intervention groups and 33 control groups. Originally, the sample

## EFFECTS OF THE CAREGIVER INTERACTION PROFILE TRAINING

consisted of 35 intervention groups and 35 control groups, but two control groups dropped out after randomization and before the pretest. A total of 139 caregivers participated in the study. In 64 groups two caregivers participated and in 4 groups only one caregiver participated. Caregivers were all female and were on average 32.4 years old ( $SD = 9.65$ , range 18-56), worked 28.3 hours a week ( $SD = 6.44$ , range 16-40), and had 8.2 years ( $SD = 6.48$ , range 0-25) of working experience in child care. The majority of the caregivers (89.5%) had completed the regular 3-year vocational training in general social-pedagogic work, 7% had a bachelor degree, and 3.5% worked in practice as part of their education. There were no significant differences between caregivers in the experimental and control group at pretest for caregivers' age, education, years of experience, and working hours per week. The average group size at pretest was 10.7 children per group ( $SD = 2.17$ ), with an average child-caregiver ratio of 4.8 children per caregiver ( $SD = 0.83$ ). The average child-caregiver ratio in the experimental group ( $M = 5.0$ ,  $SD = 0.78$ ) was significantly higher than in the control group ( $M = 4.7$ ,  $SD = 0.87$ ),  $t = 2.14$ ,  $p < .05$ , indicating that the ratios were more favorable in the control condition.

Figure 1 shows the flow chart of the participating caregivers per phase. As can be seen, 27 (19%) of the 139 participants dropped out in the course of the intervention program. Main reasons for discontinuing in the control group were maternity leave and caregivers being sick at the day of the observation.

Independent  $t$  tests show no differences between caregivers who completed the intervention and those who dropped out in terms of age, education, working hours per week, and experience at pretest.



**Figure 1** Flow Chart of the Study's Progress in Terms of Numbers of Caregivers

*Design and General Procedure*

This study is a RCT with random assignment of the child care groups to two conditions (experimental or control group). Caregivers' performance on the six CIP scales was the dependent variable in this study. Their performance was rated using the CIP scales at pretest, at a posttest immediately after the end of the intervention, and at a follow-up test three months after the posttest.

Parallel with the present training for caregivers to improve the quality of caregiver-child interactions, a separate consultancy program for center directors was conducted. This consultancy program had a different aim, i.e., improving the global quality of the child care environment as measured with the ITERS-R/ECERS-R; during the consultancy, no attention was given to caregiver-child interactions. When examining the effects of the training for caregivers on their interactive skills as measured with the CIP scales in the present study, we controlled for possible effects of the consultancy program (see below under Measures: ITERS-R/ECERS-R).

For the pretest, posttest, and follow-up assessments, the groups were visited by a trained experimenter from 8 a.m. until approximately 3 p.m. . During the visit, each individual caregiver was filmed for 8 to 10 minutes in each of four different situations: diapering, lunch/snack, structured play, and transition between group activities. The video episodes were rated afterwards by observers who had not visited the care group in question. Further, the trained experimenter applied the ITERS-R and ECERS-R to assess the global quality of the child care environment.

Two weeks after the pretest, the five-week training program started at the same day of the week as the pretest. One week after the last training session, or six weeks after the pretest for the control groups, each group was visited for the posttest by a second experimenter. Three months after the posttest, each group was visited by a third experimenter for the follow-up test. For an optimal comparison, the posttest and follow-up visits were planned on the same day of the week as the pretest. At the pretest, caregivers also completed a questionnaire to collect individual background information (e.g., age, education, work experience).

*The Intervention*

*Experimental group.* The CIP training was developed by the Netherlands Consortium for Child Care Research, based on the conceptual framework underlying the CIP scales (for details on the framework see Helmerhorst et al., 2014b). The CIP scales rate six caregiver skills in interacting with 0- to 4-year-old children in a group setting: *sensitive responsiveness, respect for autonomy, structuring and limit setting, verbal communication, developmental stimulation, and fostering positive peer interactions* (see Method section). Five CIP trainers ( $n = 5$ ) with a bachelor ( $n = 2$ ) or master degree ( $n = 3$ ) in psychology trained the caregivers at the childcare centers during day/work time. All trainers had been trained by the first author using a

manual and video examples. The training for trainers consisted of five sessions in total, including home video assignments.

Table 1 shows an overview of the CIP training. All CIP trainers used a manual with a standardized protocol for delivering the training. The training comprises five onsite visits in total, each lasting two hours per caregiver. The first four visits were individual training sessions with the caregiver receiving feedback on her own videotaped interactions. One caregiver was trained during the morning and the second caregiver in the afternoon. The fifth and final training session was provided to both caregivers of the care group together; the session was cancelled if only one caregiver per group participated in the training. Before each training session, the trainer had analyzed video recordings to be used during that session. For the first session, the trainer used the pretest recording, and for the second, third and fourth session the trainer collected new video material of the caregiver during daily routines in the care group, after the training session. As can be seen in Table 1, the first session was used to inform the caregiver about the upcoming training sessions and procedures, which were described in an intervention booklet that all caregivers received at the start of the first session. Directly after this general introduction, the skills *sensitive responsiveness* and *respect for autonomy* were discussed, because those are considered to be the most basic aspects of caregiver behavior in interactions with children. The set-up of the first four sessions was the same: (1) first the trainer and caregiver read a description and discussed the relevant CIP skill, followed by (2) three exemplary videos of a model caregiver interacting with children. The caregiver was requested to rate the video examples as high, medium, or low in terms of the relevant CIP scale. A description for high, medium and low performance was given in the intervention booklet. After the caregiver had rated the examples, (3) the trainer showed the caregiver short fragments (between 1 and 3 minutes) of the earlier selected video recordings of the caregiver's own interactions. After watching the video fragment together, the trainer asked the caregiver to comment on her own video. Based on the caregiver's reaction, the trainer and caregiver discussed the caregiver's behavior, and when needed reviewed the episode again. Next, (4) the caregiver was asked to indicate goals for the upcoming week by means of a checklist (also in the booklet), which listed concrete behaviors related to the specific CIP skill (e.g., make eye contact with the children, use a warm and calm voice when talking to the children for sensitive responsiveness).

The second training session started with a short review of sensitive responsiveness and respect for autonomy, followed by the same training for two new behaviors: *structuring and limit setting* and *verbal communication*. The third session again started with a review of structuring and limit setting and verbal communication, and proceeded with *developmental stimulation* and *fostering positive peer interactions*. After the third session, the caregiver determined which two out of the six CIP skills she wanted to repeat during the fourth session. The vast majority of caregivers chose to repeat developmental stimulation and fostering positive peer interactions. Whenever a caregiver chose one of the other four skills, developmen-

tal stimulation and fostering positive peer interactions were repeated during the start of the fourth session to ensure that all six skills were discussed two times with all caregivers during the intervention. After the fourth session, the caregiver was asked to choose three to five video episodes that she wanted to show to her colleague during the last session. The fifth and final session was used to share experiences and video episodes between both caregivers. This way, caregivers learned from each other by seeing what the fellow-caregiver had been working on during the past four weeks.

*Control group.* Caregivers in the control group received no training at all and were only contacted for pretest, posttest, and follow-up test observations.

**Table 1** Overview of Sessions and Content of the CIP Training

Session	Content	Individual/ with colleague	Video episodes collected
1	Information about procedures and general introduction  Video feedback <i>sensitive responsiveness &amp; respect for autonomy</i> Setup video feedback: Read description CIP skill Caregiver rates video examples model in high, medium, low Watch caregiver's own video episodes Caregiver fills in behavior checklist	Individual	Pretest
2	Review <i>sensitive responsiveness &amp; respect for autonomy</i>  Video feedback <i>structuring and limit setting &amp; verbal communication</i> Setup video feedback: see session 1	Individual	After session 1
3	Review <i>structuring and limit setting &amp; verbal communication</i>  Video feedback <i>developmental stimulation &amp; fostering positive peer interactions</i> Setup video feedback: see session 1	Individual	After session 2
4	Review <i>developmental stimulation &amp; fostering positive peer interactions</i>  Video feedback booster - two skills of caregiver's own choice Setup video feedback: see session 1	Individual	After session 3
5	Learn from each other - caregivers choose three to five of their own video episodes to show their fellow-caregiver	With colleague	Pretest; after session 1, 2, 3

*Measures*

*CIP scales.* These scales measure six caregiver interactive skills: (1) *sensitive responsiveness* refers to the extent to which a caregiver recognizes children's individual emotional and physical needs, and responds appropriately and promptly to their cues and signals; (2) *respect for autonomy* refers to the extent to which a caregiver

is non-intrusive but instead recognizes and respects the validity of children's intentions and perspectives; (3) *structuring and limit setting* refers to the ability of a caregiver to clearly communicate expectations towards children and structure the situation accordingly and to set clear and consistent limits to the children's behavior; (4) *verbal communication* refers to the frequency and quality of verbal interactions between caregiver and children; (5) *developmental stimulation* concerns the degree to which a caregiver deliberately attempts to foster children's development, e.g., motor skills, cognitive development, and creativity; (6) *fostering positive peer interactions* refers to the extent to which the caregiver guides or facilitates positive interactions between children in the child care group. For a more extensive description of the CIP scales see Helmerhorst et al. (2014b). Each of the six CIP skills is rated on a single 7-point scale (7 = *very high*, 6 = *high*, 5 = *moderate/high*, 4 = *moderate*, 3 = *moderate/low*, 2 = *low*, 1 = *very low*), with detailed behavioral descriptions for each of the seven scale points. Scores on the CIP scales can be classified in three quality levels: *inadequate* (score < 3.5), *moderate* (3.5 ≤ score < 4.5) and *adequate to good* (≥ 4.5).

Thirteen trained observers independently rated the behavior of the caregiver on the six 7-point scales for each of the four videotaped episodes. Observers that rated the video episodes had not visited the care group for data collection. Per caregiver a mean score for each of the six skills was calculated by averaging across the four episodes. Inter-rater reliability (i.e., intraclass correlations computed for 10% of the tapes) was .87 on average (range .71 – 1.0).

*ITERS-R/ECERS-R.* Both the ITERS-R (Harms et al., 2003, for children younger than 30 months) and the ECERS-R (Harms et al., 1998, for children between the ages of 30 and 48 months) were used in each child care group to assess global process quality. This was done to control for possible effects of the parallel consultancy program for center directors, that was aimed at increasing global process quality of child care as measured with these instruments. We applied only those ECERS-R/ITERS-R subscales and items that were addressed during the consultancy: Space and furnishings, Language, Activities, Interactions and Program structure. Subscale items are rated on a 7-point scale with descriptors for the scores 1 (inadequate), 3 (minimal), 5 (good), and 7 (excellent). Total scores for the ITERS-R (26 items) and for the ECERS-R (31 items) at pretest, posttest, and follow-up were computed by averaging item scores across subscales. Given their high correlation ( $r = .87$ ), we aggregated the ITERS-R and ECERS-R total scores. Per care group, two ITERS-R/ECERS-R gain scores were subsequently computed. First, by subtracting the group's combined total ITERS-R/ECERS-R score on the pretest from the total score on the posttest and second, by subtracting the group's combined total ITERS-R/ECERS-R score on the pretest from the total score on the follow-up test. These gain scores were included as a control variable in our analyses testing the effects of the CIP training in the present study.

*Missing Data*

We examined the effects of the CIP training using an *intent-to-treat* analysis, in which all data for all caregivers were analyzed, regardless of attrition. In the experimental group a total of 7 caregivers (10%) discontinued between pretest and follow-up. In the control group a total of 20 caregivers (29%) discontinued. We used Expectation Maximization (EM; SPSS 20.0) to estimate missing parameters for the experimental group and control group separately. Results demonstrated that the data were missing completely at random (Little's MCAR test,  $p = .27$  for the experimental group and  $p = .34$  for the control group). We imputed scores for the missing values of caregivers at posttest and follow-up and ran all analysis with both the imputed data and the original collected data. We found no differences between the analysis with the imputed data and the original collected data.

**4.3 Results***Effects of the CIP training at Posttest*

Table 2 shows the means and standard deviations for the six CIP scales in the experimental and control group at pretest, posttest, and follow-up. Because caregivers (level 1) were nested within groups (level 2), and groups were nested within centers (level 3), we conducted multilevel analysis, using MLwiN. First, to examine the effects of the training at posttest for each of the six scales, we tested whether the CIP scores at posttest differed between the experimental and control group, controlling for the mean pretest CIP scores and controlling for the ITERS-R/ECERS-R gain score (to control for possible effects of the consultancy training for child care directors). The dependent variable in each model was the posttest score for the six CIP scales. Three variables were entered as predictors: a group (dummy) variable which indicated whether the group was allocated to the experimental or the control condition (0 = control, 1 = experimental), the mean pretest score of the CIP skill, and the ITERS-R/ECERS-R pretest-posttest gain score to control for possible effects of the parallel consultancy intervention. Table 3 shows the outcomes of the six multilevel analyses for the separate CIP skills at posttest. We found a significant difference between the experimental and control group at posttest for all of the CIP skills, indicating that the training had a positive effect on sensitive responsiveness, respect for autonomy, structuring and limit setting, developmental stimulation, and fostering positive peer interactions. Table 2 shows that caregivers in the experimental group scored on average about half a scale point (on a 7-point scale) higher for sensitive responsiveness, respect for autonomy, and verbal communication than caregivers in the control group at the posttest (0.55, 0.44, and 0.53, respectively). For structuring and limit setting caregivers in the experimental group scored on average 0.33 higher than caregivers in the control group. For developmental stimu-

lation and fostering positive peer interactions, differences between caregivers' mean scores in the experimental group and control group were more than three-quarters of a scale point (0.77 and 0.84, respectively) in favor of the experimental group.

*Effects of the CIP training at Follow-up*

Next, we analyzed whether the effects of the training were retained at follow-up, three months after completion of the training. Multilevel models for the analysis of the follow-up results were comparable to the posttest models described before, with only the dependent variable being replaced by the follow-up scores on the CIP scales and the ITERS-R/ECERS-R pretest-posttest gain score by the pretest-follow-up gain score. Table 4 shows the outcomes of the six multilevel analyses. The results demonstrate a significant difference between the experimental and control group for four of the six scales at the follow-up: sensitive responsiveness, respect for autonomy, verbal communication, and fostering positive peer interactions. No significant differences were found for structuring and limit setting, and developmental stimulation. As can be seen in Table 2, caregivers in the experimental group still scored about half a scale point higher, on average, than caregivers in the control group (0.45 for sensitive responsiveness, 0.52 for respect for autonomy, 0.57 for verbal communication, and 0.42 for fostering positive peer interactions) at follow-up. This suggests that the positive effects of the training were retained over time for sensitive responsiveness, respect for autonomy, verbal communication, and fostering positive peer interactions.

## CHAPTER 4

**Table 2** Mean Scores and Standard Deviations for the Experimental and Control Group at Pretest, Posttest, and Follow-up Test

Variable	Experimental Group			Control group		
	N	M	(SD)	N	M	(SD)
<i>Pretest</i>						
Sensitive responsiveness	69	5.04	(0.86)	70	5.00	(0.64)
Respect for autonomy	69	4.58	(0.77)	70	4.69	(0.77)
Structuring and limit setting	69	5.09	(0.82)	70	4.91	(0.85)
Verbal communication	69	3.94	(0.76)	70	3.80	(0.62)
Developmental stimulation	69	2.61	(0.82)	70	2.43	(0.75)
Fostering peer interactions	69	2.17	(0.85)	70	1.96	(0.77)
<i>Posttest</i>						
Sensitive responsiveness	65	5.33	(0.66)	63	4.78	(0.78)
Respect for autonomy	65	4.92	(0.85)	63	4.48	(0.73)
Structuring and limit setting	65	5.24	(0.84)	63	4.98	(0.92)
Verbal communication	65	4.25	(0.86)	63	3.72	(0.73)
Developmental stimulation	65	3.02	(0.94)	63	2.25	(0.65)
Fostering peer interactions	65	2.63	(1.06)	63	1.79	(0.76)
<i>Follow-up</i>						
Sensitive responsiveness	62	5.27	(0.80)	50	4.82	(0.82)
Respect for autonomy	62	4.91	(0.77)	50	4.39	(0.76)
Structuring and limit setting	62	5.16	(0.81)	50	4.93	(0.86)
Verbal communication	62	4.03	(0.76)	50	3.46	(0.69)
Developmental stimulation	62	2.53	(0.82)	50	2.33	(0.77)
Fostering peer interactions	62	2.22	(0.85)	50	1.80	(0.71)

### *Meaningful Change*

Although the abovementioned training effects were significant, the absolute differences were relatively small. Nevertheless, the increase in scores can be meaningful if it marks the difference between inadequate care and moderate or adequate to good care. To examine this, we compared the percentages of caregivers who scored in the categories *inadequate* (score < 3.5), *moderate* (3.5 ≤ score < 4.5) and *adequate to good* (≥ 4.5) at the pretest, posttest, and follow-up test. This classification is based on the detailed behavioral description of the seven scale points of each of the six CIP scales, where a score 3 is defined as inadequate and a score 5 as adequate (see Helmerhorst et al., 2014b). Figure 2 shows the percentages of caregivers scoring in the three quality categories on the more basic CIP skills (i.e., sensitive responsiveness, respect for autonomy, and structuring and limit setting). With re-

gard to changes in the experimental group between pretest and posttest, the following picture emerges. At pretest, 3% of the caregivers in the experimental group scored inadequate on sensitive responsiveness, 3% on respect for autonomy, and 2% on structuring and limit setting. After completing the training, none of the caregivers in this group still scored inadequate on sensitive responsiveness and structuring and limit setting. The percentage of caregivers scoring in the inadequate range for respect for autonomy in the experimental group remained stable. Furthermore, the percentage of caregivers scoring in the adequate to good range improved by 9% for sensitive responsiveness (from 81% to 90%) and by 22% for respect for autonomy (from 52% to 74%), but remained stable for structuring and limit setting.

Figure 3 shows the percentages of caregivers scoring in the three quality categories on the educational CIP skills (i.e., verbal communication, developmental stimulation and fostering positive peer interactions). Between pretest and posttest, the percentage of caregivers that scored inadequate decreased by 11% for verbal communication and by 15% for developmental stimulation and fostering positive peer interactions. Furthermore, the percentage of caregivers scoring adequate to good increased by 21% for verbal communication, by 11% for developmental communication, and by 10% for fostering positive peer interactions. Altogether, these results suggest that the significant positive effects of the training on caregivers' interactive skills were relatively small in an absolute sense, but may yet be meaningful for children, as it decreases the percentage of caregivers providing inadequate care and increases the percentage of caregivers providing care of adequate to good quality.

**Table 3** Effects of CIP Training on Caregiver Interactive Skills at Posttest (Multilevel Analysis, *N* = 139)

	Sensitive responsiveness Model		Respect for autonomy Model		Structuring and limit setting Model		Verbal communication Model		Developmental stimulation Model		Fostering peer interactions Model	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Fixed parameters</i>												
Intercept	3.339*	0.386	3.294*	0.407	4.517*	0.395	2.690*	0.346	1.973*	0.237	1.339*	0.206
CIP training	0.561*	0.131	0.544*	0.132	0.287*	0.146	0.483*	0.155	0.659*	0.134	0.767*	0.173
ITERS-R/ECERS-R gain score	0.045	0.127	-0.088	0.128	-0.113	0.147	0.044	0.151	0.100	0.142	-0.049	0.166
SR pretest	0.283*	0.076	-	-	-	-	-	-	-	-	-	-
RA pretest	-	-	0.250*	0.087	-	-	-	-	-	-	-	-
SL pretest	-	-	-	-	0.093	0.076	-	-	-	-	-	-
VC pretest	-	-	-	-	-	-	0.267*	0.085	-	-	-	-
DS pretest	-	-	-	-	-	-	-	-	0.134	0.085	-	-
FPPI pretest	-	-	-	-	-	-	-	-	-	-	0.237*	0.085
<i>Random parameters</i>												
Center level	0.042	0.067	0.064	0.071	0.136	0.099	0.000	0.000	0.244	0.085	0.000	0.000
Group level	0.094	0.080	0.009	0.084	0.080	0.099	0.287	0.079	0.000	0.000	0.320	0.096
Caregiver level	0.338	0.056	0.482	0.080	0.428	0.071	0.300	0.050	0.411	0.061	0.412	0.068
Deviance	283,486		310,445		321,957		300,082		317,436		335,307	

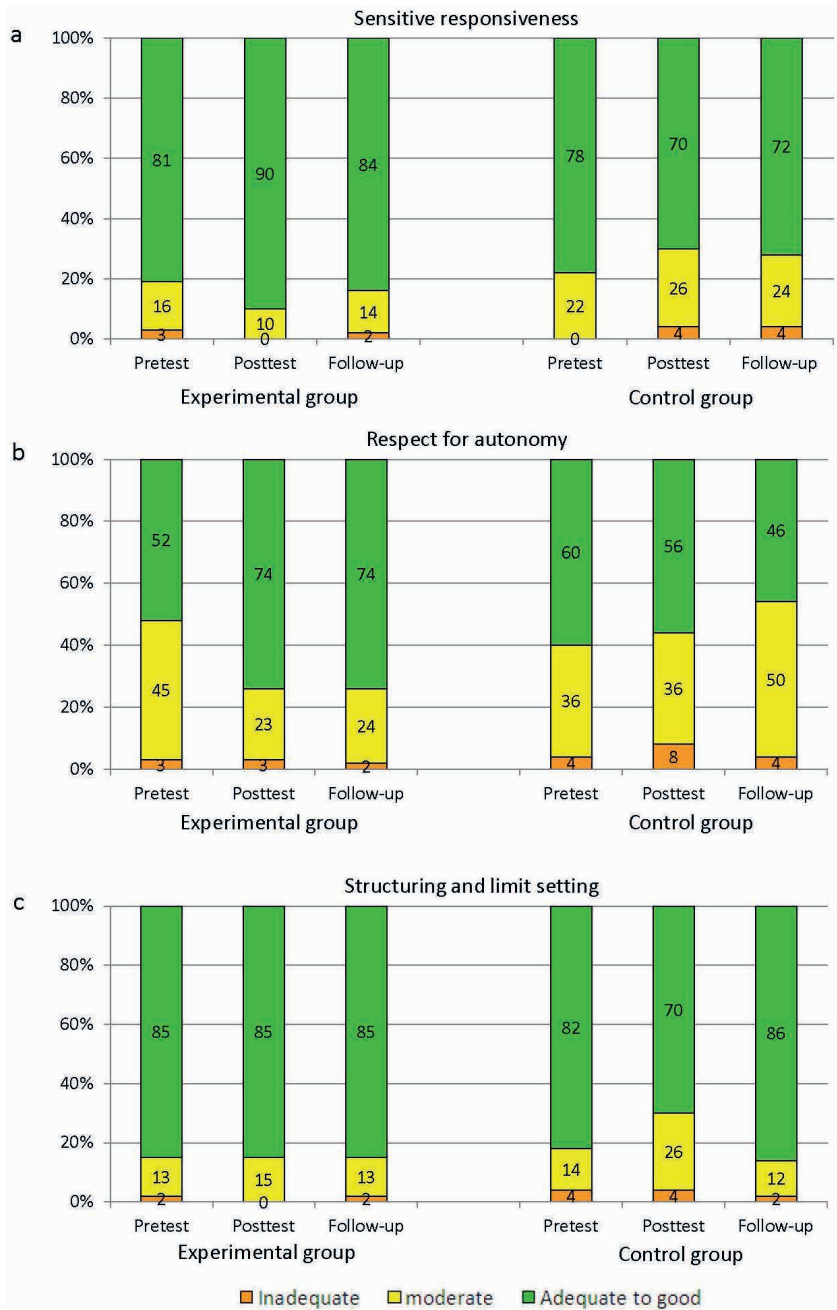
Note. SR = sensitive responsiveness; RA = respect for autonomy; SL = structuring and limit setting; VC = verbal communication; DS = developmental stimulation; FPPI = fostering positive peer interactions.  
\**p* < .05

**Table 4** Effects of CIP Training on Caregiver Interactive Skills at Follow-up (Multilevel Analysis,  $N = 139$ )

	Sensitive responsiveness Model		Respect for autonomy Model		Structuring and limit setting Model		Verbal communication Model		Developmental stimulation Model		Fostering peer interactions Model	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Fixed parameters</i>												
Intercept	3.400*	0.403	2.425*	0.348	4.383*	0.406	2.040*	0.306	1.854*	0.247	1.840*	0.186
CIP training	0.366*	0.134	0.539*	0.122	0.173	0.144	0.488*	0.121	0.238	0.148	0.521*	0.135
ITERS-R/ECERS-R gain score	0.216*	0.100	0.202*	0.091	0.018	0.106	0.122	0.090	-0.014	0.115	-0.005	0.102
SR pretest	0.270*	0.079	-	-	-	-	-	-	-	-	-	-
RA pretest	-	-	0.404*	0.073	-	-	-	-	-	-	-	-
SL pretest	-	-	-	-	0.112	0.079	-	-	-	-	-	-
VC pretest	-	-	-	-	-	-	0.373*	0.076	-	-	-	-
DS pretest	-	-	-	-	-	-	-	-	0.179*	0.088	-	-
FPPI pretest	-	-	-	-	-	-	-	-	-	-	-0.058	0.080
<i>Random parameters</i>												
Center level	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.082	0.017	0.065
Group level	0.126	0.061	0.119	0.050	0.069	0.072	0.111	0.049	0.166	0.105	0.072	0.088
Caregiver level	0.375	0.063	0.258	0.048	0.516	0.086	0.290	0.048	0.402	0.067	0.452	0.075
Deviance	293.375		261.604		324.372		261.343		313.904		306.882	

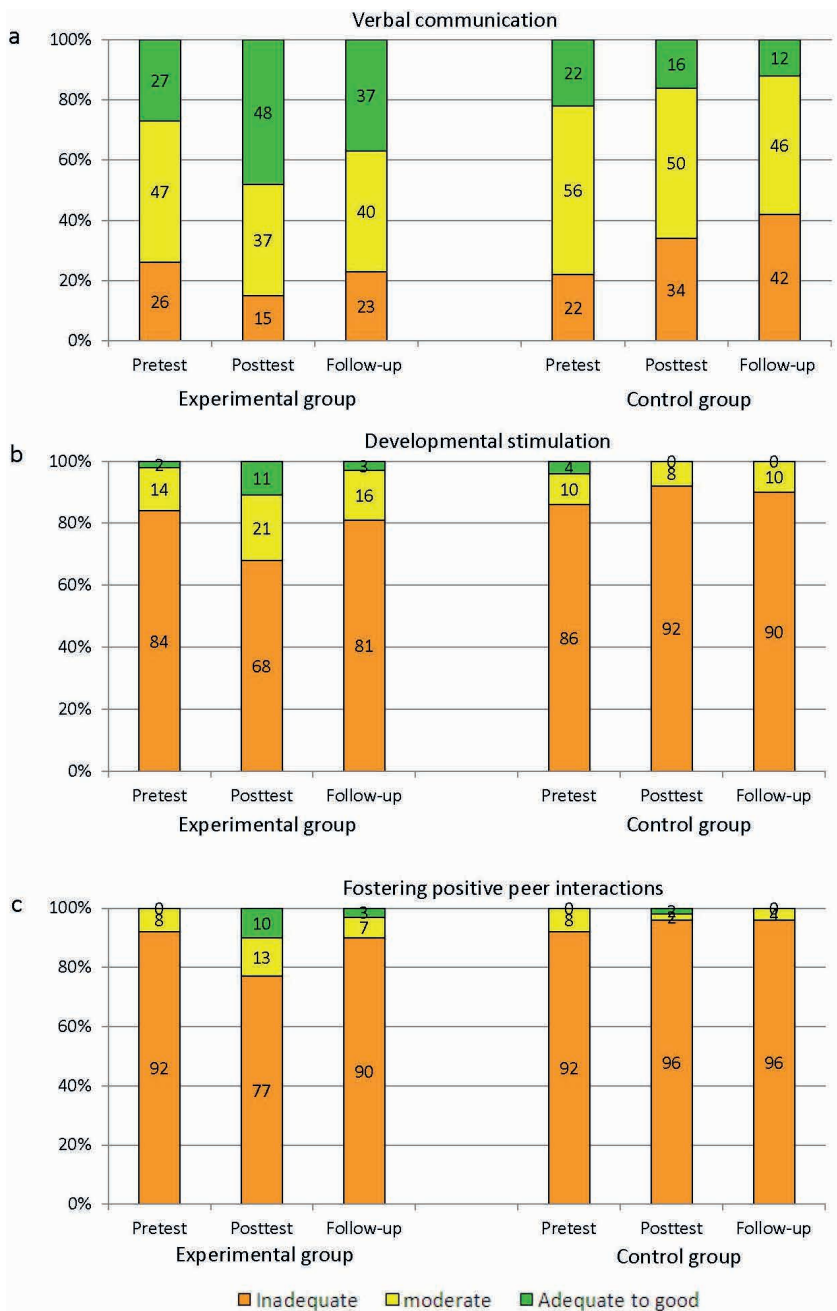
Note. SR = sensitive responsiveness; RA = respect for autonomy; SL = structuring and limit setting; VC = verbal communication; DS = developmental stimulation; FPPI = fostering positive peer interactions.

\* $p < .05$



**Figure 2a-c** Percentages of Caregivers in Experimental Group ( $n = 62$ ) and Control Group ( $n = 50$ ) with Mean Scores “Inadequate”, “Moderate”, and “Adequate to Good” on Sensitive Responsiveness, Respect for Autonomy and Structuring and Limit Setting at Pretest, Posttest and Follow-up.

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**Figure 3a-c** Percentages of Caregivers in Experimental Group ( $n = 62$ ) and Control Group ( $n = 50$ ) with Mean Scores “Inadequate”, “Moderate”, and “Adequate to Good” on Verbal Communication, Developmental Stimulation and Fostering Positive Peer Interactions at Pretest, Posttest and Follow-up.

## 4.4 Discussion

This RCT-study examined the effects of the CIP training, a 5-week video feedback training for caregivers in child care centers aimed at strengthening their interactive skills as measured with the CIP scales. Results at posttest indicate that the training had a positive effect on all six caregiver interactive skills. Three months after the posttest, at follow-up, caregivers in the experimental group still scored significantly higher on sensitive responsiveness, respect for autonomy, verbal communication, and fostering positive peer interactions than caregivers in the control group. Although training effects were relatively small in absolute terms, they appear meaningful in terms of decreasing percentages of caregivers with inadequate scores and increasing percentages of caregivers scoring in the adequate to good range.

The impact of the CIP training was most apparent for caregivers' educational skills (i.e., verbal communication, developmental stimulation and fostering positive peer interactions). This finding is highly relevant because these educational skills are of particular concern in The Netherlands. Results from the pretest scores of the present study (Figure 3) and large Dutch representative samples (Helmerhorst et al., 2014a) show that the majority of caregivers scored in the moderate quality category for verbal stimulation and in the inadequate category for developmental stimulation and fostering positive peer interactions. Given these low scores on the educational skills, it is promising that the results of the present study indicate that it is possible to strengthen these educational skills through video feedback training. But despite the significant improvement on the educational skills at the posttest, most caregivers still scored in the inadequate or moderate quality range after the training (see Figure 3). Furthermore, the increase in educational skills was only temporary; at follow-up, three months after the training, caregivers' scores for the educational skills were back at pretest level. A possible explanation may lie in the very low pretest level for the educational skills, especially for developmental stimulation and fostering positive peer interactions. This low level of educational skills is probably due to the nature of the regular vocational education in general social-pedagogic work that was completed by the vast majority of caregivers in our sample. This education prepares them to provide care for a broad age group (from children to elderly) and has a strong emphasis on care rather than education. So, especially with regard to the educational skills, the CIP training had no foundation to build on, which may explain why the posttest-levels were still low and training effects quickly disappeared. Evidently, a five-week training with only limited attention to the educational skills is not enough to produce sufficient and enduring improvement.

To increase the effect of the CIP training for the educational skills, we would first suggest adding extra sessions for developmental stimulation and fostering positive peer interactions because the initial level for these skills is, generally speaking, low. In the present training, these two skills are focused upon only by the end of the training course, namely during the third and fourth session (see Table 1).

It is very well possible that this did not give the caregivers enough time to strengthen these skills and to integrate them in their everyday behavioral repertoire. Therefore, the duration of the CIP program could be prolonged with additional booster sessions.

To prevent the drop in scores after the posttest we would, in addition, recommend a monitoring system after the training. This could be realized by using a system comparable with MyTeachingPartner of the CLASS (see Pianta et al., 2008). In this training, caregivers upload their own videos online and receive online feedback on their interactive skills complemented with concrete actions points by a trainer. Another and possibly more efficient long-term solution to ensure monitoring would be to provide an in-company training for staff members of the child care centers/organizations to assess and monitor their caregivers' interactive skills. This would require a *train the trainer* program, which we are currently developing. The first phase of the train the trainer program is devoted to training the staff members in reliably observing caregivers' interactive skills with a simplified version of the CIP scales, with high/medium/low ratings instead of a 7-point scale. In a next step, we train the staff members in providing video feedback to the caregivers. Future research should make clear whether the abovementioned adaptations contribute to the effectiveness of the CIP training, also in the long run.

#### *Limitations and Future Directions*

Despite the strengths of this study, including the randomized controlled design, relatively large sample size, and follow-up observations, we also acknowledge some important limitations. First of all, child care centers volunteered to the study, which implies that our sample was selective, which limits generalizability of the findings to the general population of Dutch child care centers. To check for possible selectivity, we compared caregivers' pretest scores in our sample with scores on the CIP scales obtained in a large representative sample of Dutch caregivers in the same period (see Fukkink, Gevers Deynoot-Schaub, Helmerhorst, Bollen, & Riksen-Walraven, 2013). Results indicated no significant differences for any of the CIP scales, except for fostering positive peer interactions. On this scale, caregivers in the present study scored significantly lower than those in the concurrent representative sample ( $M_{present} = 2.03$ ,  $SD_{present} = 0.8$ ,  $M_{representative} = 2.50$ ,  $SD_{representative} = 1.0$ ,  $t = 4.01$ ,  $p < .01$ ), indicating that the present sample is indeed not representative in this respect for caregivers in The Netherlands.

A second limitation lies in the fact that the present CIP training for caregivers was conducted parallel to a consultancy program for directors of the same centers. Although the consultancy program was not directed at improving caregiver interactive skills and although we controlled for possible effects of the consultancy program, possible confounding cannot be completely ruled out as an explanation for the effects of the CIP training. Further research examining the effects of an independently conducted CIP training may clarify this question.

Third, the positive results do not automatically imply that this training is also effective in other countries. The effectiveness of the training may depend, for example, on caregiver education, which shows considerable variation across countries (Oberhuemer, Schreyer, & Neuman, 2010). It should also be kept in mind that the CIP scales were initially developed for use in child care centers in The Netherlands and therefore reflect Dutch childcare values. As described in a former paper (Helmerhorst et al., 2014b) our choice of the six caregiver skills included in the CIP was also based on the results of a survey among different groups of stakeholders in child care, which showed that Dutch parents, caregivers, center directors, and external experts recognized these skills as important child care quality indicators. Although the caregiver skills included in the CIP scales are generally recognized as important by researchers and are also included in measures developed in other countries (e.g., the ORCE, see NICHD ECCRN, 1996; and the CLASS, see La Paro et al., 2004), it cannot be automatically assumed that these skills are also seen as key aspects of pedagogical quality in other countries.

A fourth limitation is that not all caregivers per care group were trained. For practical reasons, we only trained the caregivers that were present during the day of the pretest observations. Because most caregivers work part-time, it is very common in The Netherlands that children are cared for by more than three caregivers during the week. Prior research has shown that caregiver behavior is for the most part determined by individual caregiver characteristics, which suggests that children may experience large differences in the quality of interactions with all the different caregivers in the care group (Helmerhorst et al., 2014b). Therefore, to get a complete picture of children's everyday experiences in the care group, it would be better to observe all caregivers of the care group. To improve the quality of the children's everyday experiences in the care group, it would be beneficial to train all caregivers to strengthen their interactive skills. For future research, we therefore recommend to include all caregivers of the care group in a CIP training. Taking this a step further, it would also be interesting to not only examine the effects of the CIP training on the caregivers' interactive skills, but to also examine its effects on the development and functioning of the children in their care group. This would also make it possible to examine whether including more caregivers per group in the CIP training will indeed increase the effect of the training on the children.

#### *Implications for Policy and Practice*

The results of the present study show that it is possible to strengthen important caregiver interactive skills through an extensive training, which underscores that it is worthwhile to invest in this type of training. The present training could be made available nationally to booster the interactive skills of caregivers in child care centers. The present set-up of the training may be too financially challenging in case of large-scale implementation. Therefore, we are currently working on an adjustment of the training to make implementation in practice more feasible. Although prior

research and the present study suggest that training caregivers individually is an important element in effective programs, it seems worthwhile to examine the possibility of training all caregivers of the care group together in focus groups. The advantage could be that caregivers learn from each other from the beginning instead of only during the last session, which may in turn lead to better retention of the gains made during training, because caregivers could monitor each other afterwards. Pilot studies are needed to examine whether the program could also be effectively used when all caregivers of the care group are trained together.

An even more effective way of improving caregiver interactive skills and thereby the quality of child care, would be to incorporate the present training in the regular education of caregivers. The current regular vocational education for caregivers in child care does not educate students adequately in how to interact with young children in child care centers. Therefore, a straightforward next step would be to adapt the CIP training for implementation in the regular caregiver education, which requires the development of a *train the trainer* program for teacher educators in caregiver education. We are currently developing an adapted version of the training and will examine the effectiveness of its implementation in caregiver education in future research.

The most powerful way to improve the quality of caregiver-child interactions in child care centers would be to combine the two measures for strengthening caregiver skills that we recommended in the former paragraphs. This means that the future approach for enhancing the quality of care and education for young children should be twofold: training caregivers who already work in the field *and* investing in the interactive skills of future caregivers by implementing the CIP training in the curriculum of caregiver education.

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