Teaching and Teacher Education 26 (2010) 1652–1659

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate

Effects of Video Interaction Guidance on early childhood teachers

Ruben G. Fukkink*, Louis W.C. Tavecchio

University of Amsterdam, Nieuwe Prinsengracht 130, 1018 VZ, Amsterdam, The Netherlands

ARTICLE INFO

Article history:
Received 13 December 2009
Received in revised form
8 May 2010
Accepted 11 June 2010

Keywords:
Video feedback
Early childhood education
Teacher competencies
Teacher–child interaction

ABSTRACT

An experimental study showed that a video feedback intervention improved the interaction skills of early childhood education and care teachers. The teachers who had received the Video Interaction Guidance training appeared more stimulating in their behavior, were more sensitive and more verbally stimulating than teachers from the control group. The training results were still apparent three months after the training. An analysis of the behavior of teachers at micro-level also revealed positive outcomes. These findings show that video feedback training for early childhood educators is a promising method to increase their socio-emotional support and verbal stimulation in childcare practice.

1. Introduction

The importance of good teacher preparation for staff working in early childhood education is widely acknowledged (see, e.g., Clarke-Stewart & Allhusen, 2005; OECD, 2001, 2006; Zaslow & Martinez-Beck, 2006). Findings from recent studies have contributed to the ongoing discussion about the optimal preparation of teachers in this field. Research into formal education has shown a wide diversity of pathways in early childhood professional development, varying from no formal education to bachelor level with specialized courses in childhood development or early childhood education (Fuligni, Howes, Lara-Cinisomo, & Karoly, 2009; Saracho & Spodek, 2006). This diversity exists both not only within countries (e.g., the United States), but also between countries: there is significant cross-cultural variation in the professional development of teachers as regards educational level and the curriculum of initial vocational training (Peeters, 2008). Other research findings have also raised questions related to the optimal teacher education for the early childhood education and care (ECEC) field, and are a reason for concern among researchers and policy makers. Quality assessments have made clear that early childhood education is of low quality in many centers (LoCasale-Crouch et al., 2007), may show large variations (Pianta & Howes, 2009; Shonkoff & Phillips, 2000), or is declining toward a precarious level (e.g., Vermeer et al., 2008). Furthermore, these findings are at odds with the aims of recent policies in various countries to offer high-quality ECEC (OECD, 2006; Pianta & Howes, 2009).

Research into teachers' formal education and classroom quality has produced contradictory findings (Early et al., 2007). However, there is an increasing awareness that specialized training after initial vocational training at various levels (e.g., associate degree or bachelor degree) can improve the quality of teacher–child interactions (Domitrovitch, Gest, Gill, Jones, & Sanford DeRousie, 2009; Fuligni et al., 2009). Policies aimed at increasing teacher quality should therefore not only focus on increasing teachers' education, but also aim at sustained professional development (Early et al., 2007).

Shonkoff and Phillips (2000) emphasize that 'quality of care ultimately boils down to the quality of the relationship between the childcare provider or teacher and the child' (p. 314), because the quality of the daily interactions between ECEC teachers and the children for whom they are responsible carry the weight of the influence of childcare on child development. In line with this developmental perspective, the ECEC literature predominantly defines teaching quality as skills of teachers to engage in developmentally appropriate interactions with young children (see, for example, Clarke-Stewart & Allhusen, 2005; Kontos & Wilcox-Herzog, 1997). Research findings have stressed the importance of the teacher's sensitivity and responsivity toward children's signals for the wellbeing of young children. Furthermore, teachers should also engage the children in meaningful conversations and developmentally appropriate activities to promote a positive development of children. Hence, sensitivity and teacher talk are frequently studied aspects of teacher behavior.

* Corresponding author. Tel.: +31 (0) 20 5251351; fax: +31 (0) 20 5251200.
E-mail address: R.G.Fukkink@uva.nl (R.G. Fukkink).

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doi:10.1016/j.tate.2010.06.016

Correlational research shows that specialized training is a better predictor of sensitive and stimulating caregiver–child interactions than is the level of work experience, age, or emotional condition of teachers (Burchinal, Cryer, & Clifford, 2002; Clarke-Stewart, Lowe Vandell, Burchinal, O'Brien, & McCartney, 2002; Ghazvini & Mullis, 2002; Gormley, 1999; Honig & Hirallal, 1998; Howes, James, & Ritchie, 2003; Howes, Whitebook, & Phillips, 1992; NICHD ECCRN, 2002; Phillipsen, Burchinal, Howes, & Cryer, 1997). Experimental research has provided further confirmation of the relationship between training of early childhood teachers and teaching quality. In a recent meta-analysis, Fukkink and Lont (2007) reported positive results of caregiver training on interaction and teaching skills. Specialized training enhances the vocational knowledge of teachers, their professional attitude and their caregiving skills. The aggregated effect of training on the competencies of early childhood teachers amounts to approximately one-half of a standard deviation ($ES = 0.47$), corresponding to a medium effect size according to the rules of thumb of Cohen (1988). However, various questions remain to be answered related to the specialized training in early childhood education and care. Several authors have noted that the experimental knowledge base is still limited and that empirical research is needed to establish an evidence-based practice for the training of early childhood teachers (see, for example, Fukkink & Lont, 2007; Sheridan, Edwards, Marvin, & Knoche, 2009; Zaslow & Martinez-Beck, 2006). A serious limitation is that many experimental studies that have been conducted primarily concern broad, introductory programs that often address various aspects of childcare practice. Experimental research into specialized training programs that exclusively focus on stimulating teacher–child interactions is relatively scarce. Furthermore, previous experimental studies of interventions that have focused on altering early childhood teacher behavior are characterized by their relatively small scale, including only a fairly small number of trained participants (see Elicker, Georgescu, & Bartsch, 2008; Girolametto, Weitzman, & Greenberg, 2003, 2004; Rimm-Kaufman, Voorhees, Snell, & La Paro, 2003). Finally, no experimental study included a follow-up test to establish the retention of learning gains in the domain of teacher interaction. It remains an open question, therefore, whether training may result only into a temporary change of teacher interaction patterns immediately after the training, or may promote sustained changes which enhance the quality in early childhood practice (see also Sheridan et al., 2009). To conclude, there is a clear need for experimental research into the effects of training on the performance of early childhood teachers in practice, including its effects on teachers' interactions with children (see Daniels & Shumow, 2003; Kontos & Wilcox-Herzog, 2001).

Another limitation of the current knowledge base is that previous experimental ECEC studies that evaluated teachers' behavioral changes did not evaluate their attitudinal changes. Although interactional skills are at the heart of the evaluation of most studies, the attitudinal domain also deserves attention. Specifically, it is relevant to study whether specialized training may also affect teachers' job satisfaction. Although this issue is relevant as a topic in itself, it is also related to the classroom emotional climate, because teachers who derive little satisfaction from their work and are exposed to stressors may be less likely to engage in responsive caregiving practices, as Grining et al. (2010) note. Curbow, Spratt, Ungaretti, McDonnell and Breckler (2000) describe teacher's job satisfaction and work stressors along the dimensions of job demands, job control, and job resources. Job demands are defined as working conditions (e.g., dissatisfaction with a low salary, working long hours, and dealing with unrealistic expectations of parents), whereas job control is defined as the perceived control over work conditions (e.g., the number of children a teacher cares for and the perceived influence on policies that affect a teacher's work). These aspects are not likely to be affected by a teacher training that specifically focuses on teachers' caregiving behavior. Job resources, as defined by Curbow and colleagues, concern rewards from one's work, and refer to a feeling of accomplishment and the expressed appreciation from children and parents. Specialized teacher training that aims to enhance teachers' interaction skills may influence this latter aspect of job satisfaction. However, experimental research is needed to study this hypothesis.

1.1. Video Interaction Guidance

An intervention that is specifically directed toward improving the interaction quality between ECEC teachers and children is Video Interaction Guidance for childcare (VIG). VIG for teachers is historically related to video feedback interventions for families. Such interventions have proven to be an effective method to stimulate parents' positive caregiving behavior: Parents not only become more skilled in interacting with their children, but they also derive more pleasure from and experience fewer problems with parenting on completion of the program (Fukkink, 2008; Rusconi-Serpa, Rossignol, & McDonough, 2009). A central component of the VIG method for ECEC teachers is the analysis of video clips of interactions with children in the actual work setting, followed by a discussion with a trainer. A unique feature of VIG is that trainees watch themselves from a distance and have time for self-reflection. Providing childcare staff with this opportunity helps them to gain a realistic perception of their job performance, while reflecting on their interactional behavior promotes teachers' critical thinking about their interactional behaviors. Video feedback functions as a catalyst for critical reflection and provides teachers and their trainers with a tool to engage in a dialogue (Den Otter, 2009; Fuller & Manning, 1973; Kimbrough, Davis, & Wickersham, 2008; Virmani & Ontai, 2010). Based on the social learning theory of Bandura (1997), VIG assumes that positive reinforcement of positive behavior increases the self-efficacy of learners. Using the method of positive self-modelling (Dowrick, 1999), the VIG trainer therefore selects and labels exemplary interactions in order to strengthen positive teacher behavior. The video offers the possibility to focus on various aspects of teacher behavior, including its verbal, non-verbal, and paralingual aspects.

During the extensive review of the recording in VIG, the video is repeatedly paused to allow the recognition and acknowledgement of concrete behaviors, distinguishing, among others, between turning toward a child, making eye contact, following the child and turn taking (see also Table 1). Some of these micro-behaviors are directly related to the sensitivity of teachers, because they pertain to perceiving and receiving the initiatives of children (i.e., tuning toward a child, making eye contact, following the child, reception of initiatives of the child). The concrete verbal behaviors that are distinguished in VIG, are related to verbal stimulation (i.e., verbal reception, letting child take a turn, teacher acknowledges self and other verbal behaviors). This detailed way of observing with the VIG training is historically related to human ethology (see Beebe, Sorter, Rustin, & Knoblauch, 2005; Eibl-Eibesfeldt, 1989) and is closely related to the well-known method of micro-teaching (see Hargie, 2006 for an overview). The VIG method, which is widely used in the Netherlands, is an integral part of a masters course School-Video Interaction Guidance (S-VIG) in the Netherlands. Further, the VIG method is currently practiced in many different countries, including the Czech republic, Finland, Germany, Hungary, Poland, Sweden, Switzerland, the United Kingdom and the United States (see Häggman-Laitila, Pietilä, Friis, & Vehviläinen-Julkunen, 2003; Weiner, Kuppermintz, & Guttmann, 1994).

Table 1
Overview of test reliability (Cronbach's α), by time of measurement and condition.

	VIG group	Control group
VIG (total score − pre-test)	.54	.67
Stimulating caregiving		
Pre-test	.86	.84
Post-test	.79	.80
Retention	.90	–
Authoritarian caregiving		
Pre-test	.86	.80
Post-test	.78	.86
Retention	.90	–
Sensitive responsivity		
Pre-test	.86	.89
Post-test	.85	.83
Retention	.90	–
Verbal stimulation		
Pre-test	.84	.76
Post-test	.87	.79
Retention	.90	–
Work satisfaction VIG (post-test)	.82	.73
Work satisfaction Curbow (post-test)	.89	.91

1.2. Research questions

The central question of this study concerns the effectiveness of VIG training for teachers in early childhood education and care. We evaluated whether the training has an effect on the sensitivity and stimulating skills of early childhood teachers as measured with global quality ratings. Directly related to the substantive content of VIG, we also examine whether the training generates increases in the concrete behaviors that are distinguished by the VIG method. Finally, a supplementary and exploratory research question is whether the training may also translates into higher work satisfaction. Experimental research has demonstrated that video feedback programs result in improvement of parental attitudes toward parenting. We do not know, however, whether this type of intervention may also contribute to ECEC teachers' satisfaction with their work.

2. Method

2.1. Design and participants

A pre-test and post-test design involving an experimental group and a control group was used to assess the effectiveness of VIG. In addition, a retention measurement was conducted for the experimental VIG group three months after the training, to ascertain the retention of the training effects. An a priori power analysis indicated that a sample of fifty participants in each condition was sufficient in order to establish the statistical significance at the conventional level of $\alpha = .05$ of a medium effect size with adequate statistical power ($\beta = .80$; Cohen, 1988).

Two major childcare providers apply the VIG method on a large scale in their organization, the Stichting Kinderopvang Nederland (SKON) and KOREIN. Assignment to the experimental VIG condition and the control condition was randomized at the level of the childcare center: particular daycare centers (and all of their teachers) were assigned to the experimental training group, whereas other centers were assigned to the control group (see also Domitrovitch et al., 2009; Girolametto et al., 2003, 2004 for similar designs). Ninety-five teachers were involved in the study ($n = 52$ for the experimental group, $n = 43$ for the control group). As expected, the multivariate analysis of pre-test differences revealed no statistically significant multivariate differences between the two conditions ($p = .13$). Nine out of 52 teachers of the experimental group were not included in the retention measurement, due to sickness, maternal leave or a change of jobs; their scores did not differ significantly from the other teachers in the VIG group ($p = .65$). Because we found no evidence of statistical differences between these two groups, the data were aggregated for further analysis. The average age of the teachers was 28 years ($sd = 7.0$), and the average level of work experience was five years (65 months, $sd = 51$).

2.2. Video Interaction Guidance training

In the training, teachers were videotaped by their trainer for approximately 10 min while they are working with their groups. The trainer watched the video subsequently and selected a number of video fragments for review. In a next session, the trainer and the teacher subsequently engaged in a detailed discussion of these video clips. The training is usually comprised of four sessions (average number of sessions: 3.83, $sd = 0.94$).

According to the VIG training model, interactions are successful when initiatives of the child are received and responded to in a positive manner. Being focused on the other is an initial condition for being able to recognize the initiatives of children. Teachers must therefore be alert for these initiatives (by turning toward children, making eye contact with them, and following them), and they must create space for them (by allowing the child to take a turn). Teachers should subsequently confirm that they have recognized the contact initiatives of children, and they should react to them positively by acknowledging the children's actions in appositive verbal or non-verbal way. Based on this model, the training focused on the following six concrete teacher activities: turning toward the child, making eye contact (gaze), following the child, confirming the reception of the initiatives (either in a verbal or in a non-verbal way), allow children to take turns, acknowledge the actions and intentions of the child, and, finally, the teacher acknowledges his or her own actions and intentions. While the content of the training focuses primarily on the sensitivity and emotional support of teachers, it also touches upon the verbal stimulation of children, because teachers are also instructed to label children's and one's own actions and intentions (see Rimm-Kaufman et al., 2003 for a similar training approach).

2.3. Measurement instruments

2.3.1. Caregiver interaction scale (Arnett, 1989): stimulating and authoritarian caregiving behavior

This 26-item rating scale evaluates the behavior of caregivers and their interactions with children. Items are rated on a four-point scale, ranging from "not at all true" (1) to "very much true" (4). Consistent with earlier Dutch research (see Vermeer et al., 2008; Van IJzendoorn, Tavecchio, Stams, Verhoeven, & Reiling, 1998), two scores were calculated: one for stimulating caregiving and one for authoritarian caregiving. An example of a statement that reflects stimulating caregiving is "Pays positive attention to the children as individuals." "Expects the children to exercise self-control, e.g., to be undisruptive for the group, teacher-led activities, to be able to stand in line calmly" is an example of authoritarian caregiving. Assessors were trained to make assessments using the Arnett scales. Their reliability was established by comparing their scores to jury scores for a number of confidence intervals. As a criterion for inclusion in the analysis, at least eighty percent of an assessor's scores on a given scale were required to be identical to the jury scores. Scores with two-point deviations could not comprise more than five percent of an assessor's scores, and deviations of three points were not allowed (on average, deviations

of one, two, and three points comprised 19%, 1%, and 0%, respectively, of the observed deviations). Several studies have reported adequate reliability and validity for the Arnett measure in descriptive and experimental studies (Arnett, 1989; Vermeer et al., 2008; Tietze, Cryer, Bairrão, Palacios, & Wetzel, 1996; Van IJzendoorn et al., 1998; Whitebook, Howes, & Phillips, 1990). Also in this study, the reliability of the Arnett scales proved satisfactory for both the experimental and control group at pre-test, post-test and follow-up (Cronbach's α ranged from .79 to .90 for stimulating caregiving, .78 − .90 for authoritarian caregiving at pre-test, post-test and follow-up).

2.3.2. Sensitive responsivity and verbal stimulation

Two scales were constructed according to the theoretical framework developed by Rimm-Kaufman et al. (2003; see Table 1 in their article, "target global behavior") to characterize teacher–child interaction. The distinctions from their framework have been incorporated in a scale for sensitive responsivity (8 items, e.g., "Uses appropriate magnitude or type of response" and "Conveys warmth and openness") and for verbal stimulation (6 items, e.g., "Encourages children to talk" and "Finds balance between teacher and child talk"). Each item was rated on a six-point scale that ranges from "never" to "always." Assessors were trained, and their reliability was established by comparing their scores with jury scores for a number of confidence intervals. As a criterion for inclusion in the analysis, ratings that deviated one point from the jury scores were required to comprise less than half of all ratings; deviations of two points were required to comprise less than five percent, and deviations of three points were required to comprise less than one percent of all ratings. On average, deviations of one, two, and three points comprised 43%, 3%, and 1%, respectively, of the observed scores. The internal consistency was good for the sensitive responsivity scale at the pre-test, post-test, and follow-up for both the experimental and the control group (Cronbach's α: .83 − .90). The verbal stimulation scale also proved reliable (Cronbach's α: .76 − .90). The scales based on Rimm-Kaufman et al. showed statistically significant relationships ($p < .001$) with the Arnett measures; different assessors were involved in scoring and they used either the Arnett or the Rimm-Kaufman scales for a specific video. Using pre-test scores, the sensitivity scale showed an expected positive relation with Arnett's stimulating caregiving behavior scale ($r = .57$) and a negative relation with authoritarian caregiving behavior ($r = -.33$). As expected, the verbal stimulation measure was significantly related to Arnett's stimulating caregiving behavior scale ($r = .33$) and correlated negatively with authoritarian caregiving behavior scale ($r = -.28$).

2.3.3. VIG-specific measures

The video clips were scored on the micro-level, paying specific attention to the important components of the "basic communication" that is a central feature of VIG (see Dekker, Hoogland, Eliëns, & van der Giessen, 2004). The VIG measures were scored using event sampling. Assessors first scored the verbal categories in an initial round. In a second round, the same assessor scored the non-verbal categories of the video clip. As a criterion for inclusion in the analysis, the scores of the trained assessors for both the non-verbal and the verbal domains were required to correspond with a norm score, as defined by a lower limit of .70 (Cohen's kappa; average scores were .83 and .80, respectively).

A preliminary analysis of the video clips scores from the pre-test, aggregating the data from the experimental and the control group, showed a statistically significant relation ($p < .001$) between the scores for the individual VIG measures and educational process quality, as measured with the Arnett scale and the scales based on Rimm-Kaufman et al. (2003). In a multiple regression model, the micro-measures "explained" sixteen percent of the variance of stimulating caregiving. For sensitive responsivity they explained 25 percent of the variance. The explained variance for verbal stimulation was 23 percent. The specific VIG measures thus converged moderately with regard to the selected global quality measures from this study.

2.3.4. Job resources scale

The "Job Resources" scale was selected from a work-satisfaction instrument that was developed by Curbow et al. (2000). This measures focuses primarily on 'emotional fulfillment from the job due to relationships with the children and parents, seeing the growth in children, and feeling like the work is supported and is important' (Curbow, McDonnell, Spratt, Griffin, & Agnew, 2003: 326). This scale is comprised of seventeen statements that are rated on a five-point scale ranging from "seldom/never" (1) to "usually" (5). Curbow et al. (2000) report good psychometric qualities of their instrument for the American situation. In the validation study of Curbow et al., the Job Resources scale showed satisfactory construct validity. Further evidence is provided by Curbow et al. (2003), who found a negative relationship with the Work–Family Interface scale, which measures work–family conflict and job-related stress. In the present study, reliability proved adequate (Cronbach's alpha was .89 for the experimental group and .91 for the control group).

2.3.5. VIG job satisfaction scale

A short questionnaire of 15 items was constructed specifically for this study to evaluate the perceived competence of teachers. These statements had to do with the teachers' personal development, confidence in their own abilities, and the perceived group atmosphere (e.g., "I am growing in my work as a childcare worker", "The atmosphere in my group is pleasant"). Teachers rated each statement using a four-point scale ("Not at all true" [1], "Not true" [2], "True" [3], "Very much true" [4]). The internal consistency of this measure was satisfactory (Cronbach's alpha is .82 and .73 for the experimental group and control group, respectively). The VIG Job Satisfaction scale and the Curbow scale were significantly related, as expected ($r = .47$, $p < .001$).

2.4. Procedure

The caregivers were filmed for about 10–15 min for each measurement; this duration is comparable to the duration of filming in other video feedback interventions (Fukkink, Trienekens, & Kramer, submitted for publication). For the VIG group, the first filming session took place before the training, and the second took place after the training. The time interval between the first and second filming sessions for the VIG group was also employed for the control group. The third filming session (which was only for the VIG group) took place three months after the training. Similar activities were recorded for the teachers from the experimental and control group and included teacher-directed, small-group activities. The group size during the filming sessions was generally between five and seven children (5.27 and 6.26 for the pre-test and 6.03 and 5.55 for the post-test, for the VIG group and the control group, respectively). Trainers informed the teachers that they wanted to film a small-group activity but there were no specific instructions before or during the filming sessions.

After each filming session, the filmer and the caregiver each completed a separate short questionnaire. One question that was asked of both the caregiver and the filmer involved the representativeness of the video clip, which they rated on a five-point scale ranging from "not at all representative of me" to "highly representative of me" (see also Girolametto et al., 2003, 2004). All of the video clips that were included in the analysis were rated as "reasonably representative" to "representative" by both the

childcare teacher and the filmer, and there were no significant differences between the VIG group and the control group. Caregivers completed the work-satisfaction questionnaire individually shortly after the second recording session.

The rating (or scoring) of the video clips was carried out following a "blind procedure," with assessors who had not been informed of the time of measurement (pre-test, post-test or retention measurement) or condition (VIG or control). In addition, different assessors were involved in the evaluation of each recording with a single measure, in order to prevent contamination of the evaluations. To prevent recall effects, different assessors were used to rate individual teachers on a given instrument before and after the training.

2.5. Analyses

Multivariate analysis of covariance was conducted with the VIG training as an independent variable and the separate Arnett and Rimm-Kaufman scales, the VIG measures and both job satisfaction scales as dependent variables. Covariates included pre-test scores (both Arnett and Rimm-Kaufman scales, including a total score for the VIG categories), along with the addition of age and work experience of the childcare teachers. Because the VIG measures were not normally distributed, a root transformation was applied initially for statistical testing purposes. The original raw scores are used throughout the report, however, for descriptive purposes. Differences between the post-test and the retention measurement were tested with a repeated-measures analysis using repeated contrasts. This test considered only the persistence of the effects that were statistically significant in the post-test, as the retention of statistically insignificant effects is less relevant to the purpose of this study. Experimental effects are expressed in terms of Hedges' effect size *g*. Positive training results (including decreases in the "negative" variable of "authoritarian caregiving") are expressed as positive values.

In a preliminary analysis, the reliability of the instruments was determined for each measurement time for each condition, using Cronbach's alpha. Reliability was good for the pre-test, post-test and follow-up test and for both the VIG and control group; only the aggregated VIG score had a lower internal consistency (see Table 1).

An a priori analysis showed that the assumptions of MANCOVA were satisfied (Tabachnick & Fidell, 2007). The covariates and independent variables were significantly associated ($p = .04$), and the regression hyperplanes of the VIG group and the control group were homogeneous ($p = .97$).

3. Results

A multivariate analysis showed an overall statistically significant difference between the VIG group and the control group (Wilks' $\Lambda = .56$, $p = .000$, partial $\eta^2 = .44$). Univariate analyses were subsequently conducted for each dependent variable (see Table 2 for an overview). The training had a significant effect on the childcare teachers' use of stimulating caregiving behavior, as measured by the Arnett scale. Teachers who were trained with VIG were more stimulating after the training than were the teachers in the control group. Although there was a decrease in the score for authoritarian caregiving behavior, this result was not statistically significant. The statistically significant effect for stimulating caregiving also persisted. After three months, the scores of the teachers in the VIG group were at the same level as they had been immediately after the training. This positive effect was "confirmed" by the results on the related scale for sensitive responsivity that was based on the framework of Rimm-Kaufman. The scores of trained teachers on this aspect were also higher than were those of their counterparts who had not received the training. The training also had a positive effect on the quality of verbal stimulation of the trained teachers. Both of the positive effects on the Rimm-Kaufman-derived scales were still apparent three months after the training.

3.1. VIG measures

As result of the training, teachers made significantly more frequent eye contact with the children, verbally received the initiatives of children more often, and allowed the children to take turns more frequently. No positive results were found for the other VIG measures (i.e., turning toward the child, following, non-verbal reception, acknowledging self, and additional turns). Contrary to expectations, the trained teachers responded to the initiatives of children less frequently than did the teachers in the control group.

Table 2
Overview of pre-test and post-test for the VIG group ($n = 52$) and the control group ($n = 43$).

	Pre-test		Post-test		*p*	*ES*
	VIG	Control	VIG	Control		
	Mean *(sd)*	Mean *(sd)*	Mean *(sd)*	Mean *(sd)*		
Process quality						
Stimulating caregiving	2.75 (.48)	2.74 (.47)	3.07 (.38)	2.88 (.40)	.002	.61*
Authoritarian caregiving	1.78 (.39)	1.70 (.39)	1.58 (.29)	1.69 (.39)	.08	.37
Sensitive responsivity	4.17 (.57)	4.18 (.63)	4.78 (.49)	4.23 (.51)	.000	1.05*
Verbal stimulation	3.37 (.80)	3.30 (.71)	3.82 (.78)	3.24 (.79)	.000	.79*
VIG measures						
Turning toward child	5.5 (6.0)	6.7 (7.8)	12.0 (18.1)	14.3 (19.2)	.47	−.15
Making eye contact	71.5 (27.9)	64.3 (40.6)	83.4 (44.6)	52.4 (31.6)	.001	.76*
Following child	12.4 (8.7)	14.0 (11.6)	17.5 (18.7)	19.4 (18.9)	.55	−.13
Verbal reception	17.8 (14.0)	20.3 (14.8)	29.5 (14.6)	19.9 (10.3)	.001	.75*
Non-verbal reception	6.7 (7.1)	10.0 (10.9)	15.0 (14.1)	15.5 (11.8)	.90	−.03
Letting child take a turn	24.1 (19.0)	20.4 (11.5)	26.2 (15.5)	19.1 (13.3)	.009	.56*
Acknowledging child	12.2 (10.7)	14.3 (12.1)	18.5 (16.4)	25.1 (20.6)	.03	−.47*
Teacher acknowledges self	10.4 (7.6)	12.3 (6.3)	17.6 (10.1)	16.1 (7.6)	.84	.05
Other – verbal	60.7 (26.2)	51.3 (24.5)	55.1 (25.6)	46.4 (26.3)	.17	.30
Work satisfaction						
VIG scale	–	–	49.8 (4.1)	48.2 (3.9)	.04	.45*
Curbow scale	–	–	70.8 (6.4)	70.3 (8.8)	.69	.09

Note: Statistically significant effects are indicated with an asterisk. Effect sizes (*ES*) are calculated using corrected means.

Analysis of the retention measure showed that the positive effects of the training on eye contact and taking turns were still apparent after three months (see Table 3). There was a significant decrease in the verbal reception of child initiatives after the training, however; the positive result thus did not persist sufficiently. The negative effect of the relatively infrequent acknowledgement of the child that was evident in the post-test was still evident in the retention measurement.

3.2. Job satisfaction

The analyses showed a statistically significant effect on the VIG questionnaire, but not on the Curbow job satisfaction questionnaire. The conclusion seems justified, therefore, that the effect on teacher satisfaction is limited and is restricted to the VIG training context. Although trained teachers reported feeling somewhat more confident in their work, they experienced no more general acknowledgement of their work from others, children, or themselves (the three central concepts of the Curbow questionnaire) than do the teachers from the control group.

4. Discussion

Video Interaction Guidance shows interesting effects on the process quality of teachers of young children. This study demonstrates positive and persistent effects on the use of stimulating teacher behavior, and on their levels of sensitive responsivity and verbal stimulation. Authoritarian caregiving behavior among the teachers decreased, but this trend was not statistically significant. A micro-analysis of their teacher behavior revealed that the trained professionals make more frequent eye contact with the children, receive their initiatives verbally more often, and more frequently allow them to take turns, which indicate increased sensitivity and responsiveness of the teachers. These effects were still present after three months, although it should be noted that not all distinguished teacher behaviors improved. This study shows positive effects on both global rating measures of teaching quality and micro-analytic level, which moves VIG beyond micro-teaching in terms of the depth of change. Moreover, the statistically significant experimental gains form this study, which range from a medium (stimulating caregiving, $ES = 0.61$) to a large effect size (verbal stimulation, $ES = 0.79$ and sensitive responsivity, $ES = 1.09$), are relatively large. The observed effect sizes from this experiment compare favorably to the aggregated effect size of 0.40 for the skills domain, as found in the meta-analysis of Fukkink and Lont (2007).

Finally, the effects of the training are less impressive for the attitudinal domain. Although the teachers indicated to experience somewhat more confidence in their work after the training, this did not translate into a general effect on job satisfaction. Curbow et al. (2000) indicate in their validation study that there is a need to investigate the sensitivity of the scales in experimental research. The relatively high job satisfaction levels for both the experimental and control group in this study (scores above 4 on a five-point scale) were also found by Curbow et al. (2000) and suggest a possible "ceiling effect". Further, 6 of the 17 items of the resources scale are related to the appreciation expressed by parents and significant others (instead of children), and these items are not directly related to the content of the VIG training. However, an additional analysis with only the child-related items of the resources scale also produced a non-significant result. In our opinion, it therefore seems justified to conclude that the VIG training does not influence job satisfaction.

Table 3
Overview of retention measurement (only statistically significant training effects) ($n = 43$).

	Post-test	Retention	p	ES
	Mean *(sd)*	Mean *(sd)*		
Process quality				
Stimulating caregiving	3.06 (.40)	3.02 (.52)	.58	−.09
Authoritarian caregiving	1.56 (.30)	1.50 (.29)	.18	.20
Sensitive responsivity	4.72 (.48)	4.57 (.69)	.15	−.25
Verbal stimulation	3.76 (.79)	3.78 (1.00)	.89	.02
VIG measures				
Making eye contact	83.2 (46.5)	80.6 (49.3)	.68	−.05
Acknowledging child	18.3 (16.7)	12.3 (12.2)	.06	−.41
Letting child take a turn	26.0 (15.1)	27.6 (14.4)	.53	.11
Verbal reception	28.6 (14.7)	23.0 (10.9)	.04	−.43*

Note: Statistically significant effects are indicated with an asterisk.

This study has a number of limitations. First, an important limitation of our study is that we did not study how the VIG program has produced meaningful change in practitioners' skills. This is important because few studies have addressed the process by which childhood practitioners acquire new skills, and, hence, empirical, process studies are needed in order to reach a more complex understanding of effective professional development of ECE teachers (Sheridan et al., 2009). In the context of video feedback, it seems particularly interesting to focus on the actual content of the feedback sessions, which are at the heart of VIG and other video feedback interventions. This line of study should shed light on how trainer and trainee engage in meaningful reflection during a feedback session. This research may also possibly show, however, that some teachers find video feedback an obtrusive method because the trainer videotapes the teacher and comments on his of her interactions with the children. We do not know, however, what the reactions and experiences of the teachers were during the VIG intervention (for example, resistance to the filming procedures). Further, we did not include personal background characteristics of the teachers in our study design (e.g., teacher beliefs, perceived self-efficacy). We do not know, therefore, whether some teachers are more or less likely to profit from video feedback. It is also possible that some teachers may consider some of the specific teacher behaviors, as distinguished in VIG, less appropriate or useful, which may be related to their personal teaching style, teacher beliefs or cultural background.

Future studies may further explore the attitudinal effects of specialized teacher training. It is likely that this line of study would profit from selecting validated measures that are closely related to the content of the training. An interesting candidate in this respect is whether specialized training that focuses on interactional skills increases the perceived efficacy of ECEC teachers in providing stimulating care. Other future studies may explore whether interventions that have a specific focus on improving teachers' job satisfaction are effective. Taking into account the possibly high job satisfaction levels of the majority of ECEC teachers, it seems to make sense to focus on teachers who have relatively low job satisfaction levels. This line of study may also profit from including a broad range of stressors, namely, stressors in the workplace and in the home (see Curbow et al., 2003).

Other experimental studies have previously reported positive results of video feedback training for early childhood teachers (Elicker et al., 2008; Girolametto et al., 2003; 2004; Venn & Wolery, 1992). In addition, video feedback training has also proved to be an effective method in several other professional settings (see Hargie, 2006 for an overview). The video offers a powerful medium for capturing the process quality of teachers. A unique characteristic of video feedback training is that it offers the possibility for a teacher to step back and make a detailed analysis of his or her interactions with children in an authentic professional context (Dowrick, 1999).

This makes the video feedback method a powerful way to foster teachers' reflective practice. Although the use of video is the main element of VIG, the method includes several other elements that may contribute to its effectiveness. The video feedback method is intensive, involves personal coaching, and provides ample opportunities for individualized feedback on concrete teacher behavior. Recent studies suggest that these activities are crucial for the professional development of early childhood professionals and for changing their teaching practices (Domitrovich et al., 2009; Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Sheridan et al., 2009). The addition of other instructional elements may further enrich video feedback in future training programs. One instructional element that deserves attention is exemplary video instruction. Pianta et al. (2008) recently found that an intervention that used video clips of other teachers to show exemplary teacher behavior produced promising results. It would be interesting to explore whether the use of exemplary video clips of other teachers complements the personalized feedback from one's own video clips, and whether it may broaden the view of teachers and enhance their supportive and stimulating behavior in early childhood settings.

References

Arnett, J. (1989). Caregivers in day-care centers: does training matter? *Journal of Applied Developmental Psychology, 10*, 541–552.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Beebe, B., Sorter, D., Rustin, J., & Knoblauch, S. (2005). Forms of intersubjectivity in infant research: a comparison of Meltzoff, Trevarthen and Stern. In B. Beebe, S. Knoblauch, J. Rustin, & D. Sorter (Eds.), *Forms of intersubjectivity in infant research and adult treatment* (pp. 29–53). New York: Other Press.

Burchinal, M. R., Cryer, D., & Clifford, R. M. (2002). Caregiver training and classroom quality in child care centers. *Applied Developmental Science, 6*(1), 2–11.

Clarke-Stewart, A., & Allhusen, V. D. (2005). *What we know about childcare*. Cambridge, MA: HarvardUniversity 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.

Cohen, J. (1988). *Statistical power analysis for the behavorial sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Curbow, B., McDonnell, K., Spratt, K., Griffin, J., & Agnew, J. (2003). Development of the work-family interface. *Early Childhood Research Quarterly, 18*, 310–330.

Curbow, B., Spratt, K., Ungaretti, A., McDonnell, K., & Breckler, S. (2000). Development of the child care worker job stress inventory. *Early Childhood Research Quarterly, 15*(4), 515–536.

Daniels, D. H., & Shumow, L. (2003). Child development and classroom teaching: a review of the literature and implications for educating teachers. *Applied Developmental Psychology, 23*, 495–526.

Dekker, J., Hoogland, M., Eliëns, M., & van der Giessen, J. (2004). *Video-interactiebegeleiding*. [*Video interaction Guidance*]. Houten, Netherlands: Bohn Stafleu van Loghum.

Den Otter, M. (Ed.). (2009). *De School video Interactie Begeleider*. [*The School video interaction Coach*]. Antwerpen/Apeldoorn, the Netherlands: Fontys OSO & Garant Uitgevers.

Domitrovich, C. E., Gest, S. D., Gill, S., Bierman, K. L., Welsh, J. A., & Jones, D. (2009). Fostering high-quality teaching with an enriched curriculum and professional development support: the Head Start REDI program. *American Educational Research Journal, 46*(2), 567–597.

Domitrovitch, C. E., Gest, S. D., Gill, S., Jones, D., & Sanford DeRousie, R. (2009). Individual factors associated with professional development training outcomes of the Head Start REDI program. *Early Education and Development, 20*(3), 402–430.

Dowrick, P. W. (1999). A review of self modeling and related interventions. *Applied & Preventive Psychology, 8*, 23–39.

Early, D. M., Maxwell, K. L., Burchinal, M., Bender, R. H., Ebanks, C., Henry, G. T., et al. (2007). Teachers' education, classroom quality, and young children's academic skills: results from seven studies of preschool programs. *Child Development, 78*(2), 558–580.

Eibl-Eibesfeldt, I. (1989). *Human ethology*. New York: Aldine de Gruyter.

Elicker, J., Georgescu, O., & Bartsch, E. (2008). Increasing the sensitivity of infant-toddler child care providers; applying the VIPP approach. In F. Juffer, M. J. Bakermans-Kranenburg, & M. H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention* (pp. 55–70). Hillsdale, NJ: Lawrecne Erlbaum.

Fukkink, R. G. (2008). Video feedback in widescreen: a meta-analysis of family programs. *Clinical Psychology Review, 28*(6), 904–916.

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.

Fukkink, R. G., Trienekens, N., & Kramer, L. C. (submitted for publication). Video feedback in education and training: putting learning in the picture.

Fuligni, A. S., Howes, C., Lara-Cinisomo, S., & Karoly, L. (2009). Diverse pathways in early childhood professional development: an exploration of early educators in public preschools, private preschools, and family childcare homes. *Early Education and Development, 20*(3), 507–526.

Fuller, F. F., & Manning, B. A. (1973). Self-confrontation reviewed: a conceptualization for video playback in teacher education. *Review of Educational Research, 43*(4), 469–528.

Ghazvini, A., & Mullis, R. L. (2002). Center-based care for young children: examining predictors of quality. *The Journal of Genetic Psychology, 163*(1), 112–125.

Girolametto, L., Weitzman, E., & Greenberg, J. (2003). Training day care staff to facilitate children's language. *American Journal of Speech-Language Pathology, 12*, 299–311.

Girolametto, L., Weitzman, E., & Greenberg, J. (2004). The effects of verbal support strategies on small-group peer interactions. *Language, Speech, and Hearing Services in Schools, 35*, 254–268.

Gormley, W. (1999). Regulating child care quality. *Annals of the American Academy of Political and Social Science, 563*, 116–129.

Grining, C. L., Raver, C. C., Champion, K., Sardin, L., Metzger, M., & Jones, S. (2010). Understanding and improving classroom emotional climate and behavior management in the "real world": the role of Head Start teachers' psychosocial stress. *Early Education and Development, 21*(1), 65–94.

Häggman-Laitila, A., Pietilä, A.-M., Friis, L., & Vehviläinen-Julkunen, K. (2003). Video home training as a method of supporting family life control. *Journal of Clinical Nursing, 12*, 93–106.

Hargie, O. (2006). Training in communication skills: research, theory and practice. In O. Hargie (Ed.), *The handbook of communication skills* (3rd ed.). (pp. 553–565) Hove, UK: Routledge.

Honig, A. S., & Hirallal, A. (1998). Which counts more for excellence in childcare staff – years in service, educational level or ECE coursework? *Early Child Development and Care, 145*, 31–46.

Howes, C., James, J., & Ritchie, S. (2003). Pathways to effective teaching. *Early Childhood Research Quarterly, 18*, 104–120.

Howes, C., Whitebook, M., & Phillips, D. (1992). Teacher characteristics and effective teaching in child care: findings from the national child care staffing study. *Child & Youth Care Forum, 21*(6), 399–414.

Kimbrough, S., Davis, J., & Wickersham, L. (2008). The use of video feedback and semi structured interviews for reflection among pre-service teachers. *Journal of Education and Human Development, 2*(2), 1–12.

Kontos, S., & Wilcox-Herzog, A. (1997). Teachers' interactions with children: why are they so important? *Young Children, 52*(2), 4–12.

Kontos, S., & Wilcox-Herzog, A. (2001). How do education and experience affect teachers of young children? *Young Children, 56*(4), 85–91.

LoCasale-Crouch, J., Konold, T., Pianta, R., Howes, C., Burchinal, M., Bryant, D., et al. (2007). Observed classroom quality profiles in state-funded pre-kindergarten programs and associations with teacher, program and classroom characteristics. *Early Childhood Research Quarterly, 22*, 3–17.

NICHD Earle Child Care Research Network. (2002). Early child care and children's development prior to school entry: results from the NICHD study of early child care. *American Educational Research Journal, 39*(1), 133–164.

OECD. (2006). *Starting strong II; Early childhood education and care*. Paris, France: OECD Publications.

Peeters, J. (2008). *The construction of a new profession; A European perspective on professionalism in early childhood education and care*. Amsterdam, the Netherlands: SWP.

Phillipsen, L. C., Burchinal, M. R., Howes, C., & Cryer, D. (1997). The prediction of process quality from structural features of child care. *Early Childhood Research Quarterly, 12*, 281–303.

Pianta, R. C., & Howes, C. (Eds.). (2009). *The promise of Pre-K*. Baltimore, MA: Paul H. Brookes Publishing.

Pianta, R. C., Mashburn, A. J., Downer, J. T., Hamre, B. K., & Justice, L. (2008). Effects of web-mediated professional development resources on teacher–child interactions in ore-kindergarten classrooms. *Early Childhood Research Quarterly, 23*, 431–451.

Rimm-Kaufman, S. E., Voorhees, M. D., Snell, M. E., & La Paro, K. M. (2003). Improving the sensitivity and responsivity of preservice teachers toward young children with disabilities. *Topics in Early Childhood Special Education, 23*(3), 151–163.

Rusconi-Serpa, S., Rossignol, A. S., & McDonough, S. C. (2009). Video feedback in parent-infant treatments. *Child Adolescent Psychiatric Clinical North America, 18*, 735–751.

Saracho, O. N., & Spodek, B. (2006). Preschool teachers' professional development. In B. Spodek, & O. N. Saracho (Eds.), *Handbook of research on the education of young children* (2nd ed.). (pp. 423–439) Mahwah, NJ: Lawrence Erlbaum.

Sheridan, S. M., Edwards, C. P., Marvin, C. A., & Knoche, L. L. (2009). Professional development in early childhood programs: process issues and research needs. *Early Education and Development, 20*(3), 377–401.

Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods; The science of early childhood development*. Washington, DC: National Academy Press.

Tabachnick, B. G., & Fidell, L. S. (2007) *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

Tietze, W., Cryer, D., Bairrão, J., Palacios, J., & Wetzel, G. (1996). Comparison of obsberved process quality in early childhood care and education programs in five countries. *Early Childhood Research Quarterly, 11*, 447–475.

Van IJzendoorn, M. H., Tavecchio, L. W. C., Stams, G. J. J. M., Verhoeven, M. J. E., & Reiling, E. J. (1998). Attunement between parents and professional caregivers; a comparison of childrearing attitudes in different child-care settings. *Journal of Marriage and the Family, 60*, 771–781.

Venn, M. L., & Wolery, M. (1992). Increasing day care staff members' interactions during caregiving routines. *Journal of Early Intervention, 16*(4), 304–319.

Vermeer, H. J., Van IJzendoorn, M. H., De Kruif, R. E. L., Fukkink, R. G., Tavecchio, L. W. C., Riksen-Walraven, J. M., et al. (2008). Child care quality in the Netherlands: trends in quality over the years 1995-2005. *Journal of Genetic Psychology, 169*(4), 360–385.

Virmani, E. A., & Ontai, L. L. (2010). Supervision and training in child care: does reflective supervision foster caregiver insightfulness? *Infant Mental Health Journal, 31*(1), 16–32.

Weiner, A., Kuppermintz, H., & Guttmann, D. (1994). Video home training (the Orion project): a short-term preventive and treatment intervention for families with young children. *Family Process, 33*, 441–453.

Whitebook, M., Howes, C., & Phillips, D. A. (1990). *Who cares? Child care teachers and the quality of care in America: Final report, National Child Care Staffing Study*. Oakland, CA: Child Care Employee Project.

Zaslow, M., & Martinez-Beck, I. (2006). *Critical issues in early childhood professional development*. Baltimore, MA: Brookes Publishing Company.