Improving the Quality Of Infant–Toddler Care Through Professional Development

Philippa H. Campbell
and
Suzanne A. Milbourne
Thomas Jefferson University

The effect of a professional development program on the quality of care provided for infants and toddlers was assessed with a sample of 160 caregivers in 96 infant–toddler rooms in 48 childcare programs. Caregivers participated in a 3-month training course with a standardized curriculum of five 3-hour group classes and an out-of-class project. A total of 123 participants in 70 classrooms also received onsite consultation. Consultation was not provided for 37 participants in 26 classrooms. The effect of training program participation was judged using pre- and posttraining comparisons between mean total scale scores on the *Infant/Toddler Environment Rating Scale* (Harms, Clifford, & Cryer, 1990). Comparisons also were made between classrooms where score differences were rated as *observable change*. Observable change was evident in 15 (21.4%) infant–toddler rooms in the consultation group, in comparison to 2 (7.7%) infant–toddler rooms in the no-consultation group.

Professional development, generally defined as training experiences that are not directly linked to college credit, has been suggested as one approach for improving the quality of child care (Morgan, 2003). The types of activities described as professional development vary and range from completion of a required number of training hours to intensive, long-term approaches that may use such strategies as consultation, mentoring, or technical assistance. The outcomes expected of professional development programs also vary and may include completion of required clock hours or may be tied to a specific outcome, such as the Child Development Associate (CDA) credential, accreditation, or quality improvement.

Various studies (e.g., Barnett, 2003; Bowman, Donovan, & Burns, 2001; Howes & Brown, 2000) have demonstrated positive relationships between teachers' level of credit-bearing education and their ability to carry out their assigned roles. Researchers, however, have had difficulty collecting reliable, consistent information about noncredit training and have been unable to clarify how the amount, intensity, content, and quality of this type of training affects program quality (Whitebrook, 2003). Few studies have evaluated the impact of caregiver training on childcare quality or looked at the potential differential relationships between quality and individual professional development program elements (Kontos, Howes, & Galinsky, 1996).

Some evidence has suggested that professional development training contributes to program quality (DeBord & Swayers, 1996; Dombro & Modigliani, 1995; Ferri, 1992). For example, researchers have found positive correlations between past training experiences and current staff quality (Galinski, Howes, & Kontos, 1994; Kontos, 1992; Pence & Goelman, 1991). In a study of 36 family caregivers, 52% of the variance in caregiving practices was explained by the providers' participation in training experiences (Fischer & Eheart, 1991). In another study of family-care providers (Norris, 2001), the total *Family Day Care Rating Scale* (FDCRS; Harms & Clifford, 1989) score, as well as the language and reasoning, learning activities, and basic care subscales, related more highly to continual group training than to training provided through two noncontinual groups. Despite evidence relating training to program quality, little is known about the potential long-term implications of training, including changes in children's behavior or development, staff retention, or relations with parents (Kontos et al., 1996). The influence of training may be small in some situations because the knowledge gained or skills taught in the training may be overpowered by habits learned when caregivers parented their own children or because of existing practices in the childcare setting (Ferri, 1992).

Sustained changes in practices are less likely to occur when professional development is removed from the

Address: Philippa H. Campbell, Thomas Jefferson University, Child and Family Studies Research Programs, 5th Floor, Edison, 130 S. 9th St., Philadelphia, PA 19107; e-mail: pipcamp@aol.com

actual experiences of child caregivers and instead relys on participants to apply the content that was learned outside of their work settings to their daily interactions with children (Morgan, 2003). For example, the impact of a state regulation requiring child caregivers to complete 6 clock hours of training per year was investigated by comparing environment rating scale scores with statewide samples of childcare programs (Iutcovich, Fiene, Johnson, Koppel, & Langhan, 1997; Kontos & Fiene, 1987). When the environment rating scores in the 1997 sample were compared with those obtained in 1987, before the hourly training requirement had been adopted, programs scored significantly higher on both total and subscale mean scores. This finding led the authors to conclude that regulatory requirements for annual professional development hours led to positive improvements in the quality of statewide care. When a statewide descriptive study of childcare was undertaken in the same state in 2002 (with different purposes and a different statewide sample), however, total mean environment rating scale scores were lower than those obtained in 1997, although the training requirement was still in place (Fiene et al., 2002).

Onsite mentoring, consultation, frequent supervision, or work-setting activities and assignments are examples of training strategies used to promote application in childcare settings. These strategies appear to be more effective when paired with specific outcomes, such as improvements in program quality. For example, improvements in the quality of child care for infants, toddlers, and preschoolers were negligible when mentoring and onsite consultation visits were provided twice a month for an average of 12 months but were not linked to specific short-term expectations (Shlay et al., 2002). In contrast, 4 months of intensive mentoring directed toward program quality improvement with 22 infant–toddler caregivers resulted in positive differences on *Infant/Toddler Environment Rating Scale* (ITERS; Harms, Clifford, & Cryer, 1990) total scores when compared with a control group of 16 caregivers who did not receive mentoring (Fiene, 2002). In this study, the control group's ITERS total scores (reported as total scores rather than the mean total score) dropped from 137 to 132, whereas the experimental group's scores increased from 134 to 141. The differences between the two groups did not reach statistical significance, but the data showed a positive trend. In a second study without a control group, positive changes in classroom quality were noted on comparisons of pre- and postconsultation ITERS (N = 6), *Early Childhood Environment Rating Scale* (ECERS; Harms & Clifford, 1980; N = 14), and FDCRS (N = 4) scores when caregivers participated in a consultation approach that included 10 to 14 consultation visits (Palsha & Wesley, 1998). The trained consultants who delivered the onsite consultation developed a technical assistance plan and then assisted program staff in implementing activities to improve practices in areas where preconsultation environment scale rating scores were low.

Although the number of studies using mentoring and onsite consultation training is small, their findings suggest that these strategies may influence childcare quality. These training approaches, however, are expensive and time intensive and must be delivered by well-trained individuals to result in quality improvement (Bellm, Whitebrook, & Hantiuk, 1997). Professional development opportunities that combine content-relevant, didactic class sessions with strategies to promote child caregiver application in the work settings may be an alternative. Kontos and her colleagues (1996) used this approach in an experimental study of family-care providers whose training included class instruction supplemented by onsite consultation visits in the family-care settings. Following training, total mean FDCRS scores for the group that received training were significantly higher than those of a comparison group of childcare providers who did not receive training. Another study (Campbell, Milbourne, Silverman, & Feller, 2003) examined the childcare quality of providers who worked in infant–toddler and preschool childcare settings and who had completed a training course with an in-class component and follow-up onsite consultation visits. Although no comparison group was available, the researchers found significant differences in childcare quality as measured by ITERS and ECERS scores obtained before and after training.

Small changes (e.g., less than 1 point) on any of the environment rating scales can result in statistically significant differences when pre- and posttest mean scores are compared. The studies of Kontos et al. (1996) and Campbell et al. (2003) both reported statistically significant changes between pre- and posttraining environment rating scale scores and applied a rating of *observable change* to mean score differences. The standard of observable change is a way to further identify settings where differences in environment rating mean scores are not only statistically significant but also large enough to be observed (Kontos et al., 1996). Classrooms are designated as having made observable change when the difference in pre– post scores results in a change from one quality category to another (e.g., a change from a rating of *inadequate* to *adequate* care) or when both pre- and posttest scores are in the *good quality* category and the total mean score difference reflects a change of a minimum of one point (e.g., a change from 5.35 to 6.47).

When this measure of observable change was used in the study by Kontos et al. (1996) to quantify the extent of change in each family-care setting, 19% of the family-care providers made observable improvements and 9% decreased in quality. In the second study by Campbell et al. (2003), 14% of the infant–toddler and preschool classrooms demonstrated observable change, and fewer than

1% decreased in quality. These outcomes from a combined training approach are positive in terms of statistical differences but seem modest when the more stringent classification of observable change is applied. Nonetheless, the results support further exploration of combined didactic–consultation approaches as a possible strategy for creating quality improvements in childcare settings.

In our study, we explored the impact of consultation with a convenience sample of infant–toddler caregivers who completed *First Beginnings*, one of a series of childcare training curricula used with child caregivers who work in urban childcare settings (Campbell, Milbourne, & Silverman, 2002a, 2002b). Participants attended one of five training courses, each of which included five didactic group training classes (15 hours) and completion of a specially designed out-of-class project focused on a child with special needs. Consultation was provided for participants in four of the five training courses.

Method

Recruitment

Caregivers were recruited for participation in *First Beginnings* through mailings and phone calls made to program directors. The most current list of state-regulated programs for specific zip codes in a large northeastern urban city was used to contact childcare program directors. Different zip codes were targeted for each of the five training courses to control the potential number of registrants. Directors received information about the dates, content, and requirements for the training course and made this information available to their staff. Three of the five training courses included two separate groups that met simultaneously to keep the group sizes between 25 and 30 participants. The remaining two training courses consisted of one group each. Infant–toddler caregivers who successfully completed the course received a stipend of $100 and 15 state-approved childcare professional development training hours.

Participants

Participants consisted of a convenience sample of 180 child caregivers who completed all training requirements. These participants worked in 114 infant–toddler rooms in 60 childcare centers. Pre- and posttest ITERS scores were obtained for 96 (84%) infant–toddler rooms in 48 centers where 160 of the 180 caregivers (89%) worked. A majority of the 96 rooms were located in inner-city neighborhoods and provided care for infants and toddlers who were from socioeconomically poor neighborhoods. Prior to training, the mean age of the infants and toddlers enrolled in these rooms was 22 months (range = 3–30 months). The average number of children present at the time of the initial observation was 8.36 and average number of adults was 2.32.

Posttest ITERS were not completed for 18 of the 114 infant–toddler rooms, with 20 participants who completed all training requirements. For 5 rooms, the classroom assistant completed course requirements, but the lead teacher did not; therefore, posttest ITERS were not obtained. For 3 rooms, four caregivers completed course requirements but were reassigned to preschool classrooms during the course. Finally, for 10 infant–toddler rooms, posttest ITERS were not obtained, with 11 staff members who completed course requirements but either changed their employment from the center at which they were employed at the beginning of the training program or who were unable to be scheduled for the posttest observation during the month following the training session due to illness or scheduling difficulties, such as field trips. No significant differences in mean total pretraining ITERS scores were found between infant–toddler rooms that received posttraining observations and those that did not, $t(112) = -.285$; $p = .776$, $d = 112$.

Consultation was provided to 123 caregivers who worked in 70 infant–toddler rooms and was not provided for 37 caregivers who worked in 26 infant–toddler rooms. Because we were interested in exploring the extent to which consultation visits contributed to changes in program quality, consultation was purposefully not provided for participants who completed the fifth training course ($n = 15$ infant–toddler rooms). In addition, participants in 11 infant–toddler rooms across the four training courses in which consultation was planned were not provided consultation for a variety of reasons. The primary reason was refusal of consultation by childcare center directors, not unwillingness of the child caregivers to receive consultation or inability of the training program to provide consultation. Therefore, we formed an additional convenience no-consultation group of the caregivers from these 11 infant–toddler rooms. The two no-consultation groups were compared using a repeated measures analysis of variance with a within factor of time (i.e., difference between the pre- and posttest ITERS scores) and a between factor of group. This analysis yielded no main effects for time, $F(1, 25) = .204$, $p = ns$; for group, $F(1, 25) = .000$, $p = ns$; or interaction between time and group, $F(1, 25) = .404$, $p = ns$. Therefore, these two groups were viewed as comparable and combined into one no-consultation group ($n = 26$ infant–toddler rooms). This resulted in a sample of 70 (73%) consultation and 26 (27%) no-consultation infant–toddler rooms.

Characteristics of participants in the consultation and no-consultation group are listed in Table 1, along with the characteristics of those participants who completed training but were excluded due to the absence of posttest ITERS scores. As can be seen, the three groups were relatively comparable on all characteristics, with

TABLE 1. Participant Characteristics By Group

Characteristic	Consultation group[a]	No-consultation group[b]	Post-ITERS not completed[c]
Mean age (years)	41.16	38.0	39.0
Female gender	99%	100%	100%
Ethnic background			
African American	91%	88.5%	67%
Caucasian	2%	3.8%	8.3%
Latino	4%	3.8%	17%
Other	3%	3.8%	8%
Education background			
No high school diploma	1%	0	0
High school diploma or GED	78%	71%	87%
Some college	3%	3.2%	0
Associate degree	10%	16.1%	7%
Bachelor's degree	7%	9.7%	7%
Postbachelor's work	1%	0	0
Certification			
Child development credential	5%	0%	6%
Educational certificate	14%	9.4%	13%
Mean years of experience in childcare	9.83	7.35	6.2
Mean years in current position	4.14	2.37	1.4

Note. ITERS = *Infant/Toddler Environment Rating Scale* (Harms, Clifford, & Cryer, 1990).

[a]70 infant–toddler rooms, 123 staff. [b]26 infant–toddler rooms, 37 staff. [c]18 infant–toddler rooms, 20 staff.

the exception of ethnic background, education level, and mean years of experience. A higher percentage of participants in classrooms where post-ITERS observations were not completed reported their ethnic backgrounds as Latino or Other. A smaller percentage of these caregivers reported attainment of associate's or bachelor's degrees, and their mean years of experience overall and in their current positions were smaller than those reported by the consultation and no-consultation groups. A majority of the participants in the consultation and no-consultation groups were middle age, African American women. On average, the participants in the no-consultation group reported higher levels of formal education, whereas those in the consultation group reported more years of experience in childcare. A *t* test comparing years of experience for the consultation and no-consultation group participants showed no significant differences, $t(129) = 1.656$, $p = .10$.

Table 2 lists the number of staff working in each of the infant–toddler rooms. In the consultation group, a higher number of infant–toddler rooms had three or four staff enrolled in the training program than the rooms that did not receive consultation. The consultation visits occurred during the time that staff were caring for children. Although these visits were oriented to staff as a whole, the lead teacher took responsibility for working directly with the consultant during the visits.

Program Quality Measures

ITERS, developed for use in rooms providing care for infants and toddlers up to approximately 30 months of age, is one of three early childhood environment rating scales that have been widely used to measure the quality of childcare in a variety of settings. The scales have been used in a number of large national and state studies to quantify, compare, and describe childcare quality in infant–toddler rooms (Briefs, 1997; Bryant et al., 2003; Peisner-Feinberg et al., 2001). ITERS consists of seven subscales: furnishings; personal-care routines; listening and talking; learning activities; interaction; program structure; and adult needs. As a whole, the subscales relate to generally accepted elements of quality care, including safety, health, developmentally appropriate activities, positive interactions with adults, and promotion of emotional growth and positive peer relationships (Cryer, 2003). The rating scale is completed during a 2- to 3-hour observation. The observer matches what is observed with criteria that define scoring for each item. Each subscale item is scored on a scale of 1 to 7. A mean score is calculated for each subscale and for all test items. This mean total score is a measure of global program quality. Mean scores between 1 and 2.99 indicate *inadequate* quality; between 3 and 4.99, *minimal or adequate* quality; and from 5 to 7, *good* quality.

TABLE 2. Number of Infant–Toddler Rooms With Multiple Staff Participating in Training

No. of caregivers per room	Consultation group[a]	No-consultation group[b]
1	32 rooms	18 rooms
2	26 rooms	5 rooms
3	9 rooms	3 rooms
4	3 rooms	0 rooms

[a]70 infant–toddler rooms, 123 staff. [b]26 infant–toddler rooms, 37 staff.

The *Caregiver Interaction Scale* (Arnett, 1989), also widely used in studies of childcare quality, is a 26-item scale that rates caregiver–child interactions in four areas: positive interactions, permissiveness, punitiveness, and detachment. Caregiver–child interactions are observed and each item is rated on a 4-point scale of *not at all, somewhat, quite a bit,* and *most of the time*. The items are then regrouped into the four areas of interaction with calculated mean scores for each area.

Training Course

As a whole, few formal training curricula have been developed to prepare child caregivers to meet the needs of infants and toddlers (e.g., Bellm, Whitebrook, & Hantiuk, 1997; Dodge, Yandian, & Bloomer, 1998; O'Brien, 1997). Those that have been published have not reported information about the extent to which completion of training is related to quality childcare practices. The *First Beginnings* program consisted of three components: (a) a five-session, 15-contact-hour group training class; (b) an out-of-class project focused on an infant or toddler identified by the participant as having a special need; and (c) two onsite observation visits to administer program quality measures (Campbell, Milbourne, & Silverman, 2002a). The training program provided information through a sequenced series of class meetings and promoted work-setting application of class information through the completion of an out-of-class homework project. The instructional strategies were geared to the education and experience levels of the participants (e.g., experienced, noncollege-educated adults) and based on principles of adult learning.

Group Training. The content and objectives for each of the five group training classes are outlined in the Appendix. Content was selected to represent key components of quality infant–toddler care, including quality care for children with special needs or disabilities. Key topic areas included caregiver–child relationships, strategies for promoting development and learning, brain–behavior relationships, inclusion and diversity, working with families, and use of community resources (see Appendix). Each session lasted 3 hours. Material in each of the five content areas was presented through active, hands-on, participatory activities that provided opportunities to apply information within the class session. Activities involved participants in problem solving, designing learning activities and adaptations, working with families, and identifying and using community resources. Caregivers learned to design learning activities appropriate for children at a variety of developmental levels and to make and adapt toys and other materials. Other activities used case study methods by providing "real-life stories" and having the child caregivers discuss which approaches would be used to address the issues presented in the story. All the training methods relied heavily on providing participants with experiences that could be easily carried out in their work settings. Participants were permitted to miss (and make-up) only one of the five class sessions.

Out-of-Class Project. Participants completed a portfolio project outside of the time spent in training classes (Campbell, Milbourne, & Silverman, 2000). The project was completed by a participant team when both teachers and teaching assistants were enrolled together in the training program. The project was designed to facilitate caregivers' views of infants and toddlers in terms of their strengths (rather than in terms of their weaknesses or deficits) and promote collaboration between caregivers and children's families. The project was introduced during the second class session by having caregivers write a story about the infant or toddler with special needs selected for the project. Outside of class, the participants made "A Child Portfolio: All About Me" book about the child using a structured format and pictures taken with a program-provided disposable camera. This booklet represented a "picture" of the child in terms of his or her strengths, abilities, and preferences. Such areas as what a child liked to do or was learning to do and favorite activities, people, or places were included. At the final class session, participants shared their projects with each other in a poster format.

Onsite Observation Visits. Each infant–toddler room was visited by an observer in the month prior to and the month following the training course in order to administer the ITERS and the *Caregiver Interaction Scale*. The ITERS measured the quality of each infant–toddler room in which training course participants worked. The *Caregiver Interaction Scale* was administered for each training course participant during the same observation visit. Observations lasted for approximately 2 to 3 hours during the morning and were conducted by an individual who was trained to administer the two scales. Interrater reliability of greater than 85% for exact ratings for each

subscale of the instruments across three observations was established with a primary observer for each individual who observed the infant–toddler rooms. Total and subscale mean scores were calculated for the ITERS for each infant–toddler room following the observation.

Onsite Consultation. The consultation group received three 1-hour consultation visits in each infant–toddler room across the 3 to 4 months when the group training sessions were held. Visits were spaced between each of the class sessions, with the first visit occurring after the first class session and the final visit completed before the fifth class session. The content of each consultation visit followed a specific protocol. During the initial training program session, participants completed a self-assessment. One self-assessment instrument was completed together by all staff when two or more staff assigned to the same infant–toddler room participated in the training course. The project-designed self-assessment consisted of 32 items for which the participants marked the extent of occurrence (*always, sometimes, frequently*) and indicated whether they would like to target improvement in that item area. The items were generated through a review of published checklists and other similar materials designed to provide observations of specific activities in infant–toddler environments (e.g., O'Brien, 1997). An example of one of the self-assessment items is "All children are busy and involved with people or play most of the time." These items were not derived directly from the ITERS nor were they designed to represent ITERS subscale areas proportionally; however, to guide the development of desired outcomes from consultation, self-assessment items were coded for identification with the subscale of the ITERS to which the item was most related. Six of the subscales were represented: furnishings and display (3 items); personal-care routines (11 items); learning activities (4 items); interaction (7 items); program structure (6 items); and adult needs (1 item).

Before the initial consultation visit, the assigned consultant for each infant–toddler room completed a summary sheet that recorded the areas of improvement identified by the staff and the ITERS areas where subscale scores placed the classroom at the *inadequate* level of quality (e.g., subscale mean scores of below 3.) This summary sheet formed the basis of discussion with participants to identify two outcomes to be targeted through consultation. A graph of the total and subscale mean scores obtained on the ITERS was also shared with participants in each infant–toddler room. During this initial visit, a written consultation follow-up plan was developed jointly by the participants and the consultant. For each of the two identified outcomes, the plan identified consultation strategies to be used, steps to be completed, who would be responsible for completion, deadlines for completion, and means for knowing that the outcomes had been accomplished. A variety of strategies were available for consultation, including modeling, discussion, providing resources, brainstorming, room rearrangement, modifying teaching strategies, making written plans, and acquiring materials. The most commonly used strategies included providing or reviewing resources or materials, brainstorming, modeling, and discussion. Between visits, consultants prepared for the next visit by obtaining materials or information, formulating questions for discussion, or planning for modeling sessions. The second and third consultation visits were used to implement the plan and assess the degree of attainment of the outcomes. Outcomes were judged as being met on the basis of the criteria established in the follow-up plan. Furthermore, each consultant maintained a log for each visit to record who was present, how long the visit lasted, the focus of the visit, the overall tone of the classroom, and the degree of interest and staff member response to the visit.

Eight individuals functioned as consultants for infant–toddler rooms across the training courses. Each of the consultants had a minimum of 3 years' experience with child care. Half had master's degrees, and the remainder had bachelor's degrees. Consultants participated in a 3-hour training session held before each training course, during which the procedures to be used for the onsite visits and the ways in which the protocol forms were to be completed were reviewed. The various strategies that could be used for consultation (e.g., brainstorming, modeling) were discussed.

Results

Comparisons of ITERS total mean scores were made using a two-way repeated measures analysis of variance with a within-group factor of time between ITERS total mean scores and a between-group factor of consultation group. No main effects were found for time, $F(1, 94) = 2.179$, $p = ns$, or for group, $F(1, 94) = .060$, $p = ns$. A significant interaction was found between time and consultation group, $F(1, 94) = 6.920$, $p = .010$. The magnitude of the effect was moderate ($\eta^2 = .062$). We explored the possibility of other factors that may have influenced program quality. We did not find any significant between group main effects on repeated measures for these factors (see Table 3), which included number of infant–toddler rooms with multiple participants, training program group, consultant, years of experience, and level of education. Before training, the average ITERS total mean score for the no-consultation group ($M = 3.43$; $SD = .772$) was slightly higher than that of the consultation group ($M = 3.20$; $SD = .779$). Following training, the ITERS total mean score of the no-consultation group ($M = 3.35$; $SD = .666$) decreased from the pretraining score, and that of the consultation group ($M = 3.49$; $SD = .842$) increased

and exceeded the mean score of the no-consultation group. Because the mean scores of the no-consultation group decreased over time, participation in the consultation group cannot be clearly identified as an explanation for the significant interaction found between time and group. Of the factors that we analyzed that may potentially have explained this finding, both levels of education and years of experience approached statistical significance. The participants in the no-consultation group reported higher levels of formal education but fewer mean years of experience in childcare than the consultation group participants.

TABLE 3. Repeated Measures Analysis of Variance for Childcare Quality

Source	*df*	*F*	η	*p*
Number of infant-toddler rooms with multiple participants	3	.227	.007	.877
Training course group	6	1.193	.074	.318
Consultant	7	.587	.062	.764
Years of experience	1	3.328	.039	.072
Level of education	3	2.281	.074	.085

The mean total ITERS scores were labeled as *inadequate, adequate,* or *good quality.* Infant–toddler rooms that achieved scores below 3.0 were classified as providing *inadequate* care, those scoring between 3.0 and 4.99 were classified as providing *adequate* care, and those scoring above 5.0 were classified as providing *good quality* care. Figure 1 shows the pre- and posttraining percentage of infant–toddler rooms rated at each level of care. Prior to training, the consultation group had a larger percentage of *inadequate* care infant–toddler rooms (38.6%) than the no-consultation group (26.9%) and a smaller percentage of *adequate* or *good quality* care infant–toddler rooms (61.5%) than the no-consultation group (73.1%). Following training, 71.4% of the consultation and 69.2% of the no-consultation groups were scored as providing *adequate* or *good quality* care.

Pre- and posttraining total mean ITERS scores also were rated in terms of observable change. Fifteen (21.4%) of the infant–toddler rooms in the consultation group showed observable change following training, whereas only 2 (7.7%) of the infant–toddler rooms in the no-consultation group showed observable change. Four (5.7%) infant–toddler rooms in the consultation group received lower total mean ITERS scores following training, whereas three (11.5%) of the infant–toddler rooms in the no-consultation group had lower posttraining scores. The differences between the consultation (*M* rank = 50.78)

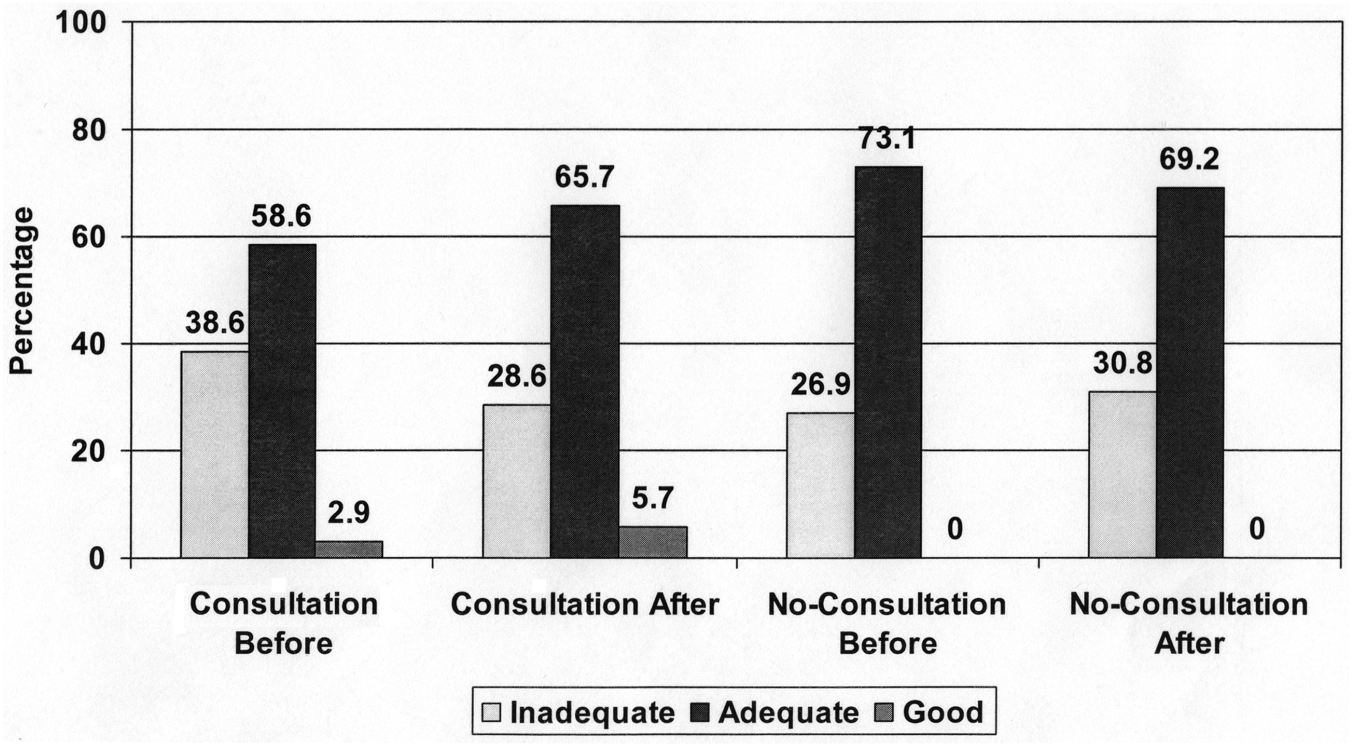

FIGURE 1. The percentage of infant–toddler rooms in the consultation and no-consultation groups rated as providing *inadequate, adequate,* and *good quality* care before and following training.

TABLE 4. ITERS Subscale Mean Scores for the Consultation and No-Consultation Groups Before and After Training

	Consultation group[a]		No-consultation group[b]	
ITERS Subscale	Pretraining	Posttraining	Pretraining	Posttraining
Furnishings	3.05	3.33	3.18	3.31
Personal care	3.33	3.63	3.58	3.49
Listening & talking	3.41	3.82	3.75	3.31
Learning activities	2.66	2.99	2.86	2.67
Interaction	3.65	4.06	4.19	3.67
Program structure	3.67	3.98	3.85	3.84
Adult needs	3.47	3.47	3.58	3.85

Note. ITERS = *Infant/Toddler Environment Rating Scale* (Harms, Clifford, & Cryer, 1990).
[a]70 infant–toddler rooms, 123 staff. [b]26 infant–toddler rooms, 37 staff.

and no-consultation (*M* rank = 42.37) groups approached, but did not reach, statistical significance, $\chi^2(1, N = 96) = 3.022$, $p = .082$. Eleven (10%) of the infant–toddler rooms in the consultation group that had initially been classified as providing *inadequate* care were classified as providing either *adequate* or *good quality* care following training. In the no-consultation group, the number of infant–toddler rooms where *inadequate* care was provided increased from seven (27%) before training to eight (31%) following training. No infant–toddler rooms in the no-consultation group were classified as providing *good quality* care either before or following training, whereas the number of infant–toddler rooms providing *good quality* care in the consultation group increased from two (3%) before training to four (6%) following training.

Table 4 shows the mean scores for each of the ITERS subscales before and after training for both the consultation and no-consultation groups. As can be seen, the posttraining mean subscale scores for the consultation group exceeded both the pre- and posttraining scores for the no-consultation group in all but two subscale areas. The interaction subscale mean score was higher at pretraining for the no-consultation group. The adult needs subscale mean score for the consultation group showed no change over time and was the lowest mean score at both training points. With the exception of the adult needs subscale, the consultation group scored higher posttraining than the no-consultation group on all subscale mean scores. The no-consultation group posttraining scores showed increases on the furnishings and adult needs subscales and either decreased or remained stable in the remaining five subscale areas. The lowest subscale score for all groups at all measurement points was learning activities. Following training, the consultation group score improved to *adequate* in learning activities, but the no-consultation group score remained in the *inadequate* range.

The *Caregiver Interaction Scale* was used to gain more detailed measures of the caregivers' interactions with the infants and toddlers. The scale includes four factors. On punitiveness and detachment, optimal scores are low (i.e., less than 2) and reflect ratings of *not at all true*. Optimal scores on positive interaction and permissiveness are high (i.e., greater than 3) reflecting ratings of *most of the time*. Both pre- and posttraining *Caregiver Interaction Scales* were completed with 93 (62%) of the 149 participants. Pre- and posttraining means for the consultation and no-consultation groups are listed in Table 5. Scores for the consultation group decreased in punitiveness, detachment, and permissiveness and increased in positive interaction. In general, the consultation group caregivers' interactions with children were characterized as somewhat punitive but not detached, with minimal levels of positive interaction and permissiveness. The no-consultation group scores increased on all four factors between pre- and posttraining ratings. At the posttraining point, interactions between this group of caregivers and children were similar to interactions of the consultation group but were somewhat more punitive and detached than those of the consultation group. Caregivers in the no-consultation group were rated as having minimal levels of positive interaction and permissiveness with children. Repeated measures analysis of variance were calculated for each caregiver interaction factor using time between the pre- and posttraining score as the within-group factor and consultation/no-consultation as the between-group factor. We found no significant main effects or interactions for any caregiver interaction factor, indicating that consultation did not have a significant effect on caregiver interactions with children.

TABLE 5. Mean Scores for the Arnett (1989) Caregiver Interaction Scale

	Consultation[a]				No Consultation[b]			
	Pretraining		Posttraining		Pretraining		Posttraining	
Factor	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Punitiveness	2.04	.796	1.92	.913	1.38	.298	1.92	.792
Detachment	1.38	.565	1.34	.508	1.22	.519	1.50	.617
Positive Interaction	2.86	.689	2.95	.643	2.71	.557	2.85	.695
Permissiveness	2.80	.932	2.42	1.01	2.77	1.03	2.91	.977

[a]n = 71 caregivers. [b]n = 22 caregivers.

Discussion

The quality of childcare has been of increasing concern nationally in the past decade (Rating Early Childhood Environment, 2003). Increasing the formal education levels of child caregivers, improving working conditions and salary levels, providing professional development training, and developing accredited programs have all been suggested as interventions to improve the quality of childcare. Only five published studies have reported the impact of systematically implemented professional development activities on infant–toddler childcare quality. Three of these studies used mentoring or intensive consultation as the training strategy, and two combined over-time training sessions with periodic consultation visits. Only two of these studies used comparison groups.

We attempted to look at the value of small amounts of onsite consultation added to a five-session training program. The content of the didactic training program was based on key issues in infant–toddler care and emphasized areas of quality care for all infants and toddlers, including those who might be identified as having special needs or disabilities. Consultation was linked to two outcomes identified by the consultant and infant–toddler room staff on the basis of a review of low-scoring ITERS subscales and participant self-assessment.

The total mean scores on the ITERS showed a significant interaction between time and group, but the mean scores of the no-consultation group decreased between the pre- and posttraining measurement points. We investigated the effect of other factors known to potentially affect quality, such as level of caregiver education, years of experience, training group, and person who provided the consultation, to determine if other factors may have related to these differences. No significant main effects were found for any of these factors; however, caregiver level of education and years of experience approached significance. As a whole, our total sample of child caregivers, drawn largely from centers in socioeconomically poor neighborhoods, were less formally educated but more experienced than samples in national childcare quality studies (e.g., Love, 1997). Fiene (2002) reported that mentoring was effective in changing quality in classrooms where caregivers were less formally educated and experienced but that greater quality change occurred in classrooms with higher educated and more experienced caregivers. In our study, the consultation may have been more helpful for child caregivers with more experience.

Our consultation group showed a greater percentage of observable change in setting quality than the no-consultation group. These changes approached significance when the groups were compared. The consultation group also showed changes on a greater number of ITERS subscale mean scores than the no-consultation group. These data, in combination with the significant interaction found between pre- and posttraining mean ITERS scores and consultation group, suggest that the addition of the three onsite consultation visits may have contributed positively to infant and toddler childcare quality.

The ITERS scores of our group show similar patterns to those reported for two other training studies with infant–toddler caregivers (Fiene, 2002; Palsha & Wesley, 1998). A randomly selected sample of staff in 22 infant–toddler rooms received 6 months of mentoring intervention, and, as in our study, quality scores of the mentoring group increased and those of the control group decreased. Fiene (2002) explained the decreased control group scores as evidence that programs decrease in quality without any onsite intervention. In the second training study, quality in a sample of six infant–toddler rooms showed change when staff received consultation for 6 to 12 months (Palsha & Wesley, 1998). The gains of our consultation group in subscale scores followed similar patterns in that no change in the adult needs subscale and minimal gain in personal-care routines were reported in both studies. Our consultation rooms showed greater gains on the interaction and program structure subscales but smaller gains on the listening and talking and learning activity subscales than reported for the six consultation-only infant–toddler rooms. The consultation provided for these

six infant–toddler classrooms was targeted to preconsultation low-scoring ITERS subscale areas. In our study, caregivers and consultants agreed on two outcomes to be achieved through consultation. These identified outcome areas were not linked directly to low-scoring ITERS areas. Had consultation in our study been directed solely to low-scoring ITERS subscale areas, greater gains may have been seen in posttraining ITERS subscale scores.

Small differences between pre- and posttraining scores on any of the environment rating scales result in significant differences (e.g., Campbell et al., 2003; Fiene, 2002; Kontos et al., 1996; Palsha & Wesley, 1998) that may not be observable in the classroom settings. Therefore, when considering the impact of interventions on childcare quality, observable change is a more stringent criteria. The rationale behind this measure is that quality differences will be observable when classrooms change from one quality score level to another (i.e., from *inadequate* to *adequate* or *good* to *excellent*) or remain classified as *good quality* but show changes of at least one score point (Kontos et al., 1996). A total of 21.4% of the infant–toddler rooms in our consultation group showed observable change following training in comparison to only 7.7% of the no-consultation group. Although the differences between the consultation and no-consultation groups only approached significance, the percentage of the consultation group change compares favorably to the 19% observable change reported with a sample of 130 family caregivers who participated in a 9-month training course that was accompanied by varying amounts of onsite consultation (Kontos et al., 1996). Although observable change in 21.4% of the consultation group in our study is small, this may be a promising amount of observable change given that our training course was held for 3 months. The finding that family care and our infant–toddler rooms showed change with a combination of participation in a training course and onsite consultation suggests that this combination may warrant further study.

The marginal quality level of childcare programs throughout the country is cause for great concern, especially as more recent data are beginning to link childcare quality to children's readiness for school (e.g., Bagnato, Suen, Brickley, Smith-Jones, & Dettore, 2002; Peisner-Feinberg et al., 2001). Although professional development activities are frequently recommended as a way of improving quality, few studies have investigated the differential effects of particular professional development activities or have done so with infant–toddler programs. Situations in which professional development hours are required and are provided through "one-shot" group training workshops are not likely to influence program quality (Fiene et al., 2002). More intensive strategies, such as mentoring and consultation, without an accompanying didactic training program have been associated with changes in pre- and posttest ITERS scores (Fiene, 2002; Palsha & Wesley, 1998). In our study, changes in program quality resulted when three 1-hour consultation visits were added to a 3-month, five-session didactic training program. To our knowledge, all published studies that have reported about professional development activities have occurred over 6 to 12 months.

Professional development activities, by themselves or in combination with other strategies, offer a cost-effective means for effecting change in the quality of childcare. Results of consultation, mentoring, and combined approaches have been investigated in infant–toddler settings with small reported changes in quality. To move forward, we need more rigorous attempts to examine the impact of specific types of professional development activities, alone or in combination, on childcare quality improvement with caregivers of different backgrounds, working in different types of childcare settings, and with varied age levels of children. ◆

REFERENCES

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

Bagnato, S. J., Suen, H. K., Brickley, D., Smith-Jones, J., & Dettore, E. (2002). Child developmental impact of Pittsburgh's early childhood initiative (ECI) in high-risk communities: First-phase authentic evaluation research. *Early Childhood Research Quarterly, 17,* 559–580.

Barnett, W. S. (2003, March). *Better teachers, better preschools: Student achievement linked to teacher qualifications* (Preschool Policy Matters Issue No. 2). New Brunswick, NJ: National Institute for Early Education Research.

Bellm, D., Whitebrook, M., & Hantiuk, P. (1997). *The early childhood mentoring curriculum.* Washington, DC: National Center for the Early Childhood Workforce.

Bowman, B. T., Donovan, S., & Burns, M. (Eds.). (2001). *Eager to learn.* Washington, DC: National Academy Press.

Bryant, D., Maxwell, K., Taylor, K., Poe, M., Peisner-Feinberg, E., & Bernier, K. (2003). *Smart Start preschool care quality in North Carolina: Change over time and relation to children's readiness.* Chapel Hill, NC: FPG Child Development Institute.

Campbell, P. H., Milbourne, S., & Silverman, C. (2000). Strengths-based child portfolios: A professional development activity to alter perspectives of children with special needs. *Topics in Early Childhood Special Education, 21,* 152–161.

Campbell, P. H., Milbourne, S. A., & Silverman, C. (2002a). *Philadelphia inclusion network, instructor guidelines.* Philadelphia: Thomas Jefferson University, Child and Family Studies Research Programs.

Campbell, P. H., Milbourne, S. A., & Silverman, C. (2002b). *Philadelphia inclusion network, participant materials.* Philadelphia: Thomas Jefferson University, Child and Family Studies Research Programs.

Campbell, P. H., Milbourne, S., Silverman, C., & Feller, N. (2003). *Innovative practices: Promoting inclusion by improving child care quality in inner city programs.* Manuscript submitted for publication.

Cryer, D. (2003). Defining program quality. In D. Cryer & R. M. Clifford (Eds.), *Early childhood education and care in the USA* (pp. 31–46). Baltimore: Brookes.

DeBord, K., & Sawyers, J. (1996). The effects of training on the quality of family child care for those associated with and not associated with professional child care organizations. *Child and Youth Care Forum, 25,* 7–15.

Dodge, D. T., Yandian, S. E., & Bloomer, D. (1998). *A trainer's guide to the creative curriculum for infants and toddlers.* Washington, DC: Teaching Strategies.

Dombro, A. L., & Modigliani, K. (1995). *Providers speak about training, trainers, accreditation, and professionalism.* New York: Families and Work Institute.

Ferri, E. (1992). *What makes childminding work? A study of training for childminders.* London, UK: National Children's Bureau.

Fiene, R. (2002). Improving child care quality through an infant mentoring project. *Child and Youth Care Forum, 3*(2), 75–83.

Fiene, R., Greenburg, M., Bergsten, M., Fegley, C., Carl, B., & Gibbons, E. (2002). *Early care and education: The keystone of Pennsylvania's future* (Quality study). Harrisburg, PA: Governor's Task Force on Early Childhood Care and Education.

Fischer, J. L., & Eheart, B. K. (1991). Family day care: A theoretical basis for improving quality. *Early Childhood Research Quarterly, 6,* 549–563.

Galinski, E., Howes, C., & Kontos, S. (1994). *The family day care training study: Highlights of findings.* New York: Families and Work Institute.

Harms, T., & Clifford, R. M. (1980). *Early childhood environment rating scale.* New York: Teachers College Press.

Harms, T., & Clifford, R. M. (1989). *The family day care rating scale.* New York: Teachers College Press.

Harms, T., Clifford, R., & Cryer, D. (1990). *Infant/toddler environment rating scale.* New York: Teachers College Press.

Howes, C., & Brown, J. (2000). Improving child care quality: A guide for Proposition 10 commissions. In N. Halfon, E. Shulman, M. Shannon, & M. Hochstein (Eds.), *Building community systems for young children* (pp. 1–24). Los Angeles: UCLA Center for Healthier Children, Families and Communities.

Iutcovich, J., Fiene, R., Johnson, J., Koppel, R., & Langhan, F. (1997). *Investing in our children's future: The path to quality child care through the Pennsylvania Child Care/Early Childhood Development Training System.* Erie, PA: Keystone University Research Corporation.

Kontos, S. (1992). *Family day care: Out of the shadows and into the limelight.* Washington, DC: National Association for the Education of Young Children.

Kontos, S., & Fiene, R. (1987). Child care quality, compliance with regulations, and children's development: The Pennsylvania study. In D. A. Phillips (Ed.), *Quality in child care: What does research tell us?* (Research Monographs of the National Association for the Education of Young Children, No. 1). Washington, DC: National Association for the Education of Young Children.

Kontos, S., Howes, C., & Galinsky, E. (1996). Does training make a difference to quality in family child care? *Early Childhood Research Quarterly, 11,* 427–445.

Love, J. M. (1997). *Quality in child care centers* (Policy brief). Chapel Hill, NC: Frank Porter Graham Child Development Institute.

Morgan, G. (2003). Staff roles, education, and compensation. In D. Cryer & R. M. Clifford (Eds.), *Early childhood education and care in the USA* (pp. 65–86). Baltimore: Brookes.

Norris, D. J. (2001). Quality of care offered by providers with differential patterns of workshop participants. *Child & Youth Care Forum, 30,* 111–120.

O'Brien, M. (1997). *Inclusive child care for infants and toddlers: Meeting individual and special needs.* Baltimore: Brookes.

Palsha, S., & Wesley, P. W. (1998). Improving quality in early childhood environments through on-site consultation. *Topics in Early Childhood Special Education, 18,* 243–253.

Pence, A., & Goelman, H. (1991). The relationship of regulation, training and motivation to quality of care in family day care. *Child and Youth Care Forum, 20,* 83–101.

Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., & Yazejian, N. (2001). The relation of preschool child-care quality to children's cognitive and social development trajectories through second grade. *Child Development, 72,* 1534–1553.

Rating Early Childhood Environments. (2003). *Early Developments, 7*(2), 1–23.

Shlay, A., Jaeger, L., Weinraub, M., Murphy, P., Shaw, K., & Gottesman, L. (2002). *Making a case for child care: An evaluation of a Pennsylvania-based intervention called Child Care Matters.* Philadelphia: Temple University, Center for Public Policy.

Whitebrook, M. (2003). *Bachelor's degrees are best: Higher qualifications for pre-kindergarten teachers lead to better learning environments for children.* Washington, DC: The Trust for Early Education.

(Appendix follows on next page)

APPENDIX: OBJECTIVES FOR EACH GROUP TRAINING SESSION

Session	Objective
Welcoming All Children	The concept of inclusion and its relationship to young children with and without special needs Terminology associated with inclusion and special needs Families' differing cultures and perspectives on childrearing
Promoting Development & Learning	Infant and toddler development through use of a variety of methods, including focused observation How to provide caregiving that is responsive to each child's unique strengths and needs How to design and make a strengths-based portfolio for an infant or toddler
Relationships with Infants and Toddlers	The importance of developing positive and supporting relationships with infants and toddlers How infants learn about themselves, their feelings, and other people How to provide relationship-based care How to provide caregiving that is responsive to each child's unique strengths and needs
Infant and Toddler Brain Development: Implications for Caregivers	Basic neurology of brain growth and development The long-lasting effects of social and physical environments on brain development How brain development influences development of social relationships, speech and language, and cognition
Resources and Relationships	Where and how to make referrals to better support infants' and toddlers' participation in the childcare setting Services and supports available through formal and informal systems How to best communicate with families and build a team with families and professionals