

# The QUINCE-PFI Study:

An Evaluation of a Promising Model for  
Child Care Provider Training

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**Final Report**

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# Executive Summary

ON-SITE CONSULTATION has become a widely implemented professional development approach to quality improvement for early childhood programs, but the way in which it is delivered is often quite variable. Even the label used to describe the process varies—consultation, coaching, mentoring, or TA (technical assistance). Few studies of the effectiveness of consultation have been conducted and little is known about the type or amount of intervention that is needed to obtain quality growth, whether teachers and family child care providers can benefit equally, or whether there are particular characteristics of caregivers who might benefit more from consultation.

This project was funded in 2004 by the Child Care Bureau of the US Department of Health and Human Services, led by researchers at the University of North Carolina, and colleagues in four other states. The evaluation was called QUINCE (Quality Interventions for Early Care and Education). The study tested the Partnerships for Inclusion (PFI) model of assessment-based, individualized, on-site consultation (Palsha & Wesley, 1998; Wesley, 1994). PFI consists of two main components, both developed at the FPG Child Development Institute—the assessment tools used to index quality (the *Infant/Toddler Environment Rating Scale-Revised*, (ITERS), 2003, the *Early Childhood Environment Rating Scale--Revised*, (ECERS ), 1998, and *Family Day Care Rating Scale* (FDCRS), 1989, measures developed by Harms, Clifford & Cryer) and the theory-based, collaborative, problem-solving model of consultation developed by Pat Wesley. The model builds on the literature that suggests greater change is possible when individuals are involved in assessing their own needs, receive individualized support over an extended period of time, and have opportunities to apply new knowledge and skills in their own work setting.

Twenty-four agencies in five states (California, Iowa, Minnesota, Nebraska, and North Carolina) participated in the study. Random assignment was used at two levels: 101 consultants were assigned to PFI or control groups, and 108 child care classrooms and 263 family child care (FCC) homes were assigned to PFI or control consultants. Teachers and FCC providers were assessed using questionnaires and observations before and after the PFI or control intervention and 6 months later. In the year after the intervention, 710 children in these classrooms and FCC homes were assessed at two time points with measures of cognitive, language and socio-emotional development.

The objectives of the research were to test the efficacy of the PFI model of on-site consultation compared to the typical quality enhancement programs delivered by the 24 participating agencies, to investigate the conditions under which PFI might work, and to assess whether children in FCC homes and classrooms served by a PFI-trained consultant had better outcomes than those in classes that received the typical consultation.

## Description of Study Participants

The partner agencies that participated in QUINCE were very similar to typical community-based resource and referral agencies. The characteristics of our 24 sites and their typical consultation services mirror the characteristics and services of NACCRRRA's 2006 national random sample of 250 local CCR&Rs. The control group in QUINCE received a variety of typical quality enhancement consultation interventions. In our study, PFI on-site consultation was compared to "business as usual."

The consultants were all women and had considerable experience in early childhood education. They had been consultants for an average of 4-5 years. Mean education was between 15-16 years (16 = BA degree), although there was a distribution ranging from high school to MA. Of the consultants with AA or BA degrees, somewhat less than 1/3 of the degrees were in early childhood education. In addition, 24% screened positive for depression.

FCC providers averaged 37 years of age, had over 10 years of early childhood experience, and 70% had less than an AA degree. The majority were White, with 12% African-American and 8% Other. Mean family income was \$50,000. They cared for an average of 7 children and 24% had a paid assistant. FCC homes served about 25% children on subsidy.

Teachers averaged 37 years of age, had almost 11 years of early childhood experience, and 75% had less than an AA degree. Almost half the teacher sample was White with 43% African-American and 8% Other. Mean family income was \$38,000. Their classrooms served an average of 13 children with an average child:adult ratio of 7:1. Almost 50% of the children in these classrooms received subsidy.

Families of study children were married (~70%), with 2 children on average, annual family income of about \$57,000, and over 40% of mothers with a BA degree or more. Child care subsidies were received by 15%.

Children in the study were generally 3-4 years old when first assessed and slightly more boys than girls. Although about 13% of families identified as Hispanic/Latino, Spanish was the primary home language of only 24 of over 700 study children so their Spanish assessments were not analyzed.

## Findings

### Family Child Care Quality

1. The PFI group made significant gains in quality from the beginning to end of consultation and they were significantly higher than the control group which made no gains. The PFI group improved on observations of teaching and interactions, provisions for learning, and literacy/numeracy; they did not improve on tone/discipline or sensitivity. The treatment effect sizes were moderate.
2. The gains made by the PFI group during intervention were maintained at 6 months after the intervention ended.

3. The average number of on-site consultation visits was 11.6 for the PFI group and 5.8 for the control group, but dosage was not a mediator of the treatment effect on quality.
4. More experienced FCC providers had more significant gains in quality over time than less experienced providers.
5. Attitudes and beliefs were not likely the mediators of the observed changes in quality. At the end of intervention, PFI and control groups did not differ on any of several measures of professional motivation, childrearing beliefs, teaching confidence, or job stress.

### Classroom Quality

6. Classrooms in both PFI and control groups improved over time on three of the four measures of quality—teaching and interactions, provisions for learning, and literacy/numeracy. No group differences were observed on the sensitivity measure. (See Figures A, B, and C)
7. Quality gains continued to be made after the intervention. In fact, the slope of change was greater during the post-intervention period than during intervention.
8. The average number of on-site consultation visits was 19.3 for the PFI group and 6.7 for the control group. Dosage was a significant mediator of the treatment effect on quality for the PFI group.
9. In the PFI group, more experienced teachers made more significant gains in quality over time than less experienced teachers.
10. Compared to control teachers, PFI teachers showed gains on the measure of childrearing beliefs (modernity) and higher professional motivation scores; the two groups did not differ in their beliefs about developmentally appropriate activities or confidence in their teaching abilities.

Figure A. Teaching and Interactions Factor from the ECERS-R & FDCRS

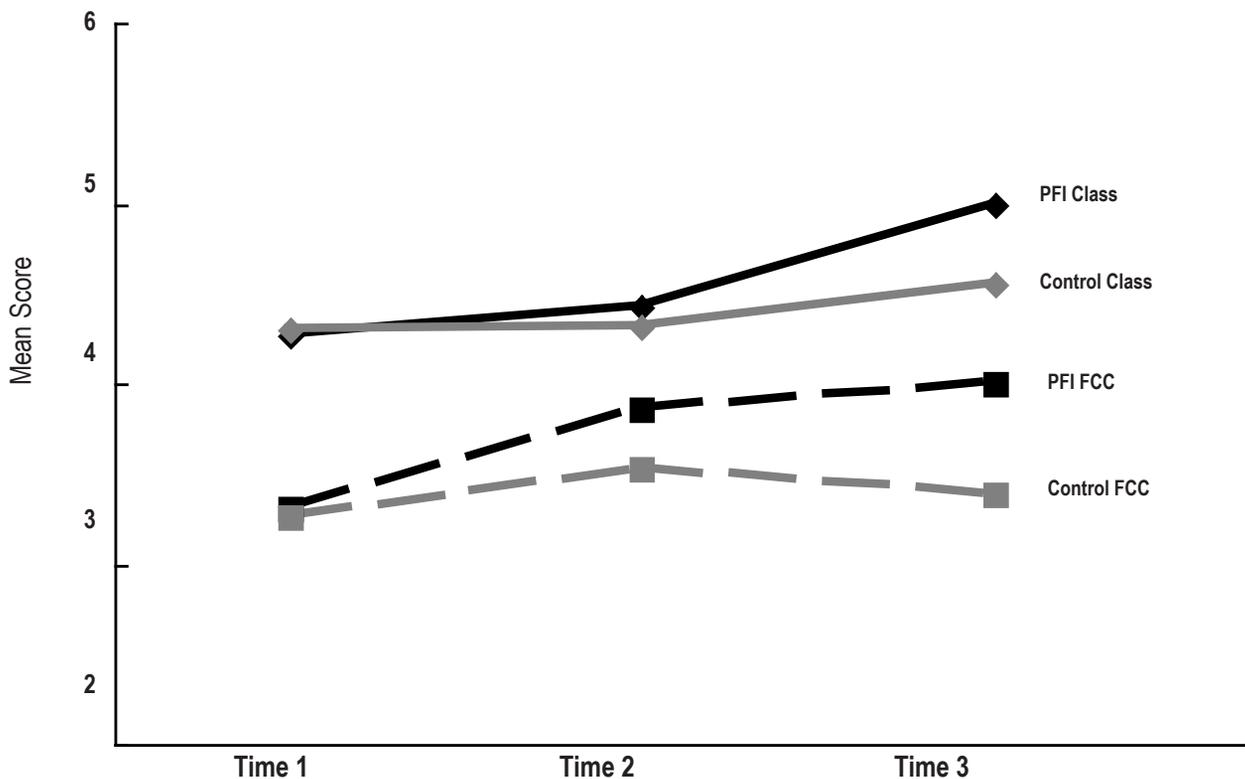
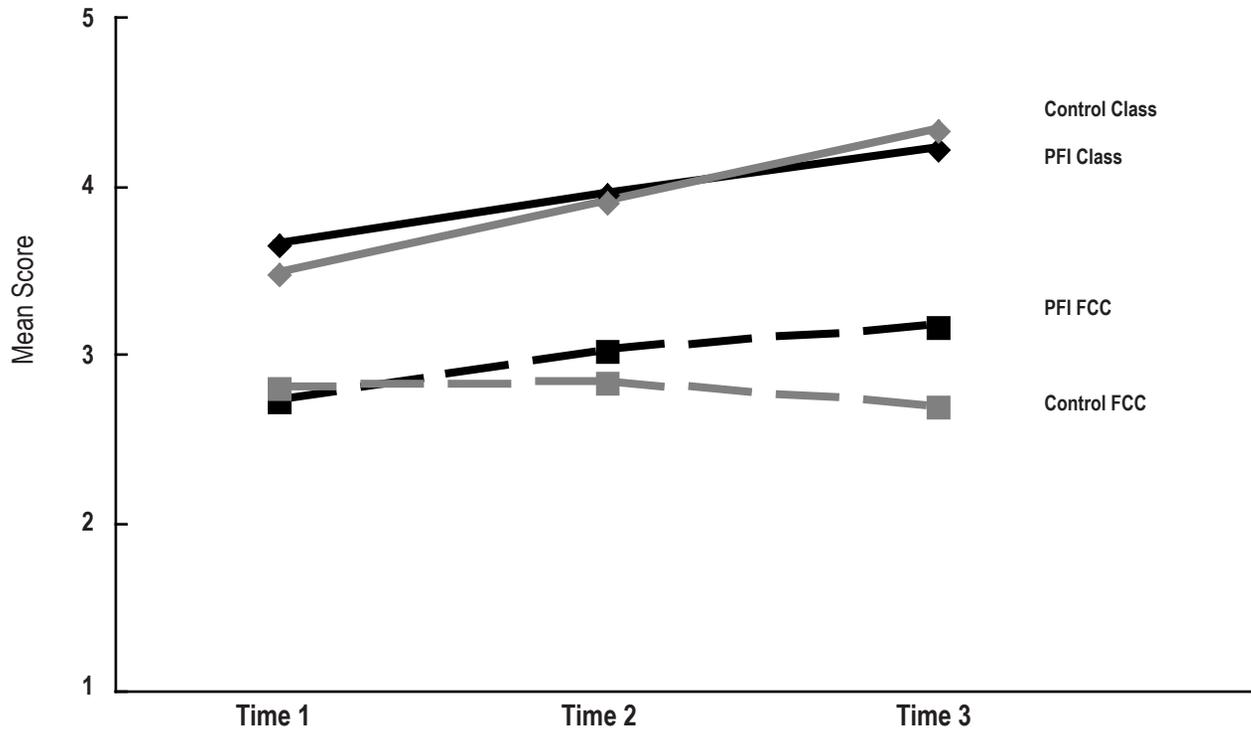
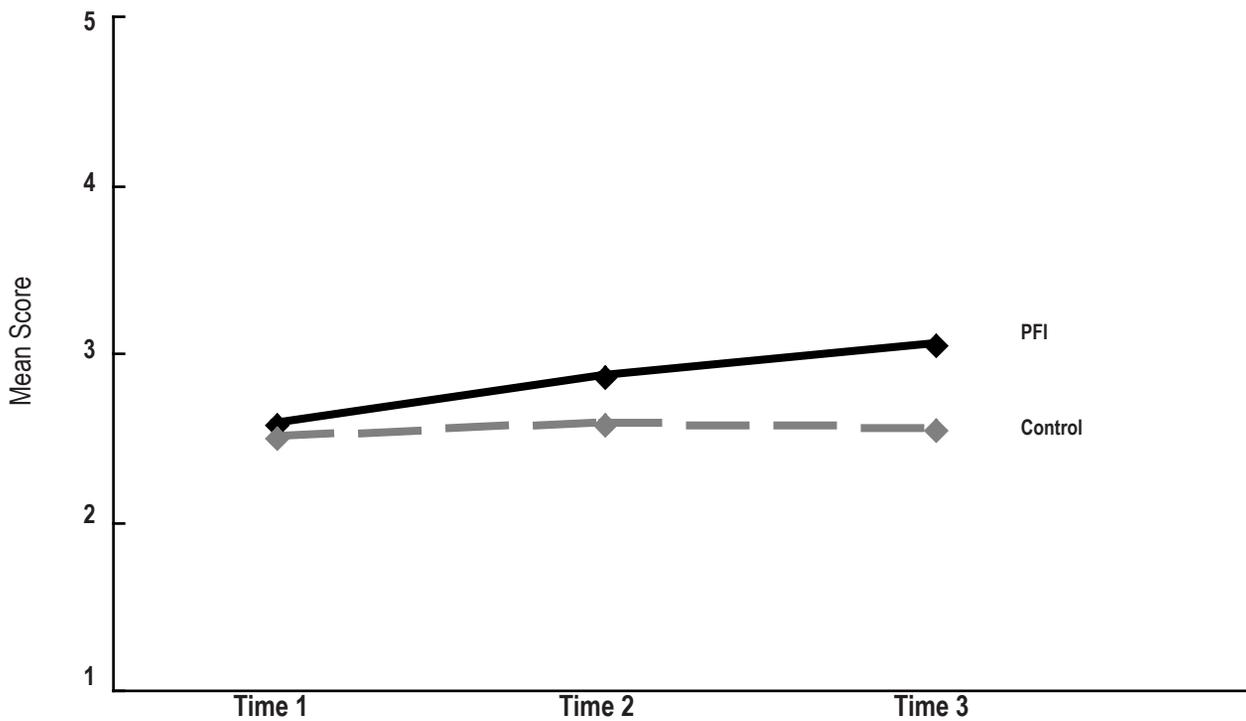


Figure B. Provisions for Learning Factor from the ECERS-R & FDCRS\*



\*This factor score contains some health and safety items for the FCC providers whereas for classrooms, the factor is mainly composed of learning materials.

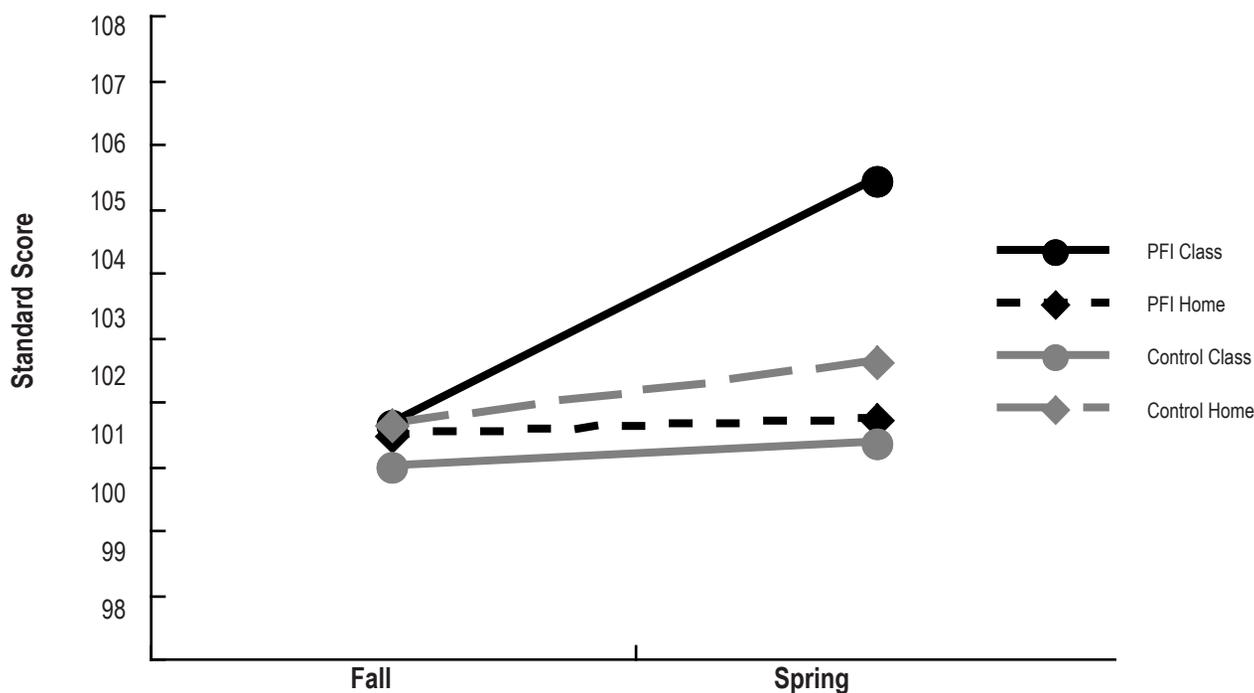
Figure C. ECERS-E Composite Score for Teachers and FCC Providers Combined



## Child Outcomes

11. Several child characteristics were related to child language, readiness and social outcomes, as one would expect: girls scored better than boys on all measures; minority children scored less well on the language assessment and higher on anxiety/depression; subsidized children scored lower on the language and school readiness measures and were rated lower in social competence.
12. After accounting for child characteristics, we found main effects for quality, that is, children in higher quality classrooms or FCC homes scored higher on the language, school readiness measures and social competence measures, and lower on conduct problems and anxiety/depression.
13. After accounting for child characteristics, there were no main effects of treatment (PFI), however, analyses indicate that children in PFI classrooms showed significantly greater improvement over time on the language measure than children in control classrooms with a moderate effect size (.44). (See Figure D)
14. Being in a PFI classroom was also significantly related to children's anxiety/depression although in a negative direction: children in PFI classrooms were rated by their teachers as significantly higher on anxiety/depression in the spring compared to fall.

Figure D. PLS Receptive Language Over Time by Treatment Group (adjusted means)



## Fidelity

15. Both control and PFI consultants reported on frequency and duration of their phone and on-site contacts with their clients. Controls reported on the general content of their visits, but PFI consultants reported more extensively. We created a fidelity index for PFI that reflected the dimensions of exposure, implementation of the model's key components, and quality of service delivery, although quality was difficult to assess.
16. Scores ranged widely on the fidelity measure, with only 8% of PFI consultants rated at a level that model developers consider to be "high-level" implementation and less than half implementing at an "average" level or above. PFI consultants generally made an appropriate number of visits and created opportunities for their consultees to make decisions, but making regular visits (twice per month) was challenging, as was scoring the rating scales accurately and tying action plans to assessment results.

17. Using several consultant characteristics to predict fidelity, we could not identify which consultants would be the ones who would implement PFI with strong fidelity. Believing that an agency's typical practices might conflict with and be a barrier to faithful implementation, we also used agency characteristics to attempt to predict consultant fidelity and found no evidence to suggest these measurable characteristics stood in the way. Other factors such as supervision and leadership are likely more important.

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### **Conclusions and Suggestions for Future Research**

18. The QUINCE study provides evidence that on-site consultation can significantly improve child care quality. The specific intervention studied, the Partnerships for Inclusion model, was more effective with FCC homes than the typical consultation being offered in many communities. Among child care classrooms, however, quality improved whether the teacher received PFI or one of the control group interventions.
19. The use of an observational assessment of quality at or near the beginning of a consultation process can provide an objective and concrete basis for entering into a supportive and helpful relationship with a teacher or FCC provider. All PFI consultants used the ECERS or FDCRS and the ECERS-E; some of the control consultants used these tools also, or another measure they developed or adopted. However, accuracy of observations is a concern with all consultants. Programs should provide good initial training on measurement tools and periodic retraining.
20. The consultation approach implemented by many agencies is, at best, not well specified, and at worst, haphazard. Following a standard, theory-based approach is important; adequate training and supervision cannot be underestimated. Fidelity of implementing the PFI on-site consultation intervention was lower than the research team desired and we believe that greater fidelity may have led to greater effect sizes.
21. The rate of turnover among quality enhancement consultants in this study was higher even than the turnover rate among providers. Study demands may have led to a few consultants dropping from the study, but not their jobs; however, this was not true for the majority of those who left. Being a quality consultant is challenging and these individuals are typically not highly paid (average salary in 24 partner agencies was \$18/hour, but 12 agencies paid from \$10-15/hour). Twenty-four percent screened positive for depression. Child care resource agencies need to support their consultant staff with good preparation and training, a manageable caseload, and frequent supervision and encouragement.
22. Given the focus on quality and the movement across the nation toward rated child care licensure, it is critical that more studies be conducted on methods of enhancing child care quality. Such studies should include a range of technical assistance services such as training, coaching, and consultation and distinguish among these terms and other professional development approaches such as mentoring and supervision. Different models may be more effective for different types of providers, in different regions, or for different purposes. For example, the high rate of consultant turnover is a consideration in matching technical assistance with program need. Perhaps brief, focused interventions should be the initial domain of newly hired consultants with opportunity to learn and practice more intensive models such as PFI for those who demonstrate their continuing commitment to their work. Likewise, tiered technical assistance services that vary in scope and intensity should be considered for providers based on their needs and initial levels of participation.

23. The QUINCE study provides a model for addressing multiple dimensions of fidelity. One lesson learned by the QUINCE study team was the need for earlier, more frequent, and more specific communication with community agencies and the consultants themselves about these fidelity dimensions and the types of supports required to implement an intensive model of consultation such as PFI. Closer ongoing contact with consultants' supervisors would have provided opportunities to reinforce the dimensions of adherence, exposure, and quality of service. In future studies it will be important to address the challenge of establishing close communication with supervisors without undermining the randomness of the experimental designs, or develop new research designs that will enable more communication between the research team and the study groups. Random assignment of entire agencies to treatment or control groups would have allowed for thorough discussion of the PFI model with all consultants and supervisors in a particular agency, although a large number of agencies would be required for such a study.
24. Given the movement in early childhood towards more evidence-based practice and the increasing focus on accountability, future studies of consultation should focus on measuring the intervention delivery process and the receipt and enactment of the intervention by providers. In our study, an independent observer assessed quality changes over time in the participating FCC homes and classrooms, but no one independently assessed the consultants' on-site delivery of either PFI or control interventions. More frequent monitoring would be helpful.
25. Consultation is an increasingly utilized method of quality enhancement in both early childhood classrooms and family child care homes. Agencies have begun to understand that it is important to implement models of consultation that have proven effective, but beyond that, we need to conduct the research that helps agencies and supervisors know how to train, support, and measure the fidelity with which consultants deliver their services.



# Chapter 1: Introduction

**I**N 2004 THE CHILD CARE BUREAU funded a randomized study of an intervention to improve the quality of young children’s early childhood care environments. The evaluation was called QUINCE (**Q**uality **I**nterventions for Early **C**are and **E**ducation) and the quality enhancement approach tested was the Partnerships for Children (PFI) model of assessment-based, individualized, on-site consultation (Palsha & Wesley, 1998; Wesley, 1994). Programs in five states (California, Iowa, Minnesota, Nebraska, and North Carolina) participated and child care classrooms and family child care homes were assessed before and after the intervention and 6 months later. Children in these classrooms and family child care homes (FCC) were assessed at 2 time points with measures of cognitive, language and socio-emotional development.

When the QUINCE study began, on-site consultation, with or without an assessment base, was becoming more widely used as a training and technical assistance (TA) approach for quality improvement, yet the way in which it was being delivered was often quite variable. Specifically, we knew little about the type and content of consultation that might be most effective, whether there were particular characteristics of the family and center-based providers who might benefit from consultation (e.g., minimal educational level or years of experience), or the intensity (total amount and duration) of TA that would be necessary to effect a measurable quality improvement. Extensive evidence exists that the quality of child care environments is positively related to children’s growth and development, providing the rationale for the many TA programs whose goal is quality enhancement. Yet most TA programs do not document quality improvement, let alone child outcome changes. The goal of this research was to determine the conditions under which a very specific assessment based, on-site consultation model of child care provider training would work, that is, enhance the quality of the family home or child care classroom and also result in positive child change. This report will provide the background of the study, and its methods, results, and conclusions.

## **The Effects of Quality**

A number of studies have shown that the quality of an early childhood classroom is related to children’s language, math, social, and emotional outcomes, both in the short-term and the long-term and in large multi-site studies and smaller local studies (Bryant, Burchinal, Sparling, & Lau, 1994; Howes, Phillips, & Whitebook, 1992; Lamb, 1998; NICHD, 2001 & 2005; Vandell, 2004). For example, findings from the Cost, Quality, and Outcomes Study show long-term effects of early childhood quality through second grade but also more pronounced effects for children at greater risk, particularly in terms of behavior problems (Peisner-Feinberg, et al., 2001). Studies of state-

funded pre-kindergarten classrooms also show modest but statistically significant relations between classroom quality and instruction and children's outcomes (Burchinal et al., 2008; Howes et al., 2008).

The studies noted above all pertain to center-based early childhood programs. Fewer studies of family child care quality exist, but conclusions are comparable. Results from the NICHD Study of Early Child Care showed that children in higher quality family child care homes, as measured by both environment ratings and positive caregiving ratings, scored higher on standardized assessments of cognitive development at 24 and 36 months, even after controlling for family selection factors (Clarke-Stewart, Vandell, Burchinal, O'Brien, & McCartney, 2002). Positive caregiving was also significantly related to positive social behaviors. Toddlers in family child care homes were more securely attached to their caregivers in homes with better overall quality and higher levels of toddler-provider interaction (Elicker, Fortner-Wood, & Noppe, 1999). In a more recent and larger scale study in Indiana, children in family child care and center-based care were found to score higher on cognitive, language, and social-emotional development measures when the overall quality of their care was higher (Elicker, Clawson, Hong, Kim, Evangelou, & Kontos, 2005). Goelman and Pence (1988) reported significant correlations between child care home quality and children's scores on standardized language assessments or social ratings. A surprising finding in the NICHD study was that higher quality care was associated with more child behavior problems reported by mothers, an association not reported in other research and possibly related to the types of family homes that would accept a child with behavioral difficulties. These results from family providers illustrate the evolving state of knowledge of early care environments and children's learning and behavior and our need to know more.

## **Methods to Improve Quality in Classrooms**

In the 1990s, based on the growing body of knowledge linking child care quality to child outcomes and because so many children were enrolled in early child care environments of poor to moderate quality, states began to implement a variety of quality improvement initiatives. Few evaluations of the effectiveness of interventions for quality improvement had been conducted, so the activities implemented by states generally were based on the research linking certain factors to child care quality, for example offering scholarships to attend college and increase providers' education, or implementing supplementary compensation and benefits programs to reduce child care teacher turnover. On-site consultation, coaching and mentoring programs also became more widely used to enhance early childhood quality.

North Carolina pioneered a comprehensive approach to early childhood quality improvement and many states have followed suit. Beginning in 1993, NC's Smart Start initiative funded a variety of efforts, including TEACH<sup>®</sup> scholarships for providers to obtain more education at community colleges or 4-year colleges, retention bonuses, access to staff benefits packages for child care programs, and on-site consultation. NC invested significant dollars in the Smart Start initiative (from \$20 million in 1993 to \$240 million in 2002) and, to its credit, also funded an evaluation. Four statewide assessments of early childhood classroom quality from 1994 to 2001 showed significantly

improved quality over time (Bryant, Maxwell, & Burchinal, 1999; Bryant, Bernier, Peisner-Feinberg, & Maxwell, 2002). Although the Smart Start evaluation showed that programs participating in more of the quality enhancement opportunities made greater gains on quality measures, particular interventions that made the most difference in quality could not be identified. On-site consultation was one of many components of Smart Start.

The Smart Start quality evaluations were also able to positively link higher classroom quality to preschoolers' receptive language, print awareness, book knowledge, and numeracy skills and negatively related to problem behaviors. When the 500 study children were followed into kindergarten, the relationship between quality and children's outcomes was even stronger (Bryant, Maxwell, Poe, & Taylor 2003). But, again, these linkages between quality and child outcomes could not be credited solely to participation in Smart Start on-site consultation programs.

Supporting NAEYC accreditation is another avenue to quality enhancement, a strategy that was evaluated by Whitebook, Sakai, and Howes (1997). Their findings suggested that achieving NAEYC accreditation does help early childhood centers improve quality and services; however, 40% of centers that became accredited were nevertheless observed to be providing mediocre care. The authors suggested structural problems in the NAEYC criteria or validation process, which may have been addressed in the recently revised procedures, but were not revised as of the beginning of QUINCE.

Group-based workshop training has long been an approach to quality enhancement, although many in the early childhood field believe that on-site TA or individual mentoring or consultation has greater impact on provider outcomes than attendance at group-based workshops (Wesley & Buysse, 1997). The type and content of training provided in groups would certainly seem to be important. In a study comparing child outcomes across two teacher training conditions, Head Start preschoolers whose teacher received skill-specific training plus classroom consultation demonstrated a significant increase in social skills compared to preschoolers whose teacher received only general training (Farmer-Dougan, Viechtbauer & French, 1999).

Peisner-Feinberg (1998) evaluated a combination training model that was part of the 14-site Head Start Teaching Centers consortium and found it to be effective in improving the quality of classroom practices across a number of dimensions. Teachers were trained in a week-long intensive institute, with individualized follow-up by a mentor. Positive changes 3 months after training were found in the organizational climate, the developmental appropriateness of educational practices, and the teachers' responsiveness to children and the child-centeredness of the classroom. This study did not identify which element(s) of the training were most responsible for the effects, whether the effects lasted beyond the 3-month follow-up assessment, or whether the same strategies might be effective with family providers.

## **Methods to Improve Quality in Family Child Care Homes**

The results of only a few studies of quality improvement in family child care were available when the QUINCE study began in 2004. Kontos, Howes and Galinsky (1996) had reported that a training program for family child care providers had a modest impact on global quality but no impact on provider sensitivity or responsiveness to children in care. As the authors explained, provider-child interactions may be more difficult to impact through training than environmental and curricular-related aspects of care. DeBord and Sawyers (1996) found that a training program for FCC providers was effective at improving quality if the provider was affiliated with a professional provider association but not effective for unaffiliated providers.

A study of 150 family child care providers in NC showed that their level of participation in quality improvement activities (e.g. workshop training, scholarship assistance, on-site mentoring, purchase of materials, lending library) was significantly related to the quality of the family child care home. Mirroring the findings of the center-based studies of Smart Start summarized above, family child care home providers who participated in more of the Smart Start quality improvement activities had significantly higher global quality scores, although their participation varied naturally and was not assigned by the researchers (Peisner-Feinberg, Bernier, Bryant, & Maxwell, 2000).

In summary, at the beginning of the QUINCE study in 2004, these few studies of center and FCC home quality improvement programs pointed to the paucity of research about the effectiveness of training and intervention programs. In the discussion section, we will note several additional programs that have been implemented and evaluated between 2002 and 2008.

## **The GAO Report on Quality Improvement Programs**

Since the 1990s states have been mandated to spend at least 4% of their Child Care Development Funds (CCDF block grant) on quality improvement. Shortly before the QUINCE study began, the General Administration Office investigated how the 50 states were spending their “quality set-aside” funds (U.S. GAO, 2002). As the GAO report noted, knowledge about how to improve programs was somewhat limited by the complexity of programs in the real world. The report documented the many efforts being implemented, but determined that only three had been evaluated properly. The greatest expenditures (20%) were for activities considered to be “Resource and Referral,” a broad category that included a variety of training and TA to providers, both on-site and off-site. Off-site provider training was reported as 11% of the total expenditures and on-site training reported as 2%. It was not reported whether these off- and on-site trainings were more likely to be group-based workshops or some type of mentoring/consulting program. Nevertheless, the most frequent route to quality enhancement seemed to be directly to the provider. The GAO report also noted that, among the 34 states that tracked the type of provider targeted, centers and center providers received over 2/3 of the set-aside expenditures while family child care providers received 1/3.

The quality improvement strategies of the three studies the GAO considered to have conclusive findings were increasing child to staff ratios and provider education (Florida) and caregiver compensation (Massachusetts and Washington). None involved direct training of providers through consultation or mentoring.

## Goals of the QUINCE Study

The research about quality enhancement approaches provided promising directions, but as the GAO report concluded, given the amount of funding being spent on a medley of well-intentioned efforts, more rigorous research was needed. In 2003, the Child Care Bureau requested a study of a proven intervention model for quality enhancement to be conducted in typical community programs and to focus on “entry level” providers, especially including family child care home providers. The research in typical child care classrooms and homes, as summarized above, had not identified a particular intervention strategy as the one to put forth for a large-scale study, but within the special education field, a model called Partnerships for Inclusion (PFI) seemed promising. The next chapter is devoted to a summary of this model’s development, approach, and research results. Briefly described, it is an assessment-based, individualized, on-site consultation process of 10-14 visits over 10-12 months that had been successfully used to improve quality in classrooms and family child care homes with a goal of better serving children with disabilities (Wesley, 1994; Palsha & Wesley, 1998). A consortium of researchers at 5 universities agreed to conduct a randomized study of PFI consultation compared to typical services for quality enhancement. Each researcher would recruit agencies within their state that would allow their consultants to participate in such a study.

## Research Questions

The QUINCE study proposed to test two primary sets of hypotheses, one concerning environmental quality as an outcome and one concerning children’s outcomes across different levels of quality. We believed that child care providers (both teachers and FCC home providers) who received services from a consultant trained to implement the PFI consultation model would: (1) provide higher quality child care than those providers who did not receive services from a PFI-trained consultant; (2) provide higher quality care than they provided before receiving the services, and (3) continue to provide higher quality care 6 months after the PFI-trained consultant services ended.

We also believe that (4) children who were cared for by providers who received services from a PFI-trained consultant would have better outcomes than children who were cared for by child care providers who did not receive services from a PFI-trained consultant, and (5) outcomes for children in higher quality care, regardless of the type of intervention their provider received, would be higher than those in lower quality care.

Three secondary hypotheses concerned possible moderators of the effectiveness of the intervention: provider education, experience, and level of professional motivation.

(7) The providers’ education may moderate the effects of the intervention, but the direction of effect is not predicted. Better-educated providers may be more able to incorporate change into their daily practices, but perhaps less educated providers start from such a low baseline that their possibilities for improvement are greater. (8) Experience may moderate the effects of the intervention such that new providers may make greater gains or experienced providers may understand more quickly how to integrate new knowledge into their teaching behavior. (9) We predicted that teachers and FCC providers with higher levels of professional motivation would gain more from the intervention.

Two secondary hypotheses concerned whether selected caregiver and treatment factors mediated the hypothesized association between treatment and quality. (10) The interventions received by teachers and FCC providers may influence their childrearing attitudes and thus contribute to the changes observed in the quality of their classrooms or FCC homes. (11) We predicted that teachers and FCC providers who participated in a greater number of on-site consultant visits would make greater gains in child care quality than those who participated very little.

The last set of hypotheses concern the conditions under which the PFI model will work. (12) We hypothesized that providers served by consultants who more closely adhere to the procedures of the PFI model would show greater benefits of participation in the intervention. (13) We also predicted that the PFI model would be an effective model for improving the quality of child care in both child care centers and family child care homes (regulated and unregulated); with providers from diverse cultural backgrounds; and in settings that serve a range of children with special needs, diverse language backgrounds, or from low-income families. In short, PFI is a child care provider training model that is predicted to be effective in a broad range of circumstances.

# Chapter 2: The Partnerships for Inclusion Model of On-site Consultation

**T**HIS CHAPTER DESCRIBES the PFI on-site consultation model, how it was first developed and evaluated, its underlying theory and the typical training process for consultants. We begin with an explanation of why we considered it worthy of evaluation.

## **Overview of the PFI Model**

Our definition of a “child care provider training model” includes both content and delivery system. The Partners for Inclusion (PFI) consultation model of quality enhancement consists of two main components, both developed at the FPG Child Development Institute—the assessment tools used to index quality (the Infant/Toddler Environment Rating Scale-Revised, (ITERS), 2003, The Early Childhood Environment Rating Scale--Revised, (ECERS), 1998, and Family Day Care Rating Scale (FDCRS), 1989, measures developed by Thelma Harms, Richard Clifford, and Debby Cryer; and the theory-based, collaborative, problem-solving model of consultation developed by Pat Wesley. The model builds on the literature that suggests greater change is possible when individuals are involved in assessing their own needs, receive individualized support and professional development over an extended period of time, and have opportunities to apply new knowledge and skills in their own work setting (Beer & Walton, 1987; Dougherty, 1990; Fullan, 1993; Guskey, 1986; Joyce & Showers, 1983; Winton, McCollum, & Catlett, 1997). These principles apply to both the consultants as they learn more effective consultation skills and to the providers who receive the consultation as they change and improve their daily practices.

We chose the PFI model for four reasons. First, its effectiveness at improving child care quality had been shown in two published studies (see below). Second, both the provision of consultation and measurement of the outcomes of PFI were well-grounded in theory (see below).

Third, collaborative consultation, by definition, affords the flexibility needed to meet the individual and highly varied needs of family child care home providers who may feel isolated both professionally and geographically. The on-site presence of the consultant facilitates a constructive focus on the real-life context of the consultee’s program, materials, children, and families. The consultation model provides resources, tools, skills, and processes that the provider can use in the future to conduct self-assessment and improvements after consultation ends. Individual consultation is useful for providers of low education level, providers who are uncertain how to improve their quality, who need motivation and individual attention, or who have cultural or language barriers. Providers new to the field may have little knowledge about what defines quality care and may find

education and training programs inaccessible. Even if they enroll in workshops and courses, they can use help to apply what they learn to their care setting. A strength of the PFI model is that consultants are able to tailor the technical assistance (TA) they offer to the provider to the unique needs and varied work environments of the provider (i.e. those with literacy or ESL issues, those new to child care, those in low-income and rural settings).

The fourth reason for selecting PFI was quite practical – increasingly, agencies were providing services on-site in child care programs, although their on-site methods had not been evaluated. Disappointed by the results of one-shot group-based training and knowing that increasing provider education takes a good deal of time, agencies that provide TA had begun to implement programs where a consultant visits a provider and works in some way to improve the quality of the program with the eventual goal of improving children’s outcomes. Such quality enhancement programs sometimes base the type and content of help they provide on an environmental assessment, perhaps the FDCRS, ECERS, or ITERS rating scales or another assessment. Many variants of this approach exist, such as the frequency and duration of the consulting visits, the relationship between consultant and provider (whether as a mentor, coach or consultant), the amount of individualization, and the amount of supervision (if any) given to the TA providers. Even within a single agency purporting to follow a given model, the services are often delivered quite differently across consultants.

In summary, for the reasons noted above, the PFI consultation model was the core training intervention implemented in the QUINCE study. The following sections describe the PFI model in more detail.

## **Development and Evaluation of the PFI Model**

The PFI model was developed in the early 1990s with support from the State of North Carolina and the Office of Special Education at the U.S. Department of Education. The impetus for its development came from the need to increase the number of high-quality early childhood programs, both centers and family providers, so that children with special needs could be served more effectively (i.e., with better outcomes for the children). A significant barrier to implementing inclusion had been the lack of high-quality, community-based programs (Bailey, McWilliam, Buysse, & Wesley, 1998; Odom & McEvoy, 1990). As more federal and state funds (Smart Start in North Carolina) became available to enable children with special needs to attend early childhood programs, it became clear that North Carolina, like most states, had too few programs of quality in which to place these children. The PFI project addressed this need.

PFI began with university-based consultants who helped center-based providers serving infants and toddlers, and then expanded to providers who served preschool children age 3-5. In its next phase of development, the university-based consultants trained community-based consultants who served center providers. During this phase, the model was extended to family child care providers. The rationale for involving community-based consultants, once the model had been shown to be effective, was that they would have existing relationships with the early childhood providers in their

communities, know the local resource base, and could continue to use their new knowledge and skills with direct providers in their local communities after the period of PFI training.

The PFI consultation model was shown to enhance quality in both phases of its development—when delivered by highly trained university-based consultants with MA degrees and consultation experience (Wesley, 1994) and also when delivered by community-based child care consultants with varied levels of education and experience who were trained by the developers of the model (Palsha & Wesley, 1998). Both studies found significant gains in observed quality in infant/toddler and preschool classrooms, and in a small number of family child care homes. Gains were observed from the beginning of consultation to the end, usually about 10 months later, and in many cases, the gains were even higher at a third assessment point six months after the intervention ended.

When our study began, the PFI model had not been tested outside of NC and it had not received an adequate test with family child care homes. It had not been rigorously compared to the typical quality improvement activities of the typical resource and referral (R&R) agency. Given the positive results of the first two studies of the PFI model, a randomized, larger scale test seemed warranted.

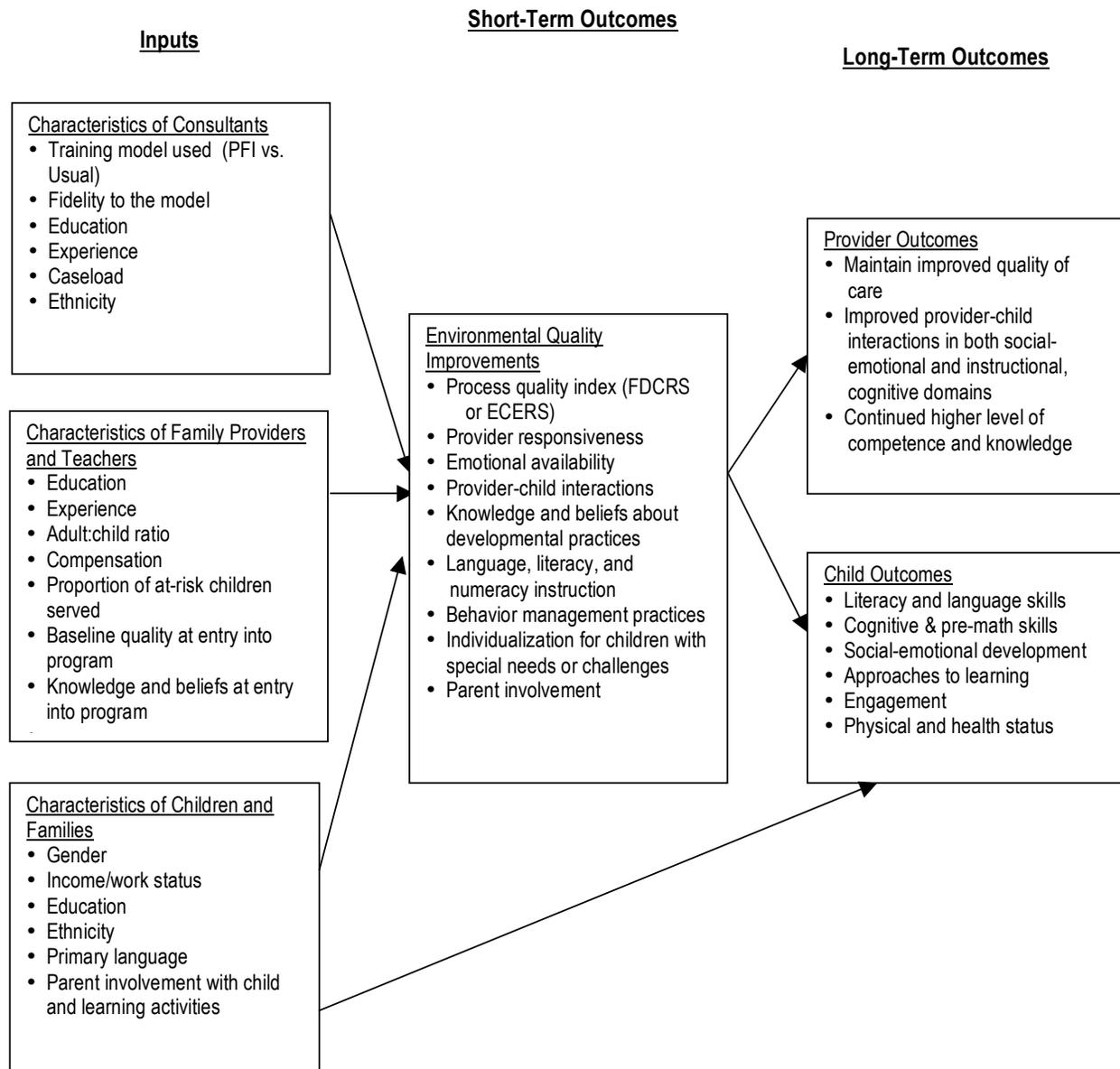
## **The Conceptual Framework/Theory of Change**

Although it began with a focus on children with special needs, PFI consultation has always been a comprehensive quality improvement approach, strongly focused on sound early childhood practices that address the broad range of needs of all children. By providing consultation that develops and reinforces global quality, the model's impact extends to all children and is appropriate for center and home providers who serve children with a wide range of ages and abilities. PFI's goal of quality improvement is based on the research noted in Chapter 1 linking early childhood quality to children's cognitive, language and behavioral outcomes.

The theory of change guiding the PFI training model is illustrated in Figure 1. The model outlines the major factors that research or experience indicates should be taken into account when describing quality in early childhood environments and the effects of those environments on child outcomes. The inputs on the left side of the model include the characteristics of the various participants—the consultants, the providers, and the children and families they serve. These inputs exist when consultants and providers begin working together to serve children. The interactions between consultant and provider are hypothesized to influence short-term change in environment quality; the responsiveness and availability of the provider; in their knowledge and practices regarding literacy, numeracy, and behavior; their involvement with parents; and ability to individualize the program for each child depending on needs.

The left side of the model also includes family and child characteristics known from previous research to influence classroom environments and child and family outcomes (Demo & Cox, 2000; Hagekull, & Bohlin, 1995; McLoyd, 1990). The characteristics of children as they enter into care environments influence the way their providers interact with and teach them. Family characteristics influence these interactions as well.

Figure 2-1  
Conceptual Model for Effects of PFI Training



The middle section of the model includes the “process” characteristics of the individual early childhood classrooms or FCC homes. Process characteristics comprise both the overall quality of the class or FCC home as indexed by such factors as caregiver responsiveness and children’s interactions as well as the day-to-day classroom or family home practices, such as the way in which the caregiver handles instruction and behavior management. Provider, family, and child characteristics will influence these classroom characteristics, which, in turn, influence children’s outcomes.

On the right side of the logic model are the desired outcomes of PFI: long-term maintenance of quality improvements for the providers and successful outcomes for children. Included here are the five major domains of child development that were identified during the National Governors' Association Goals 2000 meetings in 1990 (NEGP, 1998), all of which are hypothesized to be linked to enhanced program quality. Family outcomes might also change as a result of improved provider quality, either directly through better relationships between parent and provider (more informative, supportive, communicative) or indirectly as a result of the increased skills and abilities of their children. There might also be substantial secondary impact on reduced parental stress related to work and child care issues for the families served.

## **PFI Training Goals and Topics**

Central to the PFI model is the importance of understanding and appreciating the consultees' views and adopting a collaborative approach throughout consultation (Wesley, 1994). Core components reflect a systematic problem-solving process in which consultant and consultee share responsibility as they progress through six stages of consultation. These components include: delivery of services on-site, the consultant and consultee's joint assessment of the early childhood environment using a reliable and valid instrument, their joint development of goals and strategies to address needs identified in the assessment, consultant-supported implementation by the consultee, and the consultee's evaluation of the consultation process. Figure 2 presents the PFI service flow process (at end of chapter).

The goals of consultation are to address current concerns and equip those who receive consultation with skills to deal effectively with future concerns (Caplan & Caplan, 1999; Gutkin & Curtis, 1982). The PFI model equips early childhood consultants with consultation skills and with a process to work collaboratively with early childhood educators to improve program quality in a variety of settings. The process gives the early childhood providers a method for identifying and addressing needed improvements in their programs after consultation has ended.

The care environment is the first focus of PFI consultation. Although no single accepted assessment of quality exists, the consultants in PFI use the internationally recognized environment rating scales developed at FPG, the Family Day Care Rating Scale (FDCRS; Harms & Clifford, 1989) for family providers and the Early Childhood Environment Rating Scale–Revised (ECERS-R; Harms, Clifford & Cryer, 1998) for center-based preschool teachers. [In 2007 Harms, Cryer, and Clifford published a revised FDCRS, but the new version was not available when the QUINCE study began.] These assessment tools act as the springboard to guide the collaborative consultation process. The scales examine the use of language and literacy, interactions among children and providers as well as children and peers, learning activities, physical space and materials, and routine care. One of the key activities during the early stages of the consultation process is completion of the appropriate rating scale and discussion of the results. Involving the providers in the assessment of their needs demonstrates that they are an important part of the consultation process, and aids in building trust between consultant and provider. It also gives providers the skills they can use in the future to diagnose their own needs in the absence of the consultant.

## The Training Process for Consultants

The PFI consultants in the QUINCE study were trained in almost the same way that many other groups of consultants had been trained in North Carolina over several previous years. In this section we will describe the typical PFI training and note when a procedure or content was special for this study.

All QUINCE consultants in the Treatment group attended an initial week-long training session including a one-day overview of the environment rating scales by one of the scale's authors, two days of practice administering the environment rating scales in homes or centers (depending on the clientele they served), and two days of group training in the PFI consultation model from the model's author and others who were experienced using the model in centers and homes. Prior to the training, consultants received reading materials. Trainers followed a manual that provided the Power Point slides, handouts, activity directions, session flow guides including talking points for facilitators, and session evaluation. These materials had been developed over the course of conducting eight previous PFI trainings in North Carolina. New training materials were not developed for the QUINCE study, but we did create a new web-based method for consultants to enter documentation of contacts and on-site visits.

Because many of their home agencies used a quality assessment tool, many of the PFI consultants arrived at the initial training with experience or at least a good knowledge of the environment rating scales, but others did not. The purpose of the 3-day ERS training was to refresh those who had experience with the ECERS-R or FDCRS and give novice consultants enough information about and experience with the assessment tools so they could be used as the basis of the quality improvement action plan that consultants would create with their providers. One of the scale's authors provided a group training on the first day and the second two days were spent in practice in a classroom or FCC home in small groups with the author or other reliable FPG trainers. In the afternoon, scores were reviewed and discussed to reinforce training. Consultants were not held to the same standards of reliability in using the ERS as were the data collectors for the study, but their knowledge of the instrument(s) needed to be sufficient to help guide program improvement.

Professional development activities during the PFI training reflected recommended practices from the literature on adult learning and included large and small group discussion, case study, role play, peer and trainer feedback, self-reflection, and practice application of these skills in the work setting. Trainers provided some written materials to consultants in advance and emphasized consistent and faithful implementation of the model. The PFI training content in the 2 days of initial training included knowledge and skills in the following areas:

- The changing role of the early childhood educator in preparing children for school readiness, especially children with special challenges or needs,
- The relevance of collaborative consultation as a method of working effectively with direct service providers,
- The stages of consultation and effective consultation techniques, including organization and communication skills, trust building, and conflict resolution,

- Principles of adult learning theory and how change occurs,
- Essential skills needed to function as an effective consultant,
- The administration and use of environment rating scales as a springboard for consultation, and
- Development and evaluation of written technical assistance plans.

Consultants were not expected to be experts in the PFI model when they left the one-week in-service training. Following the training, they implemented the consultation model in a pilot site for 3-5 months and attended 5 half-day seminars facilitated by an in-state PFI liaison and/or a member of the PFI study team. During this time, and throughout the rest of the study, the work of the PFI consultants was supported by a liaison on the PFI team who talked with them regularly, reviewed their documentation data (the environment ratings completed by both the consultant and provider, the written technical assistance plans, and the consultants' contact record), answered questions, and provided further information. Within North Carolina, a newly trained PFI consultant usually has access to an original PFI team member, so we attempted to recreate this resource within each of the four other states by creating a part-time within-state liaison position to support the work of the PFI consultants in California, Iowa, Minnesota, and Nebraska. These individuals were available for questions, problem-solving, and team-building.

*Pilot site.* After the initial five days of ERS and PFI training in Chapel Hill, the Treatment group consultants worked with a pilot site. They selected a family child care provider or classroom teacher from their home agency client base, and for approximately six months worked with this provider using the procedures and strategies learned in the initial PFI training. State liaisons and members of the QUINCE study team used a combination of document review and individual conversations with consultants to determine whether consultants delivered appropriate content and dose, in correct progression, to their consultees. The QUINCE team provided feedback to state liaisons during field work regarding their responsibility to monitor implementation and discuss with consultants deviations from the intended consultation model.

*Seminars.* During the period of working with their pilot site, consultants participated in five half-day seminars in their state led by the state liaison. One seminar in each state was co-facilitated by a PFI study team member. The seminars addressed the challenges of providing consultation to support the providers' understanding of specific content areas, for example, interactions, language, arranging the environment. Seminar facilitators followed a clear protocol and were provided all the materials they needed to conduct the sessions including objectives and key discussion points around specific topics. The purpose of the seminars was to expand consultants' understanding of the assessment instruments and consultation process through reading and discussing relevant articles, anticipating implementation obstacles, and solving case dilemmas from their field work.

*Evaluation.* Evaluation is an ongoing part of the PFI model, whether the consultation process is part of a research study or not. The initial week-long training and the five seminars were evaluated in two main ways. Trainers and facilitators debriefed after each session and consultant trainees

completed evaluation forms rating their satisfaction with the organization and outcomes of the professional development activity. Throughout the work in their pilot sites, consultants submitted completed documentation on-line to the study team for review, including environment rating scale score tally sheets, contact summary forms which include a section for consultants to reflect on their own skills, and action plans. Consultees provided evaluations of consultant skills and the consultation process at the conclusion of the consultation.

After the initial training and completion of a pilot site, a PFI consultant was deemed ready to be assigned providers for the study. Details of the assignment process are presented in chapter 3. The next section describes support provided to PFI consultants to assure fidelity.

## **Supporting Fidelity During Implementation**

Given the potential for discrepancy between the conceptualization and implementation of the consultation model, the study team employed numerous strategies to keep consultants on track after their pilot experience as they took on study sites. For North Carolina consultants over the previous years of PFI, this support had been provided by a member of the original study team at FPG. She continued to provide this role for QUINCE consultants in North Carolina, but also supervised four part-time liaisons in the other four states.

State liaisons and consultants were expected to have frequent direct contact and feedback, and an FPG team member had frequent communication with the liaisons. Liaisons were to encourage self-reflection about the consultation process and encourage and review documentation. Consultants received additional print and web resources to extend understanding and support implementation. Consultants participated in monthly phone calls with state liaisons, and state liaisons participated as a group in monthly conference calls and individually in bi-monthly calls with members of the study team. State liaisons also met with consultants to provide feedback about implementation.

## **Consultants' Work with Providers**

PFI consultants typically begin their work with providers by reviewing and explaining the use of the environment rating scale appropriate for their setting (the FDCRS or ECERS-R; the ECERS-E was new for QUINCE). Consultants and providers then complete the scale independently to establish an initial profile of the setting. Consultants and providers are expected to review and discuss their observations, reach consensus on their ratings, and develop a plan for change that addresses the needs identified by the rating scale. These were the expectations for PFI consultants in the QUINCE study.

Beginning with the entry and needs assessment stages and continuing throughout the consultation process, the consultant worked to establish a trusting and nonhierarchical relationship with the provider. In training it was emphasized that the consultant should ensure that the providers' ideas were reflected a great deal in the TA plan. However, the consultant was expected to also offer her own suggestions for goals, for example, related to safety issues or the selection of materials and activities that would enrich children's language learning. The written TA plan provides

a mechanism through which the consultant and provider were expected to frequently monitor the objectives for change and document when, how, and which objectives were accomplished. Items that related to health and safety concerns and items that were scored particularly low (<3) were to receive priority in the plan.

Once the technical assistance plan was developed, the number of hours that the PFI consultant spends on site with the providers varies somewhat, depending on the strengths and needs of the providers and the work responsibilities of the consultant. In previous evaluations of PFI, the typical consultant made 10 to 14 visits to the provider, each lasting 1 to 4 hours, over a period of 6 to 12 months. This frequency and duration is what we planned for the QUINCE evaluation.

In addition to on-site visits, consultants also made check-in phone calls to providers, occasionally obtained print and video resources for them, referred them to other local or state resources that the provider might find helpful, and purchased needed supplies and materials. A \$200 budget was available for the consultant and provider to use for one or more of the action plan goals.

After each visit, consultants were asked to complete a Contact Summary Form to record date, type, purpose and outcome of each visit. These forms provided a quick reference to plan services and to monitor progress. The complete technical assistance plan also provides documentation of when, how, and what objectives were accomplished. In initial training and ongoing supervision, the timely completion of service documentation forms was emphasized to the consultant. Documentation data could be entered into a secure web-based system developed for the study or could be completed with paper and pencil.

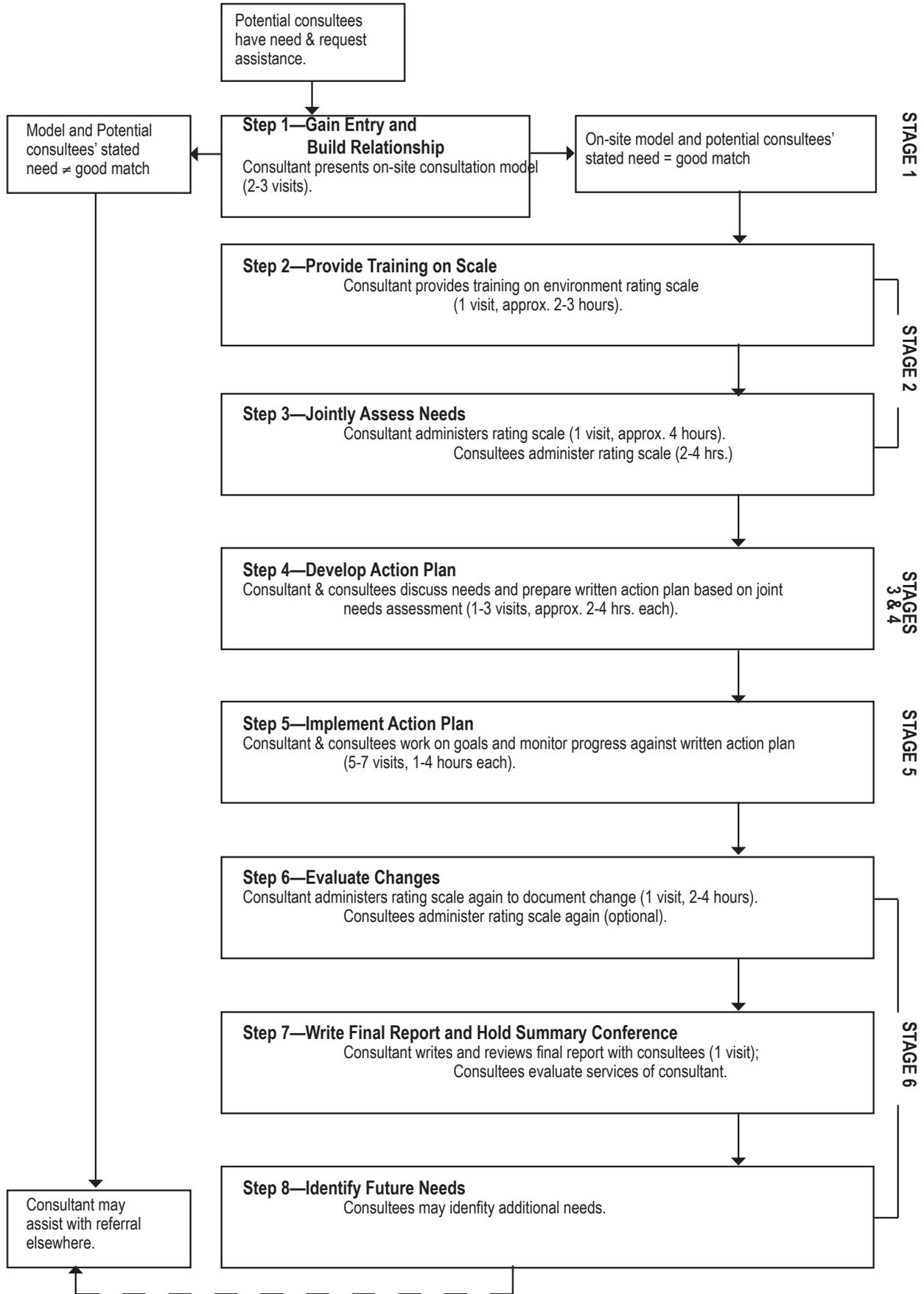
## **Summary**

The major differences in the PFI training and procedures as conducted in this study compared to PFI's typical procedures were that (1) the ECERS-E assessment was added to the consultant and provider self-assessment as the PFI process began, (2) consultants reported on their work through a web-based system of inputting contacts and action plans, and (3) although consultants were trained by and had limited contact with original PFI team leaders, their support and supervision in-state came from a part-time liaison who had never been a PFI consultant.

The similarities of QUINCE PFI training and procedures to the original PFI model were many: (1) consultants received the same initial training content and process delivered by PFI experts, (2) consultants first worked with a pilot site for several months to become familiar with PFI, (3) consultants used the same documentation forms (contact summaries, action plans, etc.), and (4) the expectations of consultants as to their process of interacting and engaging with teachers and FCC providers were the same.

In short, the PFI training, expectations, and documentation were very comparable to the original model and not enhanced in any way because of the research. In fact, due to the 5-state design, a major difference was that PFI developers had less contact with study consultants than cohorts of consultants trained in previous years. As requested by the funding agency, this was a test of a proven model taken to scale.

**Figure 2-1.**  
**Partnerships for Inclusion Model of On-Site Consultation Service Process**



# Chapter 3: Methods

**T**HIS CHAPTER WILL DESCRIBE the recruitment of study participants, the randomization procedure, the measures used, and the training of data collectors.

## **Partner Agencies**

Each of the five university principal investigators established a partnership with two to six agencies in their state that provided training and TA to child care providers. The directors of 27 agencies and the PIs of each site attended a planning meeting in January 2004 to learn about the PFI model and to discuss the logistics of conducting the proposed study within their agency. The grant funds could not be used to provide any direct services, so the directors needed to agree to allow their consultants to participate in the research, delivering the typical services of their agency, if randomly assigned to the control group, and delivering PFI consultation (after appropriate training), if assigned to the PFI Treatment group. Most agency directors were eager to have their consultants receive the PFI training and they considered it an inducement that consultants initially assigned to the control group would be offered PFI training when they concluded their year in the study.

The logistics of randomizing consultants to PFI or control groups and then randomizing their clients (teachers and FCC providers) to PFI or control consultants were thoroughly discussed and then agreed to by all directors. Due to leadership and consultant changes, 24 of the 27 agencies ultimately contributed consultants to the study. These agencies also provided approximately 20% “in-kind” funds for the study by employing their consultants through the PFI training phase and funding the research components of their work as well as their direct services to clients.

## **Study Design**

The study design included randomization at two levels—consultants and child care providers (teachers and FCC providers). Consultants who agreed to participate in the study were randomly assigned to either a PFI Treatment group who implemented the PFI model of consultation or a control group who continued to offer quality enhancement activities as typically provided by their agencies. In other words, the controls were conducting “business as usual.” The control group was not a no-treatment group. About six months after random assignment of consultants, during which time the PFI consultants were trained on the model for one week of group training in North Carolina and then implemented the model with a pilot site (as described in Chapter 2), random assignment of classroom teachers and family child care providers took place in one of two ways. If an agency had both PFI and control consultants, providers were randomly assigned to PFI

or control conditions. If an agency had only one consultant, whether PFI or control, or assigned providers to consultants within geographic areas where only a PFI or a control consultant was available, consultants received their study providers via random selection. Specifically, providers were randomly selected from lists of those seeking quality enhancement services from the participating agency and were asked to participate in the study. Thus, about 50% of study providers were randomly assigned to a consultant and about 50% were randomly selected to be in the study.

Recruitment of children into the study occurred in the school year just following providers' participation in the PFI or control intervention. The providers helped the researchers recruit children into the study by giving to the parents of eligible children the study description, consent forms and contacts for the research team in each state.

Two cohorts of consultants were recruited and randomized, one in 2004 and one in 2005. At the end of their first year, control consultants in the first cohort were offered the opportunity to continue in the study, receive PFI training, and serve providers in the next year using the PFI model. Because the providers they served were randomly assigned to receive PFI or control consultation, all providers of the crossover consultants are included in the intent-to-treat outcomes analyses and the fidelity analyses. However, in descriptive analyses (Chapter 4), these “crossover” consultants are always considered controls.

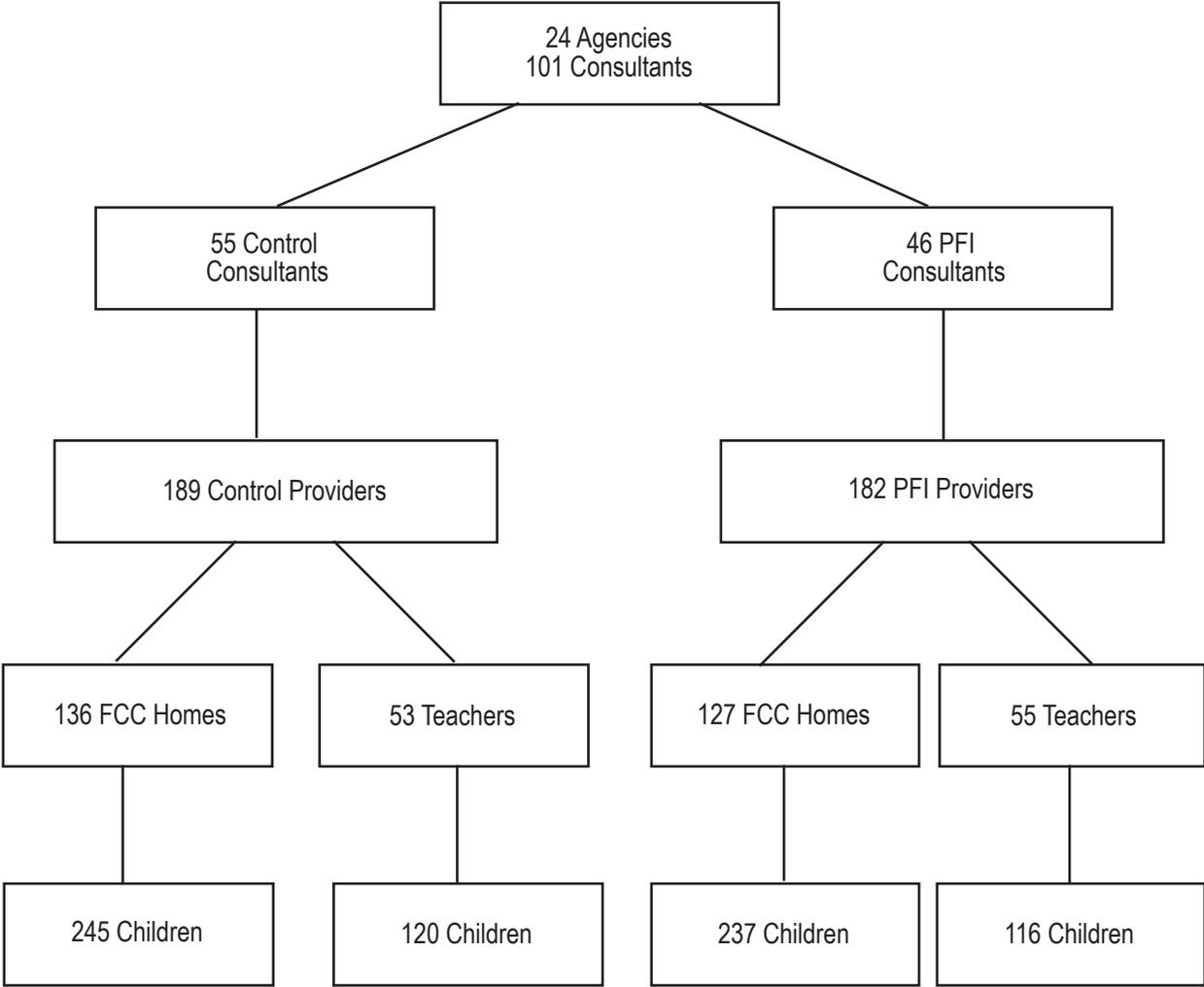
Altogether, 101 consultants (46 PFI treatment and 55 control), 108 child care teachers (55 PFI, 53 control) and 263 family child care providers (127 PFI, 136 control) agreed to be in the study. A total of 710 children were involved (352 PFI, 358 control). Figure 3-1 illustrates the design and sample of those who agreed to be in the study.

The following sections describe the criteria for consultants, providers, and children and more details about their recruitment and randomization.

## **Participant Criteria, Responsibilities, and Recruitment**

*Consultants.* We wanted to have very few criteria for consultants so that the study could best represent the variety of quality enhancement consultants who typically work in community agencies, particularly with regard to education, training, and experience. We carefully considered whether to require study consultants to have a BA degree, but decided to include the diversity that is typically seen in the field, so no educational requirements were placed on consultants. The only requirements were that they agree to randomization to either PFI or their typical model of intervention and make a 1-year commitment to implement that intervention as closely as their training had taught them. Consultants were asked to document the type and content of their contacts and on-site visits with providers, and treatment and control consultants in the same agency were asked not to communicate with each other about the PFI model until the end of the study or when all consultants had been trained in PFI. Consultant recruitment was accomplished with help from the agency directors, who distributed study information to their consultants. Members of the research team then talked with each consultant in person or by phone to answer questions, review the timeline of the study, and obtain oral consent. Signed consent was obtained via the mail.

Figure 3-1. Study design



*Providers.* Because the study was conducted within partner agencies, we did not ask to change any of their policies or procedures regarding which types of providers they served. The partner agencies in Iowa and Nebraska served only family child care providers, including unregistered or license-exempt family child care providers as well as registered providers. The partner agencies in California, Minnesota, and North Carolina served both family child care and center-based providers, all licensed or registered.

The federal funding agency stipulated that the study should focus on “entry-level providers.” After discussion with ACF staff, partner agency directors, and Technical Work Group members, we defined “entry-level” as providers with little or no formal course work in early childhood education. The argument was made by our agency partners that turnover is quite high among brand new providers which—if that were our definition of “entry level”—would have guaranteed high attrition from the study. The agency partners also maintained that many teachers and FCC providers, regardless of their years of experience, could benefit from on-site consultation. Thus, the only educational stipulation to be in the study was that teachers and FCC providers not have a BA degree. Due to shortfalls in year 1 recruitment, in the second year of the study, the education criterion was relaxed so that providers in the study could have a BA but not one with a major in early childhood education or related field.

Other provider criteria included that they (1) be at least 18 years old, (2) communicate with the children in their care in English or Spanish, (3) planned to serve children for at least one year, (4) served at least two children who were not their own, (5) served at least one child at least 20 months of age at the beginning of intervention and not older than 50 months (so that assessments of infant would not be required and study children would not enter kindergarten between their first and second child assessments), and (6) served children for at least 20 hours per week for some morning hours (e.g., no after-school-only classrooms or FCC providers were included).

Provider recruitment occurred at the large-group orientation meetings that were typical in some agencies, as providers contacted agencies to request services, and/or with help from the consultants who distributed study information to providers who were potential study participants. Then, members of the research team talked with each provider in person or on the phone to determine that she was indeed eligible for the study, to answer questions, review the timeline of the study, and obtain oral and, eventually, a signed consent.

Responsibilities of the providers were to participate in the PFI or control intervention and, in addition, to allow a researcher to make 3 visits to observe their classroom or FCC home and conduct an interview. Providers received \$50 for visit 1 (Pre-intervention), \$75 for visit 2 (Post-intervention), and \$100 for visit 3 (Follow-up 6 months later). They were also asked to help recruit parents/children by distributing study information to the families whose children were in their care.

*Children and families.* Although study providers served children of all ages, children between the ages of 20 months and 5 years were eligible to participate in the study. The other two recruitment requirements were that children’s native language was English or Spanish and that the children had been enrolled in their classroom or FCC for at least 6 months. Providers distributed information

about the study and consent forms to be returned to the provider or by mail to the research team. Written materials were in English and Spanish. Parents consented to allow their child to be assessed in their classroom or FCC provider's home and to have the provider complete two rating scales about the child's behavior. Parents were also asked to complete and return a brief demographic questionnaire. A maximum of 6 children were to be assessed in any classroom or home and procedures were followed to randomly select from among these children for the few occasions when more than 6 parents had consented. If a study child was no longer enrolled in the classroom or home at the time of the second assessment, a replacement child was recruited and assessed in the same fashion. Fall assessments were conducted with 703 children; spring assessments with 609 children; and 568 children participated in both assessments.

*Comparison group.* To have a larger sample size with which to document the characteristics of the services and recipients of typical quality enhancement services provided by the partner agencies, in the second year of the study, 79 additional teachers and FCC providers were recruited from several partner agencies already participating in the study. Some of these providers were served by consultants and some received other types of services from the agency. This comparison group of consultants and providers had no opportunity to be randomly assigned to PFI, so they are not considered controls, but data were collected from them as if they were controls. These procedures resulted in a comparison group sample of 15 consultants, 78 providers (13 teachers and 65 FCC home providers), and 267 children. The data from these consultants, providers and children are in the QUINCE public access dataset, but they will not be further discussed in this report.

## **Attrition**

Attrition from the study was higher than expected, even at the agency level. Of the original 27 agencies agreeing to the study, one had a single consultant who consented to participate but dropped out immediately upon being assigned to control and two agencies had a consultant who came to PFI training but left the study shortly thereafter (before being assigned providers). Another agency employed 6 consultants who consented to participate in the study and were assigned to treatment (n=3) or control (n=3), but the agency was closed within a month of the PFI group training. Thus, 23 agencies had at least one consultant to whom at least one study provider was assigned.

Because PFI consultants needed to complete PFI training and provide intervention to a pilot site before assignment of providers to treatment group could take place, a hiatus of approximately 6 months took place between a provider's agreement to be in the study and her random assignment to PFI or control group. During this time -- before providers could be assigned to consultants -- the study lost 13 PFI consultants (28.2%) and 12 control consultants (21.8%). Of the original 46 consultants assigned to PFI, three did not attend the PFI training week. One quit her job before the training and two or were unable to attend the training week or chose not to attend. Of the 43 PFI consultants who attended training, 10 were never assigned study sites for the following reasons: 3 worked in an agency that closed shortly after training, 2 left their jobs for medical or personal reasons, 1 was reassigned within her agency, 1 was fired, 1 left her agency for a new job, 1

said she was too busy to work with a pilot, and 1 said she was unable to recruit a pilot site. Of the original 55 control consultants, 12 were never assigned study sites. Of these, 4 refused their control group assignment immediately (perhaps hoping to have been assigned to the PFI group), 3 were in an agency that closed, 2 left their positions, and 3 were no longer able to participate for reasons unknown.

Thus, 76 consultants (33 PFI and 43 control) from 23 agencies comprise the base sample of consultants for this study. From time of consent to enrollment of providers, the study lost 25% of consultants. Of the 76 consultants who were assigned sites, 64 (84.2%) completed their planned intervention work with those sites (either PFI or control).

## **Agency Director Interviews**

At the beginning of the study, the directors or chief administrators of the participating agencies were interviewed using a semi-structured questionnaire that included several multiple choice and open-ended questions. These interviews included questions about the agencies' purposes, funding sources, and range of services provided to child care facilities, particularly on-site consultation and training services. Information was collected about the number of staff offering on-site services, average caseload, typical number of hours of services given to a provider, whether an observation of quality is part of their typical service model, educational requirements for consultants, the mean and ranges of salaries for consultants, and consultant turnover.

## **Consultant Questionnaires**

Consultants were interviewed or completed a questionnaire shortly after random assignment, before the PFI consultants began their PFI training. Consultants were interviewed or completed a second questionnaire at the end of their participation in the study. Cohort 1 consultants who were control in year 1 and PFI in year 2 were interviewed at the end of the control and PFI years.

The 11-page consultant interview included demographic information such as education, work experience, and personal characteristics, as well as questions about their professional development experiences and a self-rating of their health status. The questionnaire also included three measures of attitudes and beliefs about practices and a screening measure for depression.

*Beliefs.* An adapted version of the Teacher Beliefs Scale (TBS, Burts, Hart, Charlesworth, & Kirk, 1990) was included in the consultant questionnaire. The original 30-item measure included scales about beliefs regarding developmentally appropriate practices, child-initiated activities, didactic teaching, and use of explicit rewards. Higher scores indicate stronger beliefs in that dimension. Items are rated on a 5-point Likert scale about strength of belief in various child teaching practices such as "Children should be allowed to select many of their own activities" and "Children should work silently." Item scores range from strongly agree (5) to strongly disagree (1). "Inappropriate" items are reversed to create a score where higher scores indicated stronger agreement with developmentally appropriate practices. In the Head Start FACES 2000 study, the TBS was reduced to 15 items. A general summary scale score was established called Developmentally Appropriate Attitude Scale based on nine items with factor loadings of .40 or higher. In our study,

we used 14 of the 15 items of the FACES adapted version of the TBS. The FACES item not used in the QUINCE study is: “Children in preschool classrooms should learn to form letters correctly on a printed page.” Our sample size of consultants was too small for factor analysis of the 14 FACES items, so we created two scores using items from factors determined in other samples. First, using the 9 items from FACES, we created a Developmentally Appropriate Attitude Scale score (alpha = .47). Second, from the large sample of child care providers in this study (see provider measures section below), we created a Developmentally Inappropriate Beliefs score (alpha = .27).

*Modernity Scale.* A measure of progressive versus traditional child rearing values, the *Parent Modernity Scale* (Schaefer & Edgerton, 1985), was included in the interview. The questions seem appropriate for consultants as well as for parents. This scale measures whether the respondent has more “traditional” or authoritarian views of caring for children or more “progressive” or child-centered views. After reverse-scoring the traditional subscale and adding it to the progressive subscale, a higher total modernity score represents more child-focused, authoritative child rearing beliefs. Internal consistency scores were .55 for progressive, .65 for traditional, and .73 for the total modernity score.

*Professional motivation.* The consultant interview included several items adapted from a questionnaire used with early childhood providers in a study by Kontos, Howes, Shinn, and Galinsky (1995). Eleven questions related to perceptions of their job such as whether it was a paycheck or a career, whether they were making a difference with their work, and how respected they felt. Consultants rated on a 5-point scale whether the statement strongly applied to their beliefs or not. Two significant factors emerged from the larger sample of child care providers in this study (see provider measures section below), but when applied to the consultant data, the internal consistencies of the resulting scales were low. We thus present only descriptively the item-level scores.

*Self-perceptions of teaching ability.* The *Early Childhood Teaching Inventory* (Van deWiele, 2001) is a 38-item measure designed to assess teachers’ self-perception regarding their teaching practices, professional knowledge, and classroom management abilities in the early childhood environment. This scale asks teachers to reflect on their ability to perform particular teaching-related activities. Response scales range from 1 (“I am sure I cannot do this task”) to 5 (“I am sure I can do this task”). Four subscales were found for this measure: responsivity, focus, professional knowledge, and crisis management, and a total score.

In our study we modified the scale for use with consultants, rephrasing the items to reflect the confidence that consultants had regarding helping their clients rather than teachers’ confidence in helping their children. We took 12 of the 38 items directly from the ECTI and adapted other items. We also slightly revised the response scale wording from 1 (“No, I’m sure I cannot do this”) to 5 (“Yes, I’m sure I can do this”). We used Van deWiele’s items to compute the four subscales of responsivity (alpha = .63), focus (alpha = .90), professional knowledge (alpha = .84), and crisis management (alpha = .72), as well as a total score (alpha = .95).

*Depression.* Three items comprising a brief *depression screener* (Rand, 1998) were included. A consultant who answered two of three questions positively was considered at risk of depression. The

items concerned how frequently within the past month, 12 months, and 2 years a person felt “sad, empty or depressed.”

## **Provider Interviews**

Providers were interviewed in their FCC home or center by a trained research assistant at three times: (1) shortly before or after the provider entered the study, (2) at the end of their consultants’ period of working with them, and (3) about 6 months after the intervention was finished. The 18-page interview was extensive and included demographic questions about education, work experiences, and personal characteristics, as well as questions about professional development experiences and a self-rating of their health status. The interview included questions about provider knowledge, attitudes, beliefs, behaviors, and job stress. Several questions about their program were included such as number of children served, characteristics of the enrollees (age range, proportion subsidized, with disabilities, with non-English home language), hours of operations, family fees, and benefits received. The interview included several scales.

*The Teacher Beliefs Scale* (TBS, Burts, Hart, Charlesworth, & Kirk, 1990) is a 30-item measure designed to tap teachers’ philosophy regarding developmentally appropriate practices. As described in the consultant questionnaire section above, we used the FACES adaptation of this measure, from which a Developmentally Appropriate Attitude Scale was derived (ACF, FACES, 2003). Testing the reliability of this factor, the alphas at baseline for teachers and FCC providers were .51 and .52, respectively. In addition, we factor analyzed the 14 FACES items separately for teachers and family child care providers in our study. For FCC providers, a 2-factor solution resulted in a factor consisting of items that were more child-centered and developmentally appropriate and a factor consisting of items that were more inappropriate, such as expectations that children should work silently, that curriculum areas should be taught separately and coloring should be within the lines. For teachers, however, only a 1-factor solution was found, consisting of all the items that were in factor 1 for the FCC providers plus 5 more items (that is, all but 1 item on the scale). To arrive at a measure that would be comparable for both groups, we applied the factor 1 items from the FCC providers to the teachers’ data to create a factor labeled Developmentally Inappropriate Beliefs. Internal consistencies at baseline were .82 for teachers and .69 for FCC home providers.

*Modernity Scale.* A measure of progressive versus traditional child rearing values, the *Parent Modernity Scale* (Schaefer & Edgerton, 1985), was included in the interview. The questions seem appropriate for child care providers as well as for parents. This scale measures whether the respondent has more “traditional” or authoritarian views of caring for children or more “progressive” or child-centered views. After reverse-scoring the traditional subscale and adding it to the progressive subscale, a higher total modernity score represents more child-focused, authoritative child rearing beliefs. Internal consistency scores for teachers and FCC providers, respectively, were .43 and .30 for progressive, .82 and .77 for traditional, and .80 and .73 for the total modernity score.

*The Early Childhood Teaching Inventory* (ECTI, Van deWiele, 2001) was described in the previous consultant section. It is a measure of teacher confidence in their ability to perform particular

teaching-related activities. We used 12 of the original 38 items and slightly revised the other items to be appropriate for FCC providers as well as teachers (e.g. changing “teacher” to “provider”). The four subscales of responsivity, focus, professional knowledge, and crisis management were computed with internal consistencies ranging from .55 to .86 for teachers and .60 to .82 for FCC providers, and a total score alpha of .91 for both teachers and FCC providers.

*Professional motivation.* The provider interview included several items from a 1995 study of FCC providers by Kontos, Howes, Shinn, and Galinsky. The original items required child care providers to rank order their reasons and motivation for becoming a provider. Limited analytical validation was done on this measure, but the items did show differences by regulated providers, non-regulated providers, and relatives. In the QUINCE study, we adapted these items into a Likert scale and added 2 items for a total of 13 items. The response scale ranged from 1 (“Not at all the way I feel”) to 5 (“Exactly the way I feel”). An exploratory factor analysis under maximum likelihood estimation with an oblimin rotation (oblimin is an oblique rotation that allows for correlated factors) resulted in two non-correlated ( $r = -.16$ ) components: Professional Motivation (alpha = .63 for teachers and .69 for FCC providers) and Satisfaction (alpha = .52 for teachers and .50 for FCC providers).

*Job stress.* The 51-item *Child Care Worker Job Stress Inventory* (Curbow, Spratt, Ungaretti, McDonnell, & Breckler, 2000) has been shortened to a 21-item scale by Walter Gilliam (personal communication, August, 2003) and maintains its original good psychometric properties. This measure includes 21 items that result in four subscales of Job Demands, Job-Specific Demands, Job Rewards (called Resources in the original), and Job Control. Items were rated on a scale ranging from 1 (Never) to 5 (Most of the time). Job Demands includes questions regarding interactions with parents, dealing with children’s challenging behaviors, and trying to meet many children’s needs at the same time. A lower score on this factor indicates fewer demands (i.e., better working conditions) than a higher score. The Job-Specific Demands score includes a few additional questions that apply to only teachers or only FCC providers. Job Rewards includes questions about receiving praise and respect for the work of child care and seeing that one’s work makes a difference for children and parents. Job Control includes items related to availability of supplies, having a reasonable class size, and getting parents to cooperate on managing behavior. Higher scores on the Rewards and Control scales indicate more positive working conditions. Internal consistencies for teachers and FCC providers in our sample were, respectively, .84 and .66 for Job Demands, .69 and .47 for Job-Specific Demands, .84 and .81 for Job Rewards, and .66 and .51 for Job Control.

*Depression.* Three items comprising a brief *depression screener* (Rand, 1998) were included. A caregiver who answered two of three questions positively was considered at risk of depression. The items concerned how frequently within the past month, 12 months, and 2 years a person felt “sad, empty or depressed.”

The teachers and FCC providers also completed four additional measures that were specific to the children who were study participants—two measures wherein they assessed their relationship and communication with the parents of the study children and two measures of each child’s social

and emotional behavior. These four measures were completed when the children were assessed and are described in the respective parent and child measures sections below.

## **Parent Survey**

After parents consented to be in the study, they were given by the provider or mailed a 4-page questionnaire in English or Spanish and asked to return it in post-paid envelope. The questionnaire included questions about family composition, ethnicity, home language, work status, parent education, income, and job benefits. The questionnaire also included two measures assessing their level of communication and partnership with their child's teacher or FCC provider. The Parent-Caregiver Partnership Scale (PCPS; Tresch-Owen, Ware, & Barfoot, 2000) includes 16 items that both parents and child care providers rate from 1 (*highly unlikely*) to 5 (*highly likely*) the extent of their partnering behaviors. Composite variables were constructed from these items based on a principal factor analysis followed by a promax (oblique) rotation for identifying patterns of underlying structure. A screen test suggested two meaningful factors. Eight items loaded on the first factor, called *Communication* (alpha = .87 for providers and parents) and 4 items loaded on the second factor, called *Education Support* (alpha = .78 for providers and .83 for parents). Communication factor items include, "tell caregiver/parent about new skill or ability of child" and "discuss with caregiver/parents the kinds of things which make child angry, sad or frustrated." Education Support factor items include, "tell the caregiver/parents about fun activities for children" and "give child development materials to caregiver/parent." To reduce multi-collinearity between measures and for parsimony, a composite measure was constructed with the Communication and Education Support subscale scores ( $r = .35$  for caregivers,  $.49$  for parents), called *Partnering Behaviors*.

The second measure completed by both providers and parents was a project-developed 5-item 5-point Likert scale called Parent-Provider Closeness. The items describe the trust and closeness that a parent felt for a provider and vice versa, such as "child's parent/caregiver and I almost always agree about how to care for or handle the child" and "I really like child's parent/caregiver as a person and enjoy being around him or her." Items are rated from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal consistencies (Cronbach's alpha) were  $.93$  for parents and  $.90$  for caregivers.

## **Child Care Quality Observations**

The observational measures of the classroom and FCC home environments were collected three times: before the consulting interventions began or just at the beginning (Time 1), at the end of intervention (Time 2), and about 6 months later (Time 3). Measures included a global quality assessment, an assessment of literacy and numeracy instruction, and a measure of caregiver sensitivity and interactions with children. The Early Childhood Environmental Rating Scales-Revised was used in center-based classrooms and the Family Day Care Rating Scale was used in FCC homes. [A revised FDCRS is now available but was not published at the time this study began.] The Early Childhood Environmental Rating Scales-Extension and the Caregiver Interaction Scale were gathered in both settings. These measures are described below.

The *Early Childhood Environment Rating Scale-Revised* (ECERS-R; Harms, Clifford, & Cryer, 1998) is a well-established measure of child care quality that assesses seven general areas: personal care routines, furnishings and display for children, language-reasoning experiences, fine and gross motor activities, creative activities, social development, and adult needs. Scores on each of 43 items can range from 1 to 7, with the overall mean score used as a global measure of the developmental appropriateness or quality of the classroom. To be consistent with other research, the adult needs items were not included in the overall classroom quality scores. An overall score from 1 to 2.9 is considered poor quality; scores from 3 to 4.9 are considered medium to good quality; and scores of 5 or greater are considered good to excellent quality. The total scale was shown to be reliable ( $r = .92$ ; Harms, Clifford, & Cryer, 1998).

In addition to the overall Total Score, factor analysis of the ECERS-R in the QUINCE sample of classrooms at time 1 yielded two factors. Factor 1, labeled *Teaching and Interactions*, is a composite of 10 indicators including staff-child interactions, discipline, supervision, encouraging children to communicate, using language to develop reasoning skills, and informal use of language. Internal consistency scores from Time 1 to Time 3 were .86, .90, and .84. The second factor, labeled *Provisions for Learning*, is a composite of 12 indicators including furnishings; room arrangement; gross motor equipment; free play; group time; and activities in fine motor, art, blocks, dramatic play, sand/water, and nature/science. Internal consistency scores were .87, .90, and .88.

The *Family Day Care Rating Scale* (FDCRS; Harms & Clifford, 1989) was used to assess global quality in home-based child care settings. The FDCRS is organized under six general areas: basic care, language and reasoning, learning activities, social development, and adult needs. Scores on each of 32 items can range from 1 to 7, with the overall mean score used as a global measure of the developmental appropriateness or quality of the classroom. To be consistent with other research, the adult needs items were not included in the overall FCC quality scores. An overall score from 1 to 2.9 is considered poor quality; scores from 3 to 4.9 are considered medium to good quality; and scores of 5 or greater are considered good to excellent quality. The authors reported adequate inter-rater reliability ( $r = .86$ ) and significant positive relationships with independent home visitor quality ratings.

In addition to the overall Total Score, factor analysis of the FDCRS in the QUINCE sample of FCC homes yielded three factors. Factor 1, labeled *Teaching and Interactions*, is a composite of 12 indicators including helping children reason, use language, and understand language; informal use of language; music and movement; dramatic play; and cultural awareness. Internal consistency scores from Time 1 to Time 3 were .85, .90 and .91. A second factor was labeled *Tone/Discipline* and included 9 items such as informal use of language; helping children understand language and learn to reason; tone; and discipline (alphas from T1 to T3: .79, .83, .85). A third factor was called *Provisions for Learning and Health*, a composite of 10 indicators such as room arrangement, active physical play, schedule of daily activities, meals/snacks, nap/rest, personal grooming, health, and safety (alphas = .78, .78, and .83). This factor is very similar in item composition to the ECERS-R Provisions for Learning Factor, but includes some of the health items which the ECERS-R factor does not.

The *Early Childhood Environmental Rating Scales-Extension* (ECERS-E; Sylva, Siraj-Blatchford, & Taggart, 2003) was developed to supplement the ECERS-R, especially for use in British preschool programs and reflecting the national pre-k curriculum. In a study of 3,000 children aged 3-5, the ECERS-E better predicted children's intellectual and language progress than the ECERS-R. The QUINCE data collectors completed this measure on the same day as the ECERS-R or FDCRS. Scoring on the ECERS-E is like the ECERS-R: an overall score from 1 to 2.9 is considered poor quality; scores from 3 to 4.9 are considered medium to good quality; and scores of 5 or greater are considered good to excellent quality. We used the 6 items comprising the Literacy subscale, the 4 items comprising Numeracy and the single item Diversity scale. We also created an ECERS-E Total score which, for our study, is the sum of Literacy and Numeracy subscores.

The *Caregiver Interaction Scale* (CIS; Arnett, 1989) is an observational measure of the interactions between child caregivers and the children in their care. Observers rated teachers and FCC providers on 26 items rated from 1 (not at all), to 4 (very much). In addition to a Total Mean score, four dimensions/subscores result: Sensitivity, Harshness, Detachment, and Permissiveness. The internal reliability coefficients for the Total Mean Score were .88 for FCC providers and .92 for teachers. The internal reliabilities were low for the Permissiveness subscale (.48 for FCC, .54 for teachers), but the Sensitivity subscale internal consistency was high (.89 for FCCs, .91 for teachers). We use the Sensitivity score in analyses.

## **Child Assessments**

Children were assessed in the fall and spring of the school year following their caregiver's participation in the study. The time between assessments was an average of 6.2 months. Children were assessed by a trained data collector using standardized assessments of receptive language and school readiness--the Preschool Language Scale Fourth Edition and the Bracken Basic Concept Scale. Children's socio-emotional development and behavior were assessed by their teachers and FCC providers with the Social Competence and Behavior Evaluation Scale and the Devereux Early Childhood Assessment. These four measures are described below.

The *Preschool Language Scale Fourth Edition* (PLS-4; Zimmerman, Steiner, & Pond, 2002) is an individually administered test for children from birth to 6 years 11 months, developed specifically to identify children who have a language disorder or delay. It provides two core language subscales, Auditory Comprehension and Expressive Communication. In this study, we used only the 62-item Auditory Comprehension component, measuring how much language the child understands. Tasks in the preschool age range (2-6) address concepts such as comprehension of vocabulary and grammar rules, comprehension of complex sentences, and ability to make inferential decisions. Authors report that the standardization sample internal consistency alpha for the Auditory Comprehension subscale was .86, ranging from .66 for the 6-year-old age group to .94 for 3-year-olds. Auditory and Expressive subscales were correlated .74.

The *Bracken Basic Concept Scale—Revised* (Bracken, 1998) is a measure designed to assess children's concept development and to determine how familiar children are with concepts that

parents, preschool teachers, and kindergarten teachers teach children to prepare them for formal education. It is intended for use with children from age 30 months to 8 years. The Bracken consists of training items and 308 test items across 11 subtests, but in the QUINCE study we used only the 6 subtests comprising the School Readiness Composite. The subtests of this score were not designed to be used separately, but they include colors, letters, numbers/counting, sizes, comparisons and shapes. Split-half reliability for the SRC was .91 in the standardization sample and test-retest was .88.

*Teacher-rated social skills.* Children's socio-emotional development and behavior were assessed by caregivers with the Social Competence and Behavior Evaluation Scale (SCBE; LaFreniere & Dumas, 1996) and the Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999) in the fall. The SCBE is a 30-item 6-point Likert scale rating developed to assess three areas: Social Competence, Anger-Aggression, and Anxiety-Withdrawal. Caregivers are asked to rate from 1 (*never*) to 6 (*always*) the frequency of the behaviors they observe in the child. In this sample, the Cronbach's alphas for Social Competence, Anger-Aggression, and Anxiety-Withdrawal are .88, .84, and .77, respectively.

The DECA is a 37-item 5-point Likert scale rating that measures the frequency of behaviors seen by caregivers in the past 4 weeks with response scales ranging from 1 (*never*) to 5 (*frequently*). The two broad areas of the DECA are Total Protective Factors, which is composed of Initiative, Self-control, and Attachment, and Total Behavioral Concerns, which is composed of Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression. Correlations between SCBE and DECA subscores ranged from .43 to .76.

A principle components analysis of the SCBE and DECA subscale scores with varimax rotation yielded 3 factors with good internal consistency across the fall and spring data collection points. The three factors, their internal consistency scores, and their components are:

- Social Competence (alpha = .96) computed as the mean of the SCBE Social Competence and DECA Initiative, Self-Control, and Attachment scores, with SCBE weighted by 5/6 to account for the difference in scale with the DECA.
- Conduct Problems (alpha = .92) computed as the mean of SCBE Anger-Aggression and DECA Emotional Control Problems, Attention Problems, and Aggression scores.
- Anxiety/Depression (alpha = .84) computed as the mean of SCBE Anxiety and DECA Withdrawal/Depression scores.

Higher scores on each factor indicate that the child is perceived to have more of that behavior (e.g. lower Aggression and Anxiety scores are desirable.)

## **Training and Reliability of Data Collectors**

Initial training of data collectors took place in a group meeting the summer before each data collection year with the goals of orienting them to the purposes of the study, the procedures required of them, and ethical principles of assessment and data handling, followed by specific training on the measures they would collect—either the observations of child care environments and teacher/FCC interviews or child assessments.

To assure uniformity and accuracy in administration of the child assessments, data collectors left the training meetings with assignments to practice the assessments under the supervision of the site PI, until they believed they were proficient and ready for a qualifying test. Data collectors then videotaped a complete child assessment session and sent the tape to FPG for scoring. An experienced child assessor on the coordinating team used a checklist of skills that had to be demonstrated on the taped assessment, including correct administration (basals, ceilings, exact language used), rapport with the child, pacing of the session, and use of neutral feedback. Individualized feedback was provided to each child assessor. Those that failed were asked to practice and submitted another tape until they passed. Child assessors submitted and passed a test tape each year of data collection.

Training of data collectors on the observation instruments took place initially in Chapel Hill with a day of orientation from one of the authors of the ECERS-R and FDCRS, Debby Cryer, and 2-3 days in the field practicing the measure with a gold standard observer from FPG. More practice was required back in their community and then the gold standard study coordinator visited each site for final reliability checks. At each site, the most accurate and/or experienced data collector was deemed the gold standard for that site. Data collectors hired mid-year were trained and supervised by the PI and the local gold standard observer. The FPG gold standard observer visited each site each year.

The project goal for reliability was to have 10% of the observational data collected by two observers, with one observer being either the FPG or local gold standard. Because of the geographic distances between most agencies' service areas and the resulting additional cost to the FPG gold standard's site visits, in actuality 8.5% of observational visits for the study (97 visits) were collected by a gold standard and a data collector or two data collectors together. On these visits, the gold standard's data was entered into the study database. To obtain more reliability checks, 76 additional visits to non-study classrooms and homes were completed by the FPG or local gold standard and another assessor. Kappas were calculated for each measure after each visit. Refresher training was provided and reliability was retested if the data collector's scores were too low (e.g. Kappa < .60).

The 173 total reliability visits comprised 14.1% of all visits made by study data collectors (including both study and practice sites). Table 3.1 summarizes the Kappa reliabilities for all visits and for study sites only. The mean kappa is of all visits and the range is of each state's means. Except for one state on one measure (ECERS-E), the means for all reliability scores when gathering actual study data had kappa scores greater than .60.

**Table 3.1 Inter-rater Reliability**

Measure	N	All Visit Kappa		Study Site Visit Kappa		
		Mean	Range	N	Mean	Range
FDCRS	143	.79	.68 - .93	76	.80	.68 - .93
ECERS-R	63	.70	.57 - .77	43	.74	.73 - .75
ECERS-E	194	.73	.62 - .93	112	.72	.58 - .93
CIS	195	.67	.60 - .80	112	.68	.63 - .80

### **Documenting the Interventions**

A password-protected project Web site was developed to allow control and PFI consultants 24/7 ability to record basic information about any phone calls or on-site visits they had with their study providers. Each consultant had access only to her clients and the liaison in each state had access only to the logs of consultants in her state. Only FPG staff could review all contact logs. The consultants were trained and asked to enter data at least once a week, if not daily after each visit.

The contact log for control consultants was brief, consisting of time, date, and duration of the contact, and an open-ended field in which to record notes about the content of the visit. The contact log for the PFI consultants included time, date, and duration of the contact as well as other fields that were specific to the activities and stages of the consultation model.



# Chapter 4: Characteristics of the Study Participants

**T**HIS CHAPTER WILL PROVIDE A DESCRIPTION of the agencies, consultants, teachers, family child care providers, parents and children involved in the study. We include here Time 1 data, describing the sample at enrollment. Many of the measures were collected at three time points and these data over time will be reported in Chapters 5-7.

## **Agencies**

The study was conducted with the consultants of 24 community agencies in five states. These agencies had been operating for an average of 23 years with a range of 5 to 95 years. The extension agencies in the Midwestern states had provided a range of service for families for considerably longer than most other agencies that were focused primarily on child care. Fourteen agencies reported the state as their major funding source (> 50% of funds). Across all agencies, 67% of total funds were estimated to come from states, however, some respondents acknowledged not being clear about what portion of their “state” dollars were federal pass-through. Across agencies, respondents estimated that 27% of their funds were federal, although this is likely an underestimate. Other sources of funding were private sector grants or donations (5%) and fees (1%). Only two agencies required child care providers to pay fees for the services they receive.

Of the 24 agencies, all but one already offered “on-site consultation” services to child care providers prior to participating in the QUINCE study, although it became clear over the course of the study that agencies’ use of the word “consultation” was not always our meaning of the word. In addition, most agencies provide training in the form of workshops and courses, resource and referral services, informational pamphlets for parents, videotapes for providers, and a lending library of materials. Some programs offer grants for quality enhancement and professional development, and manage subsidy funds. In Table 4-1 the percent of participating agencies providing various services is documented.

**Table 4-1. Services Offered by Partner Agencies**

<b>Service</b>	<b>Percent of Agencies Providing the Service</b>
Information for Parents	100%
On-site services	96%
Training Workshops	96%
Resource and Referral Services	96%
Videotapes for Providers	83%
Lending Library of Materials	83%
Training Courses (series of classes)	79%
Grants to Improve Quality	71%
Grants for Professional Development	67%
Management of Subsidy Funds	21%
Manage the Food Program	17%
Provide Substitutes	13%

Other services offered by individual agencies: health screenings, use of office equipment, assistance with building a provider association, grants to sustain quality, and assistance in helping providers receive benefits (insurance, health benefits, etc.)

Agencies that provided individual workshops (96%) or a series of workshops comprising a course (79%) noted the topics of these workshops or courses (see Tables 4-2 and 4-3).

**Table 4-2. Workshop Topics**

<b>Content of Workshops Offered</b>	<b>Percent of Agencies</b>
Health and Safety	96%
Business Practices	96%
Working with Parents	96%
Language and Literacy	96%
Cognitive Development	96%
Guidance and Discipline	96%
Working with Children with Special Needs	96%
Working with Children of Specific Ages	92%
Social-emotional Development	88%
Nutrition/Menu Planning	79%
Creative Arts	79%

Other workshop topics: observation and assessment, baby signs, computer skills, space arrangement, ethical behavior, professional development, diversity, and working with Spanish speaking families.

**Table 4-3. Content of Courses Offered**

Content of Workshops Offered	Percent of Agencies
Rating Scale Training	88%
PITC	50%
Creative Curriculum	46%
ChildNet	21%
High Scope	13%

Other courses offered: Welcome to Child Care, Welcome to School Age Care, The Power of Mental Health, Every Child Reads, Project Exceptional, Care to Read, Hand in Hand, Ten Steps to Positive Discipline, Dollars and Sense, Essential Elements Core Course for New Providers, ITTI, Beyond Cultural Connections, Reggio, Mother-Read, Teacher-Read, BSAC (basic school age), and PBS training.

The mean number of staff offering on-site services at the participating agencies is 10 with a range of 0-25 and median of 4. Twenty-two agencies employ consultants or specialists who spend much or all of their time providing some type of on-site consultation; one agency had no consultants before the study began and its services are primarily information and workshop provision; and one agency employs actively working FCC providers as mentors to help one or two (at most) other FCC providers. An environmental rating scale such as the ECERS, ITERS, or FDCRS is used by 66% of the agencies.

The education level of the consultants hired in each agency varies from some who have taken college courses but have no degree to agencies where the majority of the consultants have at least a BA in a field related to early childhood. At the time the study began, 220 consultants were employed across 22 agencies and their educational levels were reported as 11% with high school plus some college, 13% with an AA as highest degree, 25% with a BA not in early childhood education, 33% with a BA in early childhood education, and 18% with a Masters degree. The average consultant salary of the average agency was \$18/hour with a range of \$10-27/hour and one outlier program with \$45/hour.

The type and frequency of on-site consultation across the 22 agencies with typical consultant services is extremely varied. The median caseload of consultants (the number of classroom teachers or FCC providers served at any one time) is 44 providers with a range of 5-200. The median number of hours of on-site services typically received by a provider in each agency was reported as 13 hours with a range of 1.5 to 80.

As summarized above, the “typical” consultation services delivered by our partner agencies were the services received by the control group providers in the QUINCE study. Although a main goal of all the approaches was quality enhancement, the control consultation varied widely in terms of frequency, duration, intent, approach, and use of assessments.

## Consultants

Characteristics of the consultants participating in the QUINCE study are presented in Tables 4-4 and 4-5. Randomization resulted in groups that were very similar, with no statistically significant differences in demographic characteristics (as tested by appropriate t-test or Chi-square). The

consultants were all women who had considerable experience in early childhood education and had, on average, been consultants for 4-5 years. The mean education was between 15-16 years (16 = BA degree), although there was a distribution ranging from high school to MA. Of the consultants with AA or BA degrees, somewhat less than 1/3 of the degrees were in early childhood education.

Table 4-5 presents data for the PFI and control group of consultants from the beliefs and attitudes measures administered at baseline, indicating that they held quite similar beliefs about children's learning and behavior, developmental practices, confidence in their abilities, and professional motivation. There were no significant differences between the PFI and control group consultants on these variables. The table also presents the internal consistency scores (alpha) of the various scales. Because of the relatively small sample size of consultants (compared to the provider samples), we applied the factor scoring determined from the teachers and FCC providers to the consultants' data to create the consultant scores on these attitude measures. For the two FACES scores, the internal consistencies are low, indicating that consultants may interpret or respond to these items differently than teachers and FCC providers. For the Kontos Professional Motivation questions, item-level means are presented.

**Table 4-4. Consultant Demographic Characteristics\***

	<b>PFI</b>	<b>Control</b>
	<b>N = 38</b>	<b>N = 48</b>
Age, mean yrs. (SD)	42.0 (10.8)	42.0 (12.3)
Experience in early childhood direct care, mean years	9.7 (8.5)	12.8 (11.0)
Experience providing consultation to providers, mean years	4.3 (4.8)	5.0 (5.3)
How long plans to be a consultant, %		
1-2 years	5.6	7.1
3-4 years	19.4	28.6
5-10 years	58.3	39.4
>10 years	16.6	25.0
Education, mean years	16.0 (1.6)	15.1 (1.9)
Education, %		
HS	0	3.6
Some college (inc. technical)	10.5	21.4
AA	13.2	7.1
BA	47.4	53.6
MA	29.0	14.3
Of AA or BA, % in early childhood	32	25
Has CDA, %	5	14
Race/Ethnicity, %		
White	78.4	77.1
Black	16.2	16.7
Multi-racial	2.7	0
Other	2.7	6.23
% Latina	11	6
Married, living with spouse	71%	76%
Mean # of people in household	3.1 (1.9)	3.0 (1.2)
Language spoken at home, %		
Mostly or all English	89.8	91.7
Mostly or all Spanish	0	0
A mixture of English & Spanish	7.9	6.3
Other mix	2.6	2.1
Professional memberships, %		
NAEYC	61	51
NAFCC	13	29
Local child care group	27	44
Any other professional group	5	0
Health Status, Self-reported, %		
Very Good or Excellent	71	83
Good or Fair	29	17
Characteristics of Area Served, %		
Small/Medium Town (0-50,000 pop.)	49	52
Large Town/Suburban/Urban (>50,000)	51	48

\*No statistically significant differences between PFI and control groups on any variable

**Table 4-5. Consultant Beliefs\***

	Alpha	PFI N = 38	Control N = 48
<b>Beliefs, Modernity Scale</b>			
Total score, mean (SD)	.73	64.1 (8.2)	62.4 (7.6)
Progressive	.55	16.7 (2.6)	16.6 (2.2)
Traditional	.65	47.4 (7.4)	45.8 (6.8)
<b>FACES Scores</b>			
Develop. App. Attitude Scale	.47	8.1 (1.1)	7.7 (1.2)
Develop. Inappropriate Factor	.27	2.0 (.6)	2.0 (.6)
<b>Self-Perception of Teaching Abilities</b>			
Total score			
Professional knowledge	.95	4.4 (.51)	4.4 (.53)
Focus	.84	4.1 (.71)	4.2 (.75)
Responsivity	.90	4.5 (.51)	4.5 (.51)
Crisis management	.63	4.5 (.52)	4.6 (.50)
	.72	4.4 (.54)	4.3 (.60)
<b>Professional Motivation</b>			
"I see my consultant position as..."			
Career or profession		4.6 (.69)	4.4 (.95)
Stepping stone to related job		3.1 (1.32)	3.5 (1.43)
Job with a paycheck	NA	1.8 (1.02)	1.9 (1.15)
Way of helping improve quality		4.9 (.41)	4.9 (.26)
I feel respected for my work		4.4 (.54)	4.1 (1.08)
My work makes a difference		4.5 (.56)	4.4 (.56)
Want to help child care field		4.9 (.31)	4.9 (.26)
Providers appreciate my work		4.5 (.51)	4.5 (.58)
My work is very difficult		3.2 (1.3)	3.4 (1.28)
I am well-equipped to do this		4.0 (.74)	4.4 (.83)
Opportunity to learn and grow		4.6 (.75)	4.7 (.48)
Positive screen for depression, %	NA	32	19

\*No statistically significant differences between PFI and control groups on any variable

## Teachers and Family Child Care Providers

Baseline data on teachers and family child care providers are presented in several tables below.

Missing data accounts for the slightly lower sample sizes reported here. Table 4-6 includes data on their program environments such as size of community in which the program is located, licensing status, and whether their program was accredited by a national accrediting body. Among teachers and FCC providers, those randomly assigned to PFI or control did not differ significantly at Time 1 on any of these variables, except whether the classroom received any sort of cash grant to improve quality. Twice as many PFI classrooms had received grants as control classrooms (56% vs. 26%).

Both classrooms and FCC homes were open to serve children for quite a number of hours per week, averaging between 57-67 hours per week across groups.

**Table 4-6. Program Characteristics of the Teachers and FCC Providers, Time 1**

	Teachers			FCC Providers		
	N = 102			N = 258		
	PFI N = 52	Control N = 50	t-test group diffs	PFI N = 127	Control N = 131	t-test group diffs
Community Area, %						
Small/Medium Town (0-50,000 pop.)	37	54	.74	51	56	.74
Large town/Urban suburban	63	46		49	44	
Licensing Status†, %						
Licensed	100	100	NA	79	77	.32
Registered				16	18	.55
Program or FCC home accredited by NAEYC or NAFCC, %	18	14	.35	17	19	.35
Hours of program operation each week (SD)	57.0 (3.9)	62.7 (17.1)	1.78	64.8 (30.9)	67.5 (31.3)	.69
Support Received, %						
Participates in child care food program	63	53	.73	73	81	1.67
Receives cash grants from foundations	56	26	2.42*	20	20	.53
Receives funds from LEA	31	22	.82	2	1	1.02
Has received QE grant for materials	55	43	.99	18	29	1.38

† Based on Center Director Interview reporting on the center classrooms, total N = 73

\*p < .05

Table 4-7 includes demographic information about teachers and providers in PFI (Treatment) and control groups and results of t-tests comparing PFI and control teachers and PFI and control FCC providers. Only one significant difference was found: compared to PFI teachers, significantly more control teachers were taking courses at Time 1.

**Table 4-7. Teacher and FCC Provider Demographic Characteristics, Time 1**

	Teachers			FCC Providers		
	N = 102			N = 258		
	PFI N = 52	Control N = 50	t-test group diffs	PFI N = 127	Control N = 131	t-test group diffs
Age, mean years	38.3 (12.1)	35.4 (9.5)	1.32	37.7 (10.1)	37.3 (10.4)	.29
Experience in child care, mean years (SD)	11.1 (6.8)	9.1 (6.5)	1.01	10.1 (9.0)	9.4 (8.8)	.35
Education, mean years	12.9 (.99)	13.1 (1.1)	.93	13.0 (1.6)	13.0 (1.4)	.30
Education, %						
< HS	0	0		4.7	3.8	
HS	11.5	6.0	$\chi^2 =$	22.1	13.0	$\chi^2 =$
Some college, inc. technical	65.4	66.0	2.32	37.8	54.2	4.21
AA	17.3	20.0		22.1	18.3	
BA or more	5.8	8.0		13.4	10.7	
Of AA degrees, % in ece or ed	67	50	.12	24	18	.66
Has CDA, %	24	33	1.09	8	11	.84
Currently taking college courses, %	25	44	2.04*	8	13	1.34
Training hours taken in past 2 years	23.9 (28.2)	16.5 (15.2)	1.52	28.4 (24.3)	24.6 (18.4)	1.30
Participating in a scholarship program (like TEACH), %	26	34	.87	9	13	1.07
Race/ethnicity, %						
White/Caucasian	50.0	46.0		76.2	81.9	
African American	44.2	44.0	$\chi^2 =$	13.9	11.0	$\chi^2 =$
Multi-racial	1.9	4.0	.70	.8	2.4	3.28
Other	3.8	6.0		9.0	4.7	
Hispanic origin, %	8	12	.69	9	11	.55
Mostly or all English spoken at home, %	94	90	.79	91	92	.28
Annual family income (Mean and SD)	\$37,595 (25,997)	\$39,541 (24,440)	.38	\$50,442 (24,179)	\$50,028 (22,493)	.14
Has another paid job, %	15	8	1.15	10	15	1.18
Would not choose any other work, %	27	30	.28	14	15	.05
Health status, self-reported						
Very Good/Excellent	68	68	1.00	73	78	.98
Good or Fair	32	32		27	22	
Screen positive for depression, %	12	4	1.43	5	2	1.05
Has first aid/CPR training, %	98	92	1.40	91	94	.78
Feels totally prepared to work with children with disabilities, %	2.63 (.93)	2.54 (.89)	.53	2.33 (.95)	2.24 (.84)	.78

\*p < .05

Teachers and FCC providers were remarkably similar in age, years of child care experience, and education level, and PFI and control caregivers were similar within each group. Professional development training hours in the past two years ranged from 16.5 to 28.4 hours and did not differ between PFI and control. More teachers than FCC providers were participating in some type of scholarship program to enable them to attend post-secondary classes, but PFI and control groups did not differ. The teacher groups included a large percentage of African Americans and other non-whites, whereas the FCC providers were mostly white. Mean family income was around \$38,000/year for teachers and \$50,000/year for FCC providers, likely because a higher proportion of providers were married and had another income-producing adult in their family. Across groups, 8 to 15% had another paid job, in addition to their child care job. A relatively small percentage of each group screened positive for depression, from 2-12%.

Table 4-8 includes data about characteristics of classrooms and FCC homes from group size to ratio to the composition of the group of children served. No significant differences were found between PFI and control classrooms on any characteristic, and only three characteristics were significantly different between PFI and control FCC homes. The group size of the PFI homes was significantly larger than control homes, and the percentage of parents of children in FCC homes who have trouble with English was significantly larger than in control homes, but both were at very low percentages (< 4%). Significantly more control FCC providers than PFI FCC providers had received or were in a program to receive a bonus for achieving a higher license level, but these were also both at low percentages (< 4%). The list of employment benefits potentially received is extensive and it is clear that teachers were eligible for and had received many more types of benefits than FCC providers. However, within groups of teachers and FCC providers, the PFI and control groups did not differ.

**Table 4-8. Classroom and FCC Home Characteristics, Time 1**

	Teachers			FCC Providers		
	N = 102			N = 258		
	PFI	Control	t-test	PFI	Control	t-test
	N = 52	N = 50	group	N = 127	N = 131	group
			diffs			diffs
Group size, mean (SD)	14.4 (7.0)	12.5 (5.1)	1.6	7.3 (3.4)	6.5 (2.8)	2.14*
Child:adult ratio	7.1 (3.6)	6.6 (2.6)	.87	4.5 (2.0)	4.5 (1.9)	.87
Has paid assistant in the class, %	56	55	.07	24	23	.14
% girls enrolled in class/home	49	48	.43	48	46	.62
% of enrollees with family income less than \$30,000	45	52	.84	34	41	1.00
% of enrollees receiving subsidy	41	52	1.38	19	29	1.65
% of children with an IEP or IFSP	4	4	.03	4	3	.40
% of parents who have trouble with English	2	5	1.77	1	4	2.11*

\* p < .05

## Children and Families

Table 4-9 includes descriptive data on the children in the study. Although parents completed the consent, a large number did not return the questionnaire. Limiting the study's ability to look at differential effects by typical family circumstances, returned questionnaires ranged from only 49% of children in the classroom control group to 67% in the PFI FCC group. In most cases, the mother was the respondent.

Children were about 3 1/2 years old when first assessed and the time between fall and spring assessments averaged over 6 months in all four groups. Slightly more than half the sample were boys. Children in classrooms tended to be more diverse than those in FCC homes.

Acknowledging that too few parents provided family data to allow precise description of families of the different groups of children in the study, based on the parent data we did receive, there were very few significant differences between the PFI and control groups within classroom and within FCC homes. In the classroom group, monthly child care fees paid by parents was significantly higher for control families than PFI, and this was also true within control FCC homes compared to PFI family child care homes. Across the four groups, the mean monthly fee ranged from \$400 to \$580 per month. The other significant difference between PFI and control groups was for father education level in FCC home children—more fathers of control group children had BA and MA degrees than fathers of PFI group children.

The majority of parents in each group were married and average household size was 4 people. Mean annual incomes ranged from \$53,000 to \$62,000 and few children (from 13-17% across groups) received any type of child care subsidy. A wide range of education levels was reported among mothers and fathers in all four groups with 25-43% having a BA or MA degree and 17-26% with only a high school degree or less.

**Table 4-9. Characteristics of Children and Families**

	Children in Classrooms			Children in FCC Homes		
	PFI	Control	t-test	PFI	Control	t-test
	N = 116 (Fall)	N = 120 (Fall)	group diffs	N = 237 (Fall)	N = 245 (Fall)	group diffs
<b>CHILDREN</b>						
Age at 1st assessment, mean yrs (SD)	3.7 (.84)	3.7 (.76)	.87	3.4 (.90)	3.4 (.90)	.24
Mean time between assessments, mo.	6.2	6.6	-	6.2	6.1	-
Gender, % girls	48	44		49	44	
Race/ethnicity, %						
White/Caucasian	44.8	35.8	$\chi^2 =$	70.9	74.3	$\chi^2 =$
African American	12.1	34.2	11.24	6.8	8.6	41.27***
Multiracial	32.8	10.8		9.3	6.5	
Other	10.3	19.2		13.1	10.6	.53
Hispanic origin, %	9	18	1.08	12	14	
<b>PARENTS</b>	<b>N = 65</b>	<b>N = 59</b>		<b>N = 159</b>	<b>N = 159</b>	
Children with a parent questionnaire, %	56.0	49.2		67.1	64.9	
Respondent was mother, %	89	88	.68	90	92	.79
Age, mean years (SD)	31.9 (5.3)	32.4 (5.0)	.52	32.4 (6.0)	33.0 (6.7)	.88
Marital Status, %						
Single, never married	15.4	8.5		17.7	17.9	
Single, living with	4.6	10.2	$\chi^2 =$	8.9	5.6	$\chi^2 =$
Married	75.4	69.7	6.12	67.7	72.8	3.44
Separated/divorced/ widowed	4.6	11.9		5.7	3.7	
No. people in household (mean)	4.1 (1.0)	3.8 (1.3)	1.32	3.9 (1.1)	4.1 (1.1)	1.06
No. people < 18 years in household (mean)	2.1 (.9)	1.83 (.7)	1.63	2.0 (1.0)	2.1 (.9)	.46
Community Area, %						
Small/Medium Town (0-50,000 pop.)	51	41	1.12	50	50	.06
Large town/Urban suburban (> 50,000)	49	59		50	50	
Annual family income, mean \$	56,882 (26,652)	62,546 (24,908)	1.18	52,903 (27,132)	58,497 (25,770)	1.84
Mother, Highest Ed, %						
Less than 9th grade	0.0	1.7		0.7	0.0	
Some HS	6.4	0.0		4.5	2.5	
HS/GED	11.1	6.9	.00	7.7	9.4	1.34
Some college	15.9	12.1		21.9	17.5	
HS + technical sch.	4.8	12.1		12.3	11.9	
AA	12.7	19.0		12.3	15.6	
BA/BS	25.4	32.8		29.7	27.5	
MA/MS	20.6	13.8		9.7	15.6	
Other	3.2	1.7		1.3	0.0	

**Table 4-9 (continued). Characteristics of Children and Families**

	Children in Classrooms			Children in FCC Homes		
	PFI	Control	t-test	PFI	Control	t-test
	N = 116 (Fall)	N = 120 (Fall)	group diffs	N = 237 (Fall)	N = 245 (Fall)	group diffs
Father, Highest Ed, %						
Less than 9th grade	0.0	0.0		0.7	0.0	
Some HS	4.8	3.6		3.3	5.9	1.99*
HS/GED	12.9	18.2	.91	19.3	20.9	
Some college	24.2	12.7		16.0	9.8	
HS + technical sch.	8.1	14.6		13.3	7.2	
AA	12.9	0.0		10.0	10.5	
BA/BS	21.0	36.4		20.7	26.8	
MA/MS	6.5	7.3		4.0	10.5	
Other	1.6	0.0		0.7	0.0	
No father in house	8.1	7.3		12.0	8.5	
Subsidy received for child care, % yes	17	15	.81	13	14	1.10
Mean child care fee/month paid by parent	\$401 (270)	\$580 (312)	2.82**	\$427 (301)	\$451 (231)	1.70**

\* p < .05; \*\* p < .01; \*\*\* p < .001

# Chapter 5: Outcomes Related to Teacher and Provider Attitudes and Beliefs

**T**HE ATTITUDES AND BELIEFS OF CLASSROOM TEACHERS and FCC providers are the focus of this chapter. Experiences, beliefs, and attitudes were measured at baseline (Time 1) for the purposes of describing the sample and to allow for testing of potential differential effects of the intervention. Although the main focus of both the PFI and the control interventions was to improve the quality of child care classrooms and family child care homes, it was also possible that certain teacher and provider attitudes about caregiving or beliefs about themselves and their work might be influenced by their participation in the treatment or control interventions. First we present the teacher and provider attitudes and beliefs data over time and then the analyses testing for PFI vs. control group differences in these belief and attitude measures.

Center teachers and family child care providers completed a variety of measures that assessed their attitudes about childrearing, being a child care provider, knowledge, and personal adjustment. These included a measure by Kontos of Professional Motivation and Satisfaction, attitudes about raising children as measured by the Modernity Scale, attitudes about developmentally appropriate practices as measured by the FACES instrument, self-ratings of their teaching skills as measured by the Van deWiele Self-Perceptions Scale, and measures of job stress and supports as measured by the Curbow Job Stress Inventory (see Chapter 3 for detailed descriptions of these instruments). Tables 5.1 and 5.2 provide descriptive statistics for these measures as assessed at study entry (Time 1), end of treatment (Time 2), and follow-up (Time 3) for teachers and FCC providers, respectively. Over time the sample sizes decreased, reflecting attrition of both providers and consultants. When PFI or control consultants resigned or withdrew from the study, their providers were always encouraged to stay in the study.

## **Attrition Group Differences**

We looked at attrition in two ways, testing the difference in several characteristics between teachers and FCC providers who completed a Time 2 data collection visit versus those who only had Time 1, and testing the difference between those who completed all three visits versus those who had only the first two. The variables tested were years of education, years of experience in early childhood education, modernity total score, professional motivation factor score, job demands, and job-specific demands. We also tested the difference in the ECERS-R factor and total scores for teachers and the FDCRS factor and total scores for FCC providers.

Among teachers in the control group, the education level of those who left the study before Time 2 was significantly lower than those who had a Time 2 visit ( $p < .05$ , 12.7 vs. 13.3). For PFI teachers, reaching Time 2 was related to quality scores, such that teachers with higher ECERS scores at Time 1 were more likely to have a second ECERS assessment ( $p < .01$  on both factors and total score; ex: total ECERS mean of 3.29 vs. 4.01). For both control and PFI teachers, those who reached Time 3 had higher ECERS scores at Time 1 than those who did not complete Time 3 ( $p < .01$  on both factors and total score). PFI teachers who reached Time 3 also had more years of experience ( $p < .01$ , 13.64 v. 8.69). There was no statistically significant difference in attrition between PFI and control teachers.

Findings were similar among FCC providers. In the control group, the education level of those who left the study before Time 2 was significantly lower than those who had a Time 2 visit ( $p < .001$ , 4.8 vs. 10.2). For control and PFI FCC providers, quality scores were significantly lower for those who only had Time 1 visit compared to those with both Time 1 and 2 ( $p < .001$  on FDCRS total score, 2.7 vs. 3.3 for control, 2.8 vs. 3.7 for PFI). Quality scores were also significantly lower for those who had data at times 1 and 2 compared to FCC providers who stayed in the study to time 3 (FDCRS total score for control: 2.8 vs. 3.4,  $p < .01$ ; for PFI: 2.9 v. 3.7,  $p < .001$ ). Contrary to the findings for teachers, attrition was significantly higher for PFI providers than for control providers.

**Table 5-1. Teacher Attitudes and Beliefs Over Time**

Measure	Time	PFI			Control			Alpha
		N	Mean	SD	N	Mean	SD	
<b>Kontos:</b> Professional Motivation	1	52	4.36	0.58	50	4.57	0.40	.63
	2	33	4.44	0.47	35	4.40	0.45	.49
	3	25	4.37	0.67	23	4.24	0.46	.72
Satisfaction Factor	1	51	1.73	0.65	50	1.63	0.66	.52
	2	33	1.47	0.62	35	1.62	0.69	.59
	3	25	1.59	0.57	23	1.85	0.85	.70
<b>Modernity:</b> Total score	1	52	52.31	11.67	49	50.63	10.47	.80
	2	31	55.30	11.82	35	49.49	11.36	.82
	3	24	52.37	11.88	23	53.33	11.42	.83
Progressive score	1	51	15.96	2.38	49	16.63	2.05	.43
	2	31	17.16	2.05	35	16.23	3.04	.56
	3	23	15.83	2.37	23	15.96	3.27	.59
Traditional score	1	52	36.43	11.02	49	34.00	10.05	.82
	2	31	38.09	11.40	35	33.25	11.10	.85
	3	24	36.50	10.78	23	37.42	11.44	.85
<b>FACES:</b> Devel. Inapprop. Beliefs Factor	1	31	2.80	0.98	17	2.84	0.85	.82
	2	30	2.89	0.78	35	3.08	1.07	.85
	3	22	2.65	0.83	23	2.79	1.05	.85
Original Devel. Appropriate Attitudes score	1	31	6.65	1.66	50	3.12	2.88	.51
	2	30	6.40	1.81	35	6.14	1.80	.71
	3	22	7.05	1.40	23	6.70	1.84	.68
<b>Self-Perceptions of Teaching Ability:</b> Total score	1	52	4.60	0.41	50	4.69	0.28	.91
	2	33	4.62	0.37	35	4.68	0.34	.91
	3	25	4.67	0.31	23	4.62	0.39	.92
Responsiveness	1	51	4.67	0.45	50	4.74	0.35	.65
	2	33	4.73	0.33	35	4.63	0.48	.50
	3	25	4.73	0.30	22	4.61	0.41	.53
Focus	1	52	4.68	0.40	50	4.78	0.27	.86
	2	33	4.67	0.38	35	4.78	0.32	.86
	3	25	4.69	0.32	23	4.70	0.36	.82
Professional Knowledge	1	50	4.36	0.58	50	4.49	0.47	.63
	2	32	4.45	0.56	34	4.45	0.51	.71
	3	25	4.56	0.46	23	4.43	0.58	.78
Crisis Management	1	52	4.65	0.42	50	4.65	0.33	.55
	2	33	4.60	0.40	35	4.72	0.41	.61
	3	25	4.65	0.42	23	4.62	0.46	.63
<b>Job Stress:</b> Demands	1	51	2.90	0.49	50	2.88	0.74	.84
	2	33	2.91	0.48	35	2.89	0.60	.54
	3	24	3.03	0.59	23	2.95	0.78	.71
Job-Specific Demands	1	52	1.78	0.58	48	1.86	0.65	.69
	2	33	1.88	0.57	35	2.09	0.80	.64
	3	24	1.99	0.47	22	2.25	0.77	.60
Rewards/ Resources	1	50	4.23	0.61	50	4.30	0.63	.84
	2	32	4.38	0.50	35	4.39	0.55	.79
	3	24	4.38	0.45	23	4.39	0.60	.79
Control	1	51	2.77	1.07	48	2.94	1.04	.66
	2	33	2.63	0.83	35	2.76	0.97	.45
	3	24	2.51	1.06	22	3.11	0.90	.64

**Table 5-2. FCC Provider Attitudes and Beliefs Over Time**

Measure	Time	PFI			Control			Alpha
		N	Mean	SD	N	Mean	SD	
<b>Kontos:</b>	1	127	4.41	0.47	131	4.38	0.54	.69
Professional Motivation	2	91	4.25	0.53	111	4.37	0.48	.65
	3	79	4.29	0.59	98	4.32	0.53	.74
Satisfaction Factor	1	127	1.99	0.70	131	2.02	0.72	.50
	2	91	2.09	0.75	111	2.00	0.77	.62
	3	79	2.15	0.86	98	2.07	0.86	.69
<b>Modernity:</b>	1	127	52.91	9.63	130	52.55	8.64	.73
Total score	2	91	53.75	9.33	111	54.11	8.33	.72
	3	79	54.66	9.37	98	53.79	8.71	.75
Progressive score	1	127	16.41	2.09	129	16.38	1.94	.30
	2	91	16.41	2.25	111	16.04	2.04	.43
	3	79	16.43	1.93	98	16.04	2.33	.45
Traditional score	1	127	36.49	9.23	131	36.29	8.25	.77
	2	91	37.40	9.22	111	38.07	7.95	.77
	3	79	38.23	8.75	98	37.74	7.99	.77
<b>FACES:</b>	1	71	2.85	0.80	66	2.83	0.61	.69
Devel. Inapprop. Beliefs Factor	2	89	2.73	0.79	105	2.85	0.64	.69
	3	75	2.72	0.66	96	2.81	0.69	.66
Original Devel. Appropriate Attitudes score	1	71	6.51	1.68	66	6.36	1.46	.52
	2	89	6.78	1.54	105	6.57	1.52	.60
	3	75	6.88	1.30	96	6.56	1.57	.60
<b>Self-Perceptions of Teaching Ability:</b>	1	127	4.46	0.42	130	4.46	0.44	.91
Total score	2	91	4.48	0.45	112	4.46	0.45	.92
	3	78	4.51	0.43	97	4.48	0.46	.93
Responsiveness	1	126	4.60	0.45	128	4.57	0.49	.60
	2	91	4.60	0.49	112	4.58	0.49	.69
	3	77	4.61	0.46	97	4.62	0.50	.70
Focus	1	127	4.54	0.40	129	4.55	0.44	.82
	2	91	4.53	0.47	112	4.51	0.45	.86
	3	78	4.58	0.43	97	4.55	0.47	.88
Professional Knowledge	1	126	4.16	0.63	130	4.17	0.59	.67
	2	90	4.23	0.58	110	4.18	0.59	.69
	3	78	4.22	0.58	97	4.20	0.60	.70
Crisis Management	1	126	4.47	0.54	130	4.49	0.55	.68
	2	90	4.53	0.49	112	4.52	0.48	.68
	3	77	4.55	0.51	98	4.52	0.46	.74
<b>Job Stress:</b>	1	126	2.68	0.65	128	2.67	0.61	.66
Demands	2	91	2.61	0.59	112	2.69	0.57	.64
	3	77	2.57	0.53	97	2.74	0.66	.70
Job-Specific Demands	1	124	2.24	0.63	129	2.36	0.66	.47
	2	89	2.18	0.68	109	2.32	0.63	.51
	3	78	2.22	0.67	96	2.38	0.76	.60
Rewards/Resources	1	124	4.18	0.71	130	4.18	0.59	.81
	2	89	4.17	0.64	111	4.20	0.61	.81
	3	77	4.22	0.67	98	4.18	0.67	.85
Control	1	126	3.88	0.75	128	3.92	0.68	.51
	2	89	3.82	0.84	111	3.79	0.70	.53
	3	77	3.95	0.76	97	3.89	0.63	.53

## **Tests of Treatment Effects on Teacher and Provider Attitudes and Beliefs Over Time**

Two sets of analyses tested whether the PFI treatment changed beliefs and attitudes. These analyses involved all participants, regardless of the extent to which they received the intended treatment (i.e., were intent-to-treat analyses), because such analyses provide the best unbiased estimate of treatment effects. For testing, we selected one or two primary scores or scales from each instrument to minimize the number of statistical comparisons conducted: the Professional Motivation Factor, Modernity total score, both FACES scores (Developmentally Appropriate Attitudes score and Developmentally Inappropriate Beliefs Factor), Self-Perception of Teaching Ability total score, and the Job Demands and Job Rewards scores.

Hierarchical linear models (HLM) tested whether the PFI treatment changed attitudes or beliefs on these measures. The HLM combined data from center teachers and family child care providers by including type of provider as a random-effects dummy variable. The model described patterns of change over time by the caregivers, with caregivers nested within consultants. The individual growth curves estimated an intercept and slope. The intercept tested whether PFI providers scored higher on these measures after completing treatment (Time 2) through centering time at Time 2. The slopes tested whether PFI providers made larger gains from pre- to post-test (i.e., gain scores from Time 1 to Time 2) and whether they maintained or showed more gains during the follow-up period (i.e., gains from Time 2 to 3). The individual intercepts for caregivers and consultants were estimated as random-effect variables whereas the slopes were estimated as fixed effect variables due to lack of sufficient variability to allow for individual differences in estimating variances.

The HLM included time as a level 1 variable and treatment (PFI or control), type (center or FCC home), and state as level 2 variables. Interactions between treatment and type and between change over time and treatment, type, and treatment x time were included in the level 2 model. Analyses included all data, allowing us to include data from teachers and FCC providers who had only one or two of the three repeated assessments for a given measure. Results are shown in Table 5-3, listing first the estimated parameters in the level 2 model predicting the individual caregivers' intercepts (i.e., attitudes or beliefs at the end of treatment) and second, the estimated parameters in the level 2 model predicting change over time during treatment and during the follow-up period. As shown in Table 5-3, treatment differences obtained statistical significance in some of the interactions, but only a marginal difference in one of the main effects.

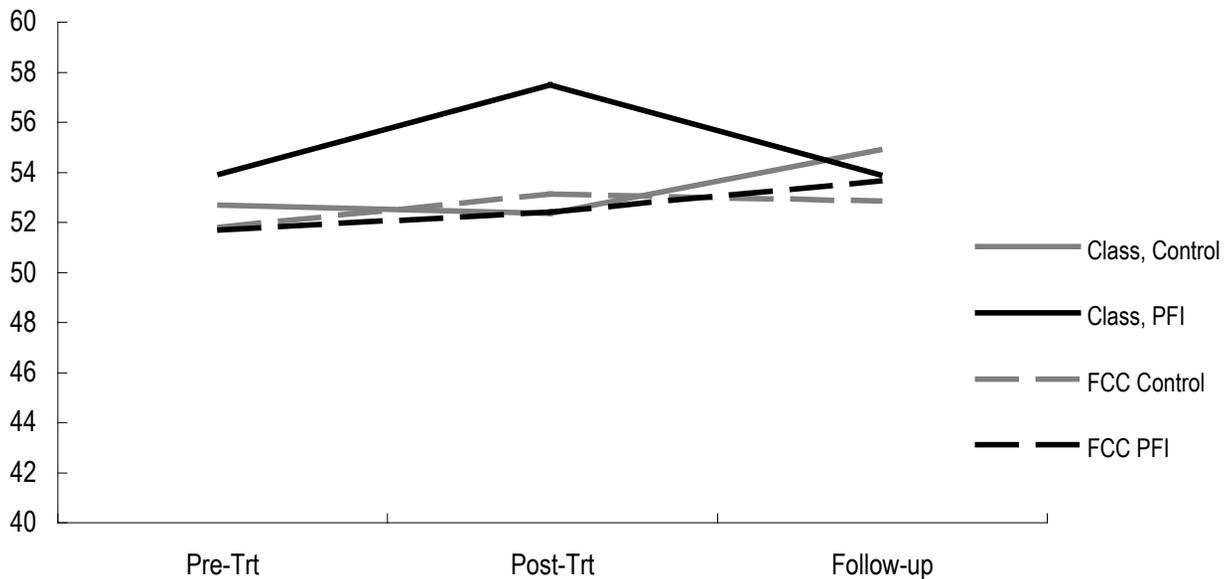
**Table 5-3. Effect of Treatment on Teacher Beliefs and Attitudes**

	Job Demands (Curbow)	Job Resources (Curbow)	FACES Dev. Approp. (Westat)	FACES Dev. Inapprop. (QUINCE)	Current Abilities (Van deWeile)	Modernity (Schaefer & Edgerton)	Professional Motivation (Kontos)
Effect	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
<b>Time 2 Differences</b>							
Treatment	-.01 (.08)	.02 (.08)	.17(.21)	-.15 (.10)	.01 (.05)	<b>2.21 (1.2)†</b>	.00 (.07)
Type (center vs. home)	-.28 (.10)**	.11 (.10)	-.12 (.27)	.02 (.14)	-.02 (.07)	-2.16 (1.62)	.09 (.08)
Treatment by Type	.18 (.16)	.01 (.16)	.08 (.43)	.10 (.21)	.05 (.11)	<b>-5.87 (2.43)*</b>	-.15 (.13)
State	F = .95	F = 13.03***	F = 4.43	F = 2.88*	F = 11.65	F = 3.68**	F = 8.37***
<b>Change Over Time</b>							
Pre-Post Change	-.02 (.04)	.04 (.04)	-.04 (.13)	.01 (.06)	.00 (.03)	1.21 (.47)†	-.06 (.03)†
Follow-up Change	.05 (.05)	.00 (.04)	.27 (.12)*	-.07 (.05)	.02 (.03)	-.02 (.53)	-.09 (.04)*
Trt by Pre-Post Change	.00 (.08)	.01 (.08)	.22 (.26)	<b>-.20 (.11)†</b>	.04 (.05)	1.54 (.95)	.07 (.07)
Trt by Follow-up Change	-.02 (.09)	.00 (.09)	.10 (.23)	.08 (.10)	.04 (.06)	<b>-2.30 (1.07)*</b>	.03 (.08)
Type by Pre-Post	-.03 (.08)	-.11 (.08)	.51 (.26)†	-.15 (.11)	-.00 (.05)	-.70 (.94)	-.04 (.07)
Type by Follow-up	-.06 (.09)	.07 (.09)	-.39 (.23)†	.11 (.10)	.03 (.06)	1.02 (1.073)	-.16 (.08)*
Trt by Type by Pre-Post	.18 (.16)	.03 (.15)	-.03 (.52)	-.04 (.22)	.02 (.11)	<b>-4.93 (1.90)**</b>	-.33 (.13)*
Trt by Type by Follow-up	-.20 (.19)	.19 (.18)	-.04 (.47)	-.07 (.20)	-.06 (.13)	<b>-7.66 (2.14)*</b>	-.13 (.15)

Significant treatment effects are bolded.  
 † p < .10, \* p < .05, \*\* p < .01, \*\*\* p < .001

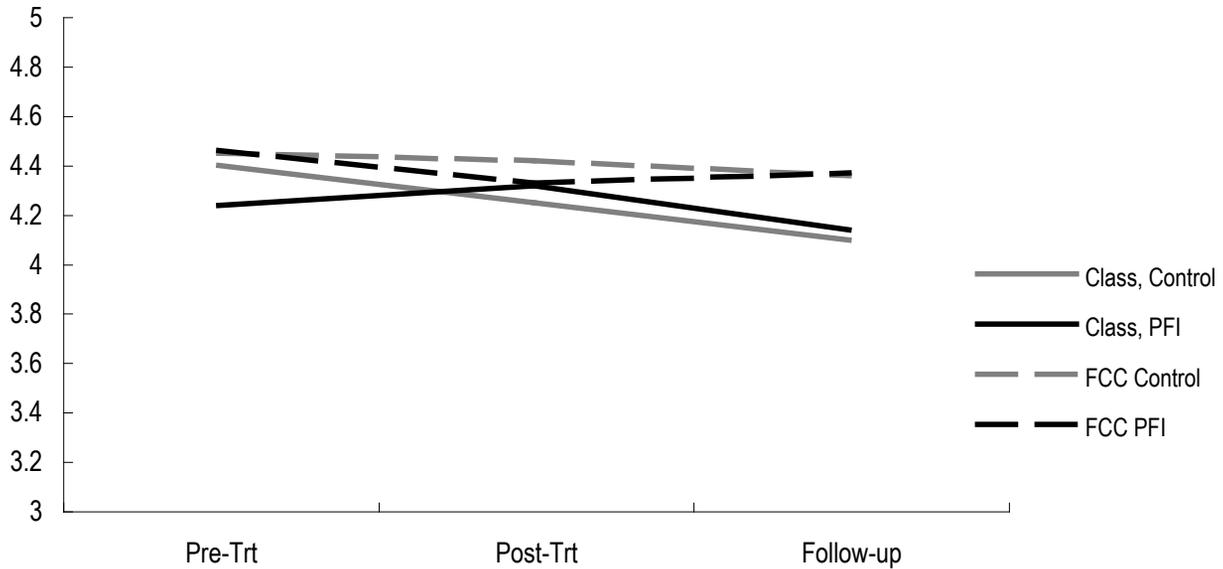
The HLM analysis of Modernity scores revealed significant treatment x type and treatment x type x time interactions. The treatment x type interactions suggested that PFI teachers had more child-focused attitudes at the end of treatment than did control teachers, but this was not true for FCC providers. However, this advantage was not maintained during the follow-up period as evidenced by the treatment x type x follow-up period interaction. Figure 5-1 illustrates these findings with adjusted means.

**Figure 5-1. Modernity Score over Time by Treatment Group and Type of Child Care**



On the Professional Motivation scale, no difference between PFI and control groups was seen at Time 2, and a marginally significant decrease occurred from Time 1 to Time 2 with the 3-way interaction (Treatment by Type by Gain 1-2) indicating that the scores of PFI teachers increased while the scores of the other three groups decreased. Figure 5-2 illustrates these findings with adjusted means.

Figure 5-2. Professional Motivation over Time by Treatment Group and Type of Child Care



## Summary

PFI consultation had significant effects on two measures of teacher beliefs and attitudes, but no effects on any measures of FCC provider beliefs and attitudes. PFI teachers, compared to control teachers, reported increases in child-focused attitudes (modernity score) at the end of treatment and gains in professional motivation scores from pre- to post-treatment. Given the number of tests we ran, we should not over-interpret these few significant findings, but the PFI intervention process does emphasize that improving child outcomes is the ultimate goal of any activities built into the action plans and perhaps thus leads teachers to professionalize their thinking about how to best teach young children.

Although PFI effects were modestly seen only among teachers and not FCC providers, participation in the control group interventions seemed to have no effects on attitudes and beliefs of either teachers or FCC providers. Assuming that attitudes and beliefs underlie much of human behavior, we can conclude that changing attitudes is difficult to do, and not accomplished by our typical consultation interventions.

The finding most challenging to the study, and to the enterprise of quality enhancement in general, is the evidence that caregivers of lower quality drop out of interventions at a higher rate than caregivers of relatively higher quality. We will discuss this further in the final chapter.

# Chapter 6. Outcomes Related to Quality of Care

**T**HE INTENT OF BOTH THE PFI AND THE CONTROL INTERVENTIONS was to improve the quality of child care classrooms and family child care homes, so the observed classroom and FCC home quality measures were outcomes of primary interest. In this chapter, the descriptive data over time are presented first, followed by the analyses that tested for PFI vs. control group differences in these quality measures. Finally, we present analyses of potential moderators of treatment effects.

## **Variables Used in the Quality Analyses**

The descriptive statistics for all of the child care quality measures are shown in Table 6-1 for the two treatment groups separately by type of care (center or FCC home) and time of assessment. The table shows descriptive statistics for the 4 groups from the pre-treatment assessment (Time 1), post-treatment assessment (Time 2), and follow-up assessment 6 months later (Time 3). The sample sizes reduce over time reflecting attrition. Comparisons of the Time 1 assessments for caregivers with and without subsequent assessments showed that those of lower quality were significantly more likely to leave the study (see Chapter 5 for detail).

As described in Chapter 3, the factor scores of the ECERS-R and FDCRS were computed, resulting in two ECERS-R factors and three FDCRS factors. The items in the Teaching and Interactions factor and the Provisions for Learning factor were comparable for classrooms and FCC homes. A few health and safety items were included in the Provisions factor for FCC homes, so we note this by labeling the factor Provisions for Learning and Health. The FDCRS analysis produced a third factor related to emotional Tone and Discipline that was not found in the ECERS-R factor analysis. Two observational measures were identical across classrooms and homes: the CIS Sensitivity score and the ECERS-E Total and its subscales (Literacy, Numeracy).

Mean scores on the Time 1 observational measures of quality were relatively low, compared to other studies of child care environments as well as to accepted standards for good quality using these measures. This was not unexpected given that these providers had enrolled in a program for the purpose of improving quality. Also, participants in the study could not have had formal training at the BA level in early childhood education or a related field. The ECERS-E scores seemed especially low, indicating that teaching of literacy and numeracy skills was a weak area in these programs.

Table 6.1 also includes descriptive information about covariates of potential interest in the quality analyses, including the Modernity Total Score and Professional Motivation factor score over the three time points. Teacher and FCC provider years of education and experience from Time 1 are included. Dosage of intervention is a Time 2 variable, indexed by number of on-site consultation visits received by the provider. Dosage could be calculated in three ways, first for everyone in the sample, including those who received no visits because they dropped out very early or because their control intervention included only group-based training and phone follow-up. The second dosage calculation shown in Table 1 includes anyone who had at least one on-site visit. With this limitation, there is considerable loss of sample in the control FCC group because some of the consultant interventions were delivered via group training and/or phone. The third dosage calculation includes teachers and providers whose consultants entered “successful completion” on the project website, indicating that the consultant had done most or all of what she and the teacher/provider intended and had wrapped up the consultation. (“Successful” did not necessarily mean that the consultant thought the intervention had been effective.) The sample size in all four groups is about 50% smaller when calculated in this way and the mean number of visits much higher, likely indicating the frequencies possible in the most optimal situations. For the analyses in this chapter, we used the dosage variable calculated for anyone with at least one visit, on the assumption that this represented a more realistic indicator of consultant-participant on-site contacts in the typical consultation program of the typical agencies. Teachers and FCC providers in the PFI treatment group received an average of 15.7 and 12.1 consultation visits, respectively. Teachers and FCC providers in the control group received an average of 6.9 and 5.4 visits, respectively.

Table 6-2 shows the correlations among quality measures for PFI and control groups of teachers and FCC providers. The Environmental Rating Scale (ERS) factors were highly correlated with each other and CIS Sensitivity was highly correlated with FDCRS Tone and Discipline and with both ECERS factor scores. The ECERS-E was highly correlated with Teaching and Interactions among FCC providers, but less related to the same factor among teachers. All of the correlations were highly statistically significant.

**Table 6-1. Descriptive Information on Observed Quality Variables, Mediators and Moderators**

Measure	Time	N	Center						FCC Home					
			PFI		Control		PFI		Control					
			Mean	Std	N	Mean	Std	N	Mean	Std	N	Mean	Std	
Teaching and Interactions: Factor 1 of ECERS or Factor 1 of FDCRS	1	52	4.30	1.25	50	4.48	1.23	123	3.22	1.09	131	3.17	0.95	
	2	33	4.69	1.14	35	4.48	1.34	91	3.84	1.16	109	3.54	1.11	
	3	25	5.24	1.14	23	5.23	0.91	79	3.95	1.18	97	3.44	1.01	
Tone and Discipline: Factor 2 of FDCRS (no comparable ECERS factor)	1		NA			NA		123	3.75	1.15	131	3.81	1.03	
	2							91	4.00	1.01	109	3.87	1.15	
	3							79	4.12	1.24	97	3.78	1.10	
Provisions for Learning & Health: Factor 2 of ECERS and Factor 3 of FDCRS	1	52	3.61	0.98	50	3.55	1.02	123	2.70	0.88	131	2.78	0.92	
	2	33	4.01	0.91	35	3.90	1.20	91	3.00	0.80	109	2.85	0.89	
	3	25	4.44	1.06	23	4.48	1.21	79	3.04	1.06	97	2.80	0.83	
CIS Sensitivity Mean Score	1	52	2.82	0.61	50	2.91	0.59	122	2.87	0.61	131	2.88	0.56	
	2	33	2.94	0.56	35	2.89	0.64	89	2.89	0.57	109	2.86	0.63	
	3	24	3.16	0.57	23	3.06	0.56	79	2.98	0.63	98	2.92	0.64	
ECERS-E Literacy	1	50	2.86	0.73	49	2.87	0.67	117	2.38	0.87	129	2.35	0.86	
	2	31	3.20	0.93	33	2.95	0.93	86	2.75	0.96	102	2.47	0.88	
	3	23	3.37	0.91	23	3.27	0.93	75	2.81	0.91	92	2.41	0.81	
ECERS-E Numeracy	1	50	1.56	0.65	49	1.77	0.78	117	1.45	0.70	129	1.47	0.68	
	2	31	1.84	0.98	33	1.73	1.00	86	1.69	0.97	102	1.54	0.65	
	3	22	2.08	0.83	23	1.79	0.74	76	1.77	0.84	92	1.43	0.60	
ECERS-E Total Score (Literacy + Numeracy)	1	51	2.24	0.59	49	2.33	0.59	117	1.93	0.69	129	1.91	0.67	
	2	31	2.54	0.83	33	2.35	0.81	86	2.22	0.81	102	2.01	0.65	
	3	23	2.70	0.73	23	2.56	0.78	76	2.27	0.78	92	1.93	0.61	
Modernity, Total score	1	52	52.31	11.67	49	50.63	10.47	127	52.91	9.63	130	52.55	8.64	
	2	31	55.30	11.82	35	49.49	11.36	91	53.75	9.33	111	54.19	8.33	
	3	24	52.37	11.88	23	53.33	11.42	79	54.66	9.37	98	53.79	8.71	
Professional Motivation	1	52	4.36	0.58	50	4.57	0.40	127	4.41	0.47	131	4.38	0.54	
	2	33	4.44	0.47	35	4.40	0.45	91	4.25	0.53	111	4.37	0.48	
	3	25	4.37	0.67	23	4.24	0.46	79	4.29	0.59	98	4.32	0.53	
Years of Education of Teacher/Provider	1	52	12.9	0.99	50	13.1	1.06	127	13.0	1.6	131	13.0	1.37	
Years of Experience of Teacher/Provider	1	51	11.1	6.80	50	9.1	6.5	126	10.1	9.0	130	9.4	8.8	
Dosage: Number of On-site Consultant Visits (incl. 0)	2	51	15.39	10.99	49	6.02	5.34	124	11.87	7.61	132	2.74	4.96	
Dosage: Number of On-site Consultant Visits for those with at least 1 visit	2	50	15.70	10.88	43	6.86	5.17	122	12.07	7.51	66	5.39	5.93	
Dosage: Number of On-site Consultant Visits for "completed" cases	2	24	23.33	10.07	23	7.91	5.52	78	14.96	6.68	38	6.74	6.80	

**Table 6-2. Correlations among Quality Measures at Time 1 (Control above diagonal, PFI below)**

	FDCRS Tchng & Interact	FDCRS Tone & Discipli	FDCRS Provisions for Learnng	ECERS Tchng & Interact	ECERS Provisions for Learnng	CIS Sensitivity	ECERS-E Total
<b>FDCRS</b>							
Tch & Interact		.69	.60			.41	.78
Tone/Discipline	.75		.72			.70	.63
Provisions	.60	.71				.38	.61
<b>ECERS-R</b>							
Tch & Interact					.69	.78	.46
Provisions				.74		.39	.26
CIS - Sensitivity	.55	.69	.43	.78	.69		.46
ECERS-E Total	.76	.66	.54	.55	.46	.52	

### Treatment Effects on Child Care Quality

Results testing the effects of PFI treatment on the observed quality measures will be presented next. We conducted separate analyses for classrooms and homes when the quality measures were different between the two types of settings (ECERS-R or FDCRS factors) and a combined analysis when the same quality measure was used in both settings (CIS and ECERS-E). The combined analysis offered greater power due to increased sample size and also allowed us to test whether the PFI treatment was more effective in one setting.

Three-level hierarchical linear models were conducted, using a similar model as described in chapter 5. Repeated measures of caregivers were used to estimate individual growth curves. The intercept for these growth curves estimated quality scores at the end of the treatment and the slopes estimated change during the treatment and follow-up periods. The caregivers were nested within consultants. Random effects intercepts at the caregiver and consultant level accounted for dependencies in the data related to two levels of nesting. All models included time as a level 1 variable, and treatment and state as level 2 variables. State was included to represent our sampling frame. The combined analyses of CIS Sensitivity and ECERS-E also included type of setting as a level 2 variable. Of particular interest were the main effects of treatment (whether the PFI and control groups differed at the end of intervention) and the interactions between treatment and gains during both the treatment period and the follow-up period to test whether PFI groups showed larger gains over time.

*ECERS-R.* The first set of models examined the ECERS-R factor scores for center teachers. The first two columns of Table 6-3 present analyses for the ECERS-R factors. These analyses suggested that ECERS scores changed over time, but that neither the scores at the end of intervention nor changes over time differed by treatment group. There was a significant improvement in the Provisions for Learning factor scores during treatment (i.e, from Time 1 to Time

2) and in both factors during the follow-up period (i.e., from Time 2 to Time 3), indicating that both PFI and control groups made progress and continued to make progress even after their interventions had ended. The treatment group means, adjusted for state, are presented in Figures 6-1 and 6-2.

*FDCRS.* The next set of models examined the FDCRS factor scores for family child care providers. The three columns on the right side of Table 6-3 present analyses for the FDCRS factors. Treatment main effects or interactions were detected for two of the three FDCRS factors. The PFI providers scored significantly higher than control providers on the Teaching and Interactions factor at Time 2 (effect size  $d = .37$ ). PFI providers also made significantly more gains during the treatment period (i.e., from Time 1 to Time 2) in Teaching and Interactions ( $d = .32$ ) and Provisions for Learning and Health ( $d = .26$ ) factor scores. Neither significant gains nor losses were made during the follow-up period (Time 2 to 3). The adjusted means of these FDCRS results are presented in Figures 6-1 and 6-2.

**Table 6-3. Quality Outcomes for ECERS-R and FDCRS**

	<b>ECERS F1 Teaching &amp; Interactions</b>	<b>ECERS F2 Provisions for Learning</b>	<b>FDCRS F1 Teaching &amp; Interactions</b>	<b>FDCRS F2 Tone and Discipline</b>	<b>FDCRS F3 Provisions for Learning/ Health</b>
Effect	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
<b>Time 2 Differences</b>					
Treatment	.11 (.28)	.04 (.24)	<b>.33 (.13)*</b>	.23 (.15)	.19 (.12)
State	F= 1.08	F= .97	F=14.10***	F=5.55***	F=13.82
<b>Change Over Time</b>					
Pre-post change	.10 (.14)	.35 (.11)***	.42(.06)***	.12 (.07)	.17 (.06)**
Follow Up Change	.50 (.16)**	.36 (.12)**	.00(.06)	.01 (.08)	.00 (.07)
Trtmt: in pre-post change	.14 (.27)	-.14 (.21)	<b>.29 (.11)*</b>	.25 (.15)	<b>.27 (.12)*</b>
Trtmt: follow-up change	-.02 (.32)	.05 (.24)	.10(.12)	.12 (.16)	.00 (.13)
Significant treatment effects are bolded. * $p < .05$ , ** $p < .01$ , *** $p < .001$					

Figure 6-1. Teaching and Interactions Factor from the ECERS-R & FDCRS

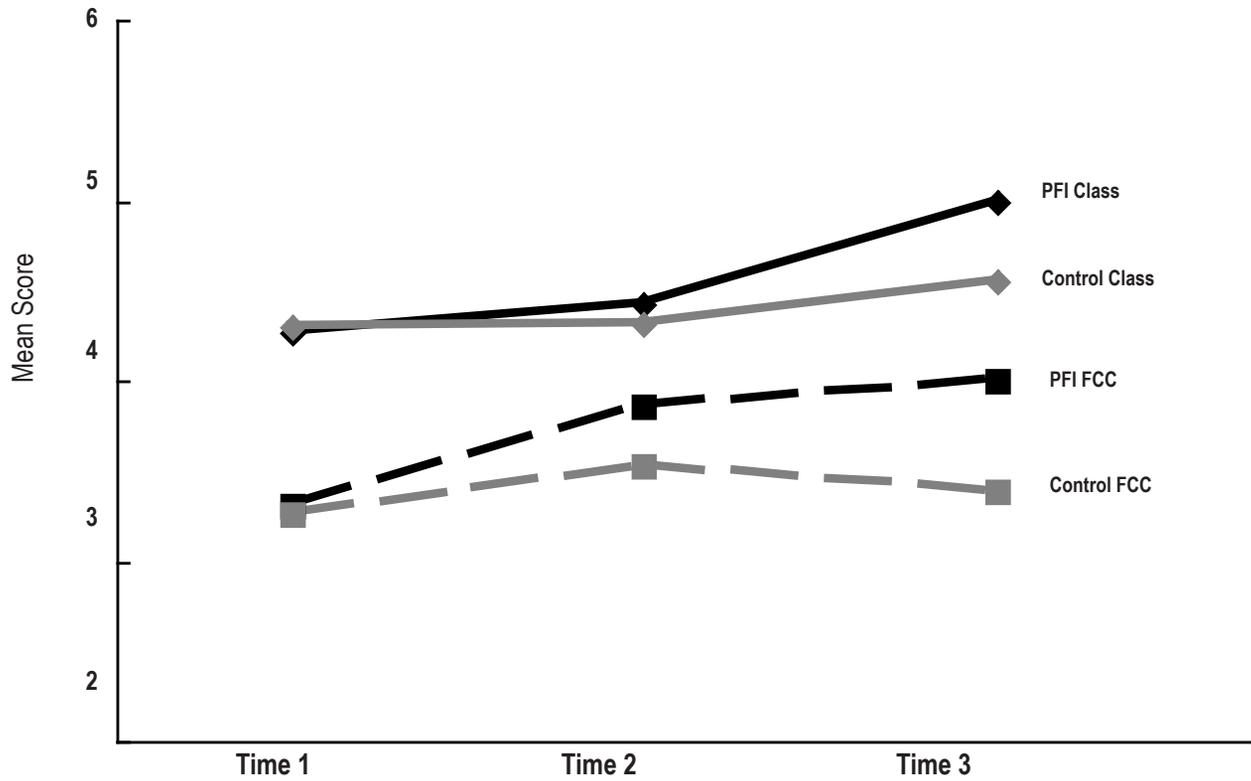
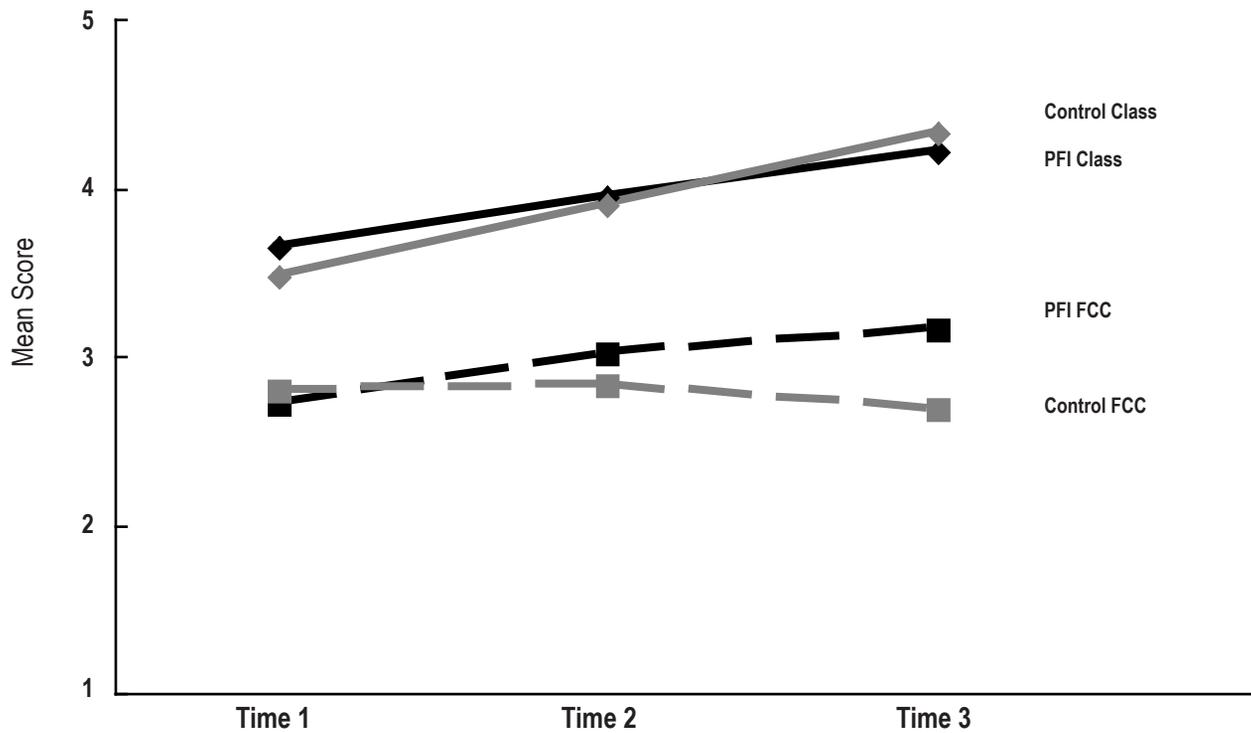


Figure 6-2. Provisions for Learning Factor from the ECERS-R & FDCRS\*



\*This factor score contains some health and safety items for the FCC providers whereas for classrooms, the factor is mainly composed of learning materials.

*CIS.* The next set of analyses included both center teachers and home providers, and allowed us to test for differences in quality between the two settings and more importantly whether treatment was more effective in one setting. The first column of Table 6-4 presents results for the measure of caregiver sensitivity. No differences were detected between PFI and control groups, either at the end of treatment or in changes over time. In addition, no differences were detected in the sensitivity of center teachers and FCC home providers.

*ECERS-E.* The next three columns of Table 6-4 show the results from analyses of the three measures of teaching practices as measured by the ECERS-E. Results indicated that the PFI caregivers scored higher than control caregivers at the end of treatment on the ECERS-E Total ( $d=.34$ ) and the ECERS-E Literacy subscale ( $d=.34$ ). In addition, compared to controls, the PFI group made significantly more gains during treatment (from Time 1 to 2) in the ECERS-E Total ( $d = .31$ ) and marginally more gains in both Literacy and Numeracy scores ( $d = .26$  and  $.34$ , respectively). Using adjusted means, the ECERS-E Total score is presented in Figure 6-3.

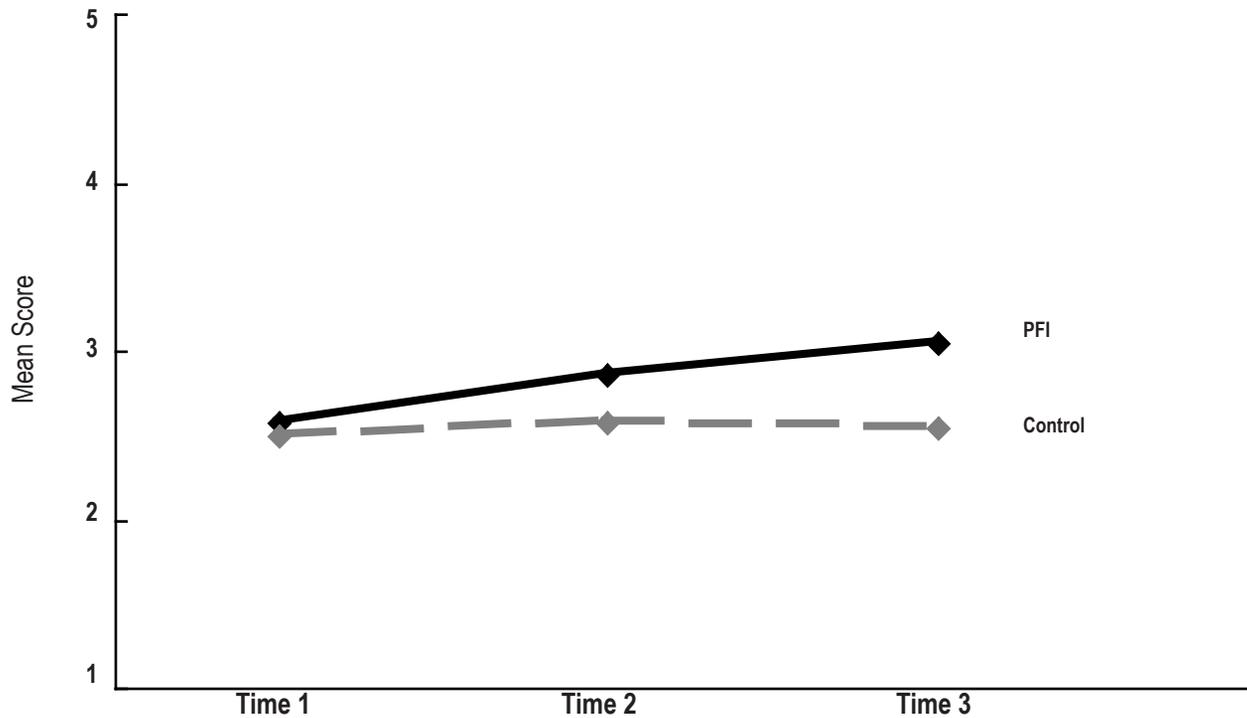
**Table 6-4. Quality Outcomes for Caregiver Interaction Scale and ECERS-E**

	<b>CIS Sensitivity</b>	<b>ECERS-E Total</b>	<b>ECERS-E Literacy</b>	<b>ECERS-E Numeracy</b>
	B (SE)	B (SE)	B (SE)	B (SE)
<b>Time 2 Differences</b>				
Treatment	.09 (.08)	<b>.21 (.09)*</b>	<b>.29 (.11)*</b>	.14 (.10)
Type	-.09 (.10)	.15 (.11)	.16 (.14)	.15 (.12)
Trt by Type	.02 (.16)	-.08 (.18)	-.11 (.23)	-.07 (.21)
State	F=9.54***	11.56***	F=12.09***	F=8.02***
<b>Change Over Time</b>				
Pre-post change	-.01 (.04)	.13 (.05)**	.18 (.06)**	.12 (.06)*
Follow-up change	.09 (.04)†	.06 (.05)	.08 (.07)	.04 (.07)
Trt: Pre-post gains	.08 (.08)	<b>.20 (.09)*</b>	<b>.22 (.12)†</b>	<b>.21 (.12)†</b>
Trt: Follow-up gains	.04 (.09)	-.03 (.11)	-.07 (.13)	.07 (.14)
Type: pre-post gains	.04 (.08)	.04 (.09)	.03 (.12)	.03 (.12)
Type: follow-up gain	.07 (.09)	.13 (.11)	.16 (.13)	-.08 (.14)
Trt x Type: pre-post	.01 (.16)	-.05 (.19)	-.16 (.23)	.07 (.23)
Trt x Type: followup	.08 (.18)	-.13 (.22)	-.20 (.27)	.04 (.27)

Significant treatment effects are bolded.

†p < .10, \* p < .05, \*\* p < .01, \*\*\* p < .001

Figure 6-3. ECERS-E Composite Score for Teachers and FCC Providers Combined



### Mediators and Moderators of Quality Outcomes

Following the tests of main effects of treatment, we were interested to know whether some providers benefited more or less from the treatment or control interventions and whether changes in attitudes or dose mediated treatment effects. Follow-up hierarchical analyses were conducted in which selected teacher and family child care provider characteristics were added to the models as covariates. Missing value dummy variables were used to account for missing data. These dummy variables allowed the inclusion of records with missing data while estimating each regression coefficient from the observed cases.

Three nested models were fit:

- a. **Intent to treat models with no covariates** (described above).
- b. **Caregiver characteristics as moderators.** Intent to treat models with selected caregiver characteristics added as moderators of treatment effects. The caregiver characteristics hypothesized to moderate treatment effects were teacher/provider education, experience, and professional motivation.
- c. **Mediation.** Intent to treat models tested whether selected caregiver and treatment factors mediated the hypothesized association between treatment and child care quality. The selected factors included teacher/provider childrearing attitudes (modernity) and dosage (number of visits by a consultant). Preliminary analyses tested for nonlinear associations for dosage, and dropped the nonlinear terms when they proved to be non-significant. Interaction terms were added when little evidence of mediation was observed.

These analyses began by examining the correlations between the potential moderators and between these predictors and child care quality. Table 6-5 presents correlations among the potential predictors, separately for control and PFI participants. In the control group, only modernity and education are modestly correlated such that better educated teachers and providers reported more child-focused beliefs. In the PFI group, experience is significantly but modestly associated with professional motivation and professional motivation is negatively related to modernity. Dosage and experience are significantly positively related such that PFI teachers and providers with more years of experience received a greater number of consultation visits.

Table 6-6 presents correlations among predictors and quality measures at both Time 1 and Time 2 and separately for control and PFI participants. In neither PFI nor control group was education related to any of the observed quality measures, but experience was positively related to FDCRS Teaching and Interactions in both control and PFI groups. Years experience was also positively correlated with the ECERS-E Total for both control and PFI groups. Modernity was positively related to most of the observed quality measures in both control and PFI groups. There were no clear patterns of relationships between dosage and the quality outcomes variables.

**Table 6-5. Correlations Among Predictors (Control above diagonal and PFI below)**

	Education	Experience	Professional Motivation	Modernity	Dosage
Education		-.07	-.02	.20**	.11
Experience	-.07		.14	.03	.15
Prof. Motivat.	.01	.24**		-.01	-.13
Modernity	-.15	.01	-.21**		.16
Dosage	.09	.24**	-.01	-.01	

Note. All measures are from Time 1 except for Dosage (number of on-site consultation visits) which was collected at Time 2.

**Table 6-6. Correlations Among Teacher/Provider Characteristics and Quality Outcomes**

	FDCRS F1 Teaching & Interactions		FDCRS F2 Tone and Discipline		FDCRS F3 Provisions for Learning/ Health		ECERS F1 Teaching & Interactions		ECERS F2 Provisions for Learning		ECERS-E Total	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<b>Control</b>												
Education	-.05	-.09	.08	.07	.18	.01	.17	.08	.00	-.01	.02	-.09
Experience	.33	.14	.17	.12	.09	.17	-.06	-.47	-.22	-.33	.30	.12
Prof Motiv	.19	.24	.11	.17	.17	.17	.28	-.02	.07	.20	.23	.13
Modernity	.19	.03	.27	.00	.23	-.06	.24	.19	.29	.24	.12	.00
Dosage	-.08	-.07	.13	-.03	-.14	.05	.13	-.24	-.06	-.06	.05	-.21
<b>PFI</b>												
Education	.03	.01	.06	.00	.10	-.04	-.09	-.30	-.13	-.21	.07	-.06
Experience	.48	.24	.21	.10	.12	.15	.19	.54	.20	.50	.38	.31
Prof Motiv	.16	.18	.06	.13	.13	.23	.00	.07	.03	.21	.18	.18
Modernity	.27	.19	.35	.21	.29	.15	.21	.27	.32	.43	.10	.23
Dosage	-.06	-.19	-.19	-.16	-.26	-.17	.01	.14	-.01	.09	.01	-.03

Next, we conducted the models using HLM. Table 6-7 presents the tests of moderation. This three-level HLM included main effects of treatment, time, and interactions between time and treatment. Model 1 repeats the intent-to-treat analyses as presented earlier in this chapter. Models 2 and 3 are the tests of selected potential moderators and mediators of treatment effects. State was included as a covariate.

Model 2 added provider education, experience, and professional motivation as moderators by including them as main effects and in interactions with treatment. All were centered at the sample mean to enhance interpretation of coefficients. Analyses indicated that years of experience moderated treatment effects on center quality outcomes. ECERS-R Teaching and Interactions and Provisions for Learning factor scores showed larger treatment effects at Time 2 among teachers with more experience. Analysis of the ECERS-R Teaching and Interactions score suggested that teachers in the PFI group but not the control group showed somewhat larger gains during treatment if they had more experience compared to less experience. In addition, the main effects suggested that caregivers with more experience overall were rated higher on all three FDCRS scales and the ECERS-E total score, and that FCC providers with higher professional motivation scores were rated higher on both the FDCRS Teaching and Interactions and Provision for Learning factors.

Model 3 was designed to test whether childrearing attitudes or dose mediated the treatment effects. No evidence emerged suggesting mediation (i.e., including the two variables in Model 3 did not reduce the magnitude of the treatment effects). Accordingly, we then asked whether either childrearing attitudes or dose moderated treatment effects and results indicated some moderation. PFI treatment was more effective for teachers with more child-centered attitudes for both ECERS factors. This was also true for FCC providers on one factor—PFI treatment showed more effects on FDCRS Provisions for Learning and Health if the FCC provider had more child-centered attitudes.

Considering the ECERS-E total score outcome, PFI was more effective for providers and teachers with more child-centered attitudes. Considering gains from Time 1 to Time 2, analysis of the ECERS-E total score suggested that teachers and providers showed somewhat larger gains during treatment if they had higher modernity scores, but that at this effect was significantly larger in the PFI group.

**Table 6-7. Tests of Covariates and Moderation**

	FDCRS Interact	FDCRS Tone	FDCRS Provision	ECERS Interact	ECERS Provision	ECER-E Total
<b>Model 1</b>						
PFI: main effect	<b>.37 (.12)**</b>	<b>.29 (.13)*</b>	<b>.19 (.10)</b>	.11 (.25)	.06 (.22)	<b>.25 (.07)***</b>
PFI: pre-post gains	<b>.34 (.10)***</b>	<b>.31 (.13)*</b>	<b>.27 (.11)*</b>	.15 (.24)	-.12 (.18)	<b>.22 (.07)**</b>
<b>Model 2</b>						
PFI: main effect	<b>.35 (.13)**</b>	<b>.25 (.15)†</b>	<b>.21 (.12)†</b>	.01 (.28)	0 (.24)	<b>.24 (.08)**</b>
PFI: pre-post gains	<b>.34 (.12)**</b>	.29 (.15)	<b>.31 (.12)*</b>	-.07 (.3)	-.22 (.23)	<b>.23 (.08)**</b>
Education	-.02 (.04)	.02 (.04)	-.01 (.03)	0 (.12)	0 (.1)	-.02 (.03)
Experience	.02 (.01)**	.02 (.01)*	.01 (.01)*	.01 (.02)	0 (.02)	.01 (0)**
Prof Motivation	.18 (.09)*	.17 (.11)	.17 (.09)*	.3 (.21)	.2 (.17)	.04 (.06)
Education x PFI	.08 (.08)	-.01 (.09)	.03 (.07)	-.3 (.23)	-.08 (.21)	.01 (.05)
Experience x PFI	.02 (.01)	.01 (.01)	.01 (.01)	<b>.13 (.04)***</b>	<b>.09 (.03)**</b>	.01 (.01)
Motivation x PFI	-.05 (.17)	-.02 (.21)	.03 (.17)	-.09 (.41)	-.3 (.33)	.04 (.12)
Educ x PFI: pre-post gains	.03 (.07)	0 (.09)	.09 (.07)	.01 (.24)	.06 (.19)	-.02 (.06)
Exp x PFI: pre-post	.01 (.01)	0 (.02)	.01 (.01)	<b>.07 (.04)*</b>	.03 (.03)	.01 (.01)
Motiv x PFI: pre-post	-.14 (.21)	-.09 (.28)	-.07 (.23)	.65 (.57)	-.26 (.45)	0 (.15)
<b>Model 3</b>						
PFI main effect	<b>.52 (.18)**</b>	<b>.38 (.19)*</b>	.22 (.14)	-.21 (.34)	-.29 (.28)	<b>.31 (.09)**</b>
PFI:pre-post gains	<b>.34 (.11)**</b>	.19 (.14)	.17 (.12)	-.17 (.3)	<b>-.43 (.22)†</b>	<b>.23 (.08)**</b>
Modernity	.01 (.01)	.01 (.01)*	.01 (.01)	.01 (.01)	.03 (.01)**	.01 (0)**
Dose	-.03 (.01)**	-.01 (.01)	-.01 (.01)	.02 (.02)	.03 (.02)	-.01 (.01)†
Modernity x PFI	.01 (.01)	.02 (.01)	<b>.02 (.01)*</b>	<b>.03 (.01)**</b>	<b>.04 (.02)*</b>	<b>.01 (.01)*</b>
Dose x PFI	.01 (.02)	-.01 (.02)	-.01 (.02)	<b>.07 (.04)†</b>	<b>.07 (.03)*</b>	0 (.01)
Mod x PFI: pre-post	.01 (.01)	.01 (.02)	.02 (.01)	.01 (.02)	.02 (.02)	<b>.02 (.01)**</b>
Dose x PFI: pre-post	-.02 (.02)	-.02 (.02)	-.01 (.02)	-.04 (.04)	-.04 (.03)	-.01 (.01)

Significant treatment effects are bolded.  
 †p < .10, \* p < .05, \*\* p < .01, \*\*\* p < .001

PFI seemed to be more effective at higher doses on both ECERS factor scores (interactions of Dose x PFI), significant for the ECERS Provisions for Learning factor and approaching significance for the Teaching and Interactions factor. Dosage had a counterintuitive negative main effect on the Teaching and Interactions factor for FCC home providers, such that those with more on-site consultation visits made less progress than those with fewer visits.

## Summary of Quality Outcomes

Differences in quality improvement between PFI and control groups were seen in FCC homes, but not classrooms. PFI was a more effective quality enhancement intervention for FCC homes than the typical on-site consultation model. FCC providers served by PFI consultants made significant gains in quality on three of the five observational measures and they were significantly different than the control group at both the end of intervention and 6 months later. Classrooms in both PFI and control groups improved in quality over time on three of the four measures of quality. Both PFI and the typical consultation model in our partner agencies were effective.

The ECERS-E seemed sensitive to intervention in both classrooms and FCC homes—the PFI group was significantly higher than the control group after intervention, having made significantly greater gains over time.

Most of the treatment effect sizes were moderate and even at the end of intervention, the average FCC home was still rated low, around a 4 on the FDCRS factors and less than 3 on ECERS-E. Room for improvement remained and one wonders whether a longer intervention or more visits might facilitate continued advances.

Experience, but not education, had several main effects indicating that experienced teachers and providers might have gained more from their interventions. Rather than being “set in their ways,” perhaps experienced individuals have a greater range of teaching strategies and daily routines into which to incorporate new ways of caring and teaching, or a greater range of past experiences with which to compare hypothetical new ones, should they chose to try something new. Regarding lack of effects of education, our study must be cautious about drawing any conclusions about education because, although some BA-degreed teachers and FCC providers were in the study, none of them had a BA in early education or a related field.

Dosage of consultation was a moderating factor among teachers, but not FCC home providers. FCC home providers who had at least one visit averaged 12.1 on-site consultation visits for PFI and 5.4 for control. Considering the small number of on-site consultations received by the control group, the lack of effects in this group is not surprising. Given that these programs were fairly representative of the typical quality enhancement intervention being offered to FCC providers by resource and referral agencies throughout the U.S., our results suggest that they may be too weak to be effective in enhancing quality.

Among classroom teachers dosage had a moderating effect, although not a main effect. For the PFI group, more visits were related to greater quality. The average number of on-site consultation visits received by a teacher was 15.7 for PFI and 6.9 for control. The range was clearly higher among PFI than control, possibly allowing for a mediating effect of dose to be seen. However, both groups of teachers made significant quality improvements over the course of the study in spite of the different mean number of consultation visits. In the control groups, the mean number of consultation visits was about the same for teachers and FCC providers (6.9 and 5.4, respectively), thus it is somewhat surprising that control teachers made quality gains whereas control FCC providers did not. Teachers are more likely to be in an environment where they receive

feedback and possibly support for incorporating new strategies into their day (from someone other than their consultant), so perhaps the value of a consultation visit is enhanced.

The PFI model and some of the control consultation programs specified an expected range of visits, but ultimately, the number of visits made by a consultant to a teacher or FCC provider was influenced by many factors, including their joint decisions about when and how long to meet. Consultants may have felt the need to visit poorer quality programs more often and may have made fewer visits to classrooms and homes that were making good progress. In addition, turnover of consultants and providers cut short many consultation periods. Although the PFI model specifies a particular range of visits, as we discuss in chapter 8, implementation varied a good deal. Ultimately, because our study did not randomly assign consultation visit dosage, we cannot provide evidence related to threshold effects.



# Chapter 7: Child Outcomes

**M**ANY STUDIES HAVE SHOWN THAT CHILDREN IN HIGHER QUALITY CHILD CARE have significantly better outcomes than children in lower quality care. Although the associations are relatively modest, both meta-analyses of published studies and analyses of data from children of low-income families show that child care quality summary scores are significant predictors of children’s language and cognitive skills (Burchinal, et al., 2009). In the QUINCE study, we assessed children in the classrooms and FCC homes at two time points, once after the teacher or provider completed either the PFI or control intervention and again about 6 months later, generally fall to spring of one school year. These child assessments allowed us to answer five main questions:

- 1) Compared to children whose caregivers were in the control interventions, did children whose caregivers had been in the PFI intervention score higher in the spring on language, school readiness, and socio-emotional measures?
- 2) Did children in the different treatment groups make differential gains from fall to spring in language, school readiness, and socio-emotional development in the school year after their caregiver had participated in the intervention?
- 3) Were child outcomes different for children from poor families (using subsidy receipt as a proxy for poverty)?
- 4) Do certain provider characteristics (modernity and experience) mediate the effects on child outcomes?
- 5) Was quality of care or dosage of intervention, regardless of treatment group, related to children’s outcomes?

## **Variables Used in the Child Outcome Analyses**

The child-level measures and their administration were described in detail in Chapter 3. Children were assessed in their care setting by a trained data collector in the fall and spring of the school year directly after their child care provider had completed the PFI or control quality enhancement intervention. The providers completed two measures of children’s behavioral and socio-emotional development. The main scores we use in the child outcomes analyses are the Bracken school readiness standard score, the PLS-IV Auditory Comprehension standard score, and three socio-emotional summary scores computed after factor analysis of the Social Competence and Behavioral Evaluation Scale and the Devereux Early Childhood Assessment: Social Competence, Conduct Problems, and Anxiety/Depression.

Although we assessed in Spanish any child whose primary home language was Spanish, the study included only 25 such children; they are not included in the analyses that follow. Descriptive statistics of the child outcomes are presented in Table 7-1.

Table 7-2 presents correlations between the Bracken and PLS scores in the fall and spring. Fall and spring Bracken scores were highly correlated (around .80) and fall and spring PLS scores somewhat less so (around .60). Correlations between the PLS and Bracken scores at the same time point were also about .60.

**Table 7-1. Descriptive Statistics for Child Variables**

		CLASSROOM						FAMILY CC HOME					
		PFI			Control			PFI			Control		
		N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Child Age at Assessment	Fall	116	4.16	0.83	117	4.31	0.76	234	3.94	0.90	236	3.90	0.91
	Spring												
Percent Subsidized	Fall	117	0.42		119	0.40		235	0.16		239	0.10	
	Spring	103	0.45		89	0.53		202	0.16		226	0.09	
Percent Girls	Fall	117	0.49		119	0.49		235	0.48		239	0.44	
	Spring	103	0.48		89	0.53		202	0.50		226	0.42	
Bracken School Readiness St. Score	Fall	101	101.8	14.69	115	99.61	16.56	188	103.7	17.05	182	104.0	14.69
	Spring	97	104.9	15.17	86	101.7	16.65	171	106.6	14.81	200	105.4	16.24
PLS-4 Receptive Language St. Score	Fall	114	98.46	14.03	116	97.14	12.74	231	103.1	14.33	231	102.9	14.12
	Spring	98	102.0	12.00	88	97.58	11.62	188	104.1	13.33	218	104.6	13.34
Social Competence	Fall	101	3.65	0.55	112	3.61	0.70	228	3.66	0.60	220	3.64	0.61
	Spring	79	3.63	0.56	78	3.77	0.60	195	3.76	0.59	196	3.71	0.60
Conduct Problems	Fall	101	1.89	0.59	112	2.02	0.70	228	2.20	0.70	220	2.16	0.64
	Spring	78	2.06	0.85	78	2.07	0.86	196	2.04	0.62	196	2.18	0.61
Anxiety/Depression	Fall	101	1.35	0.52	112	1.49	0.55	229	1.55	0.64	221	1.47	0.53
	Spring	78	1.45	0.53	77	1.41	0.50	197	1.48	0.58	196	1.52	0.55

**Table 7-2. Correlations between Child Outcome Measures at Two Time Points**

	Children in Classrooms			Children in FCC Homes		
	Spring Bracken	Fall PLS	Spring PLS	Spring Bracken	Fall PLS	Spring PLS
Fall Bracken	.76	.52	.47	.80	.61	.53
Spring Bracken		.49	.58		.47	.62
Fall PLS			.65			.56

To test child outcomes over time between treatment and control children, a three-level hierarchical linear model analysis was conducted, with time nested within children and children nested within providers. The analysis included two assessments of outcomes per child—a random-effects intercept for each child to account for correlations between these repeated measures and a random-effects intercept to account for the nesting of children within sites. The predictors of interest were treatment group and type of care and the two and three-way interactions between treatment group and both type of care and subsidy status. Main effects tested differences in the spring and time interactions tested change over time from fall to spring. State and children’s gender, age at the spring assessment, race, and subsidy status were entered in the model as covariates. Interactions involving subsidy status were tested and non-significant interactions were dropped. Time was centered at the spring assessment so the main effects test of treatment asked whether there were treatment differences among children in the spring of the school year after the interventions ended. We included all data in these analyses, including children with only fall data. Their age and time of assessment was computed using the average number of months between assessments for children who had both fall and spring assessments. Table 7-3 presents the results of the analysis.

**Table 7-3. Child Outcomes**

		<b>Bracken School Readiness</b>	<b>PLS Language</b>	<b>Social Competence</b>	<b>Conduct Problems</b>	<b>Anxiety/ Depression</b>
<b>Differences at Spring (intercept)</b>						
State	F(4, dfe)	3.82**	9.77 ***	13.49***	1.06	1.99†
Male	B (se)	-4.96 (1.08)***	-4.12 (.84)***	-.18 (.04)***	.19 (.04)***	.11 (.04)**
Age (Spring)	B(se)	2.11 (.67)**	-.88 (.47)†	.19 (.02)***	-.14 (.03)***	-.04 (.02)
Race	F(2, dfe)	2.13	15.44***	2.09	.55	3.45*
Subsidy	B (se)	-7.52 (1.15)***	-5.10 (1.00)***	-.14 (.04)**	.10 (.05)	.01 (.05)
<b>Treatment</b>	B (se)	1.70 (1.38)	1.59 (1.20)	-.01 (.05)	-.05 (.07)	.01 (.06)
Type (center/ FCC)	B (se)	2.33 (1.91)	1.21 (1.20)	-.22 (.07)**	-.04 (.08)	-.11 (.07)
<b>Treatment x Type</b>	B (se)	1.95 (2.73)	<b>4.98 (2.36)*</b>	-.15 (.10)	.09 (.13)	.06 (.11)
<b>Treatment x Subsidy</b>	B (se)	.22 (2.69)	-2.58 (2.52)	<b>.25 (.11)*</b>	-.07 (.13)	-.08 (.11)
Center x subsidy	B (se)	4.21 (2.75)	5.26 (2.54)*	.07 (.11)	.23 (.13)+	.16 (.11)
<b>Change from Fall to Spring</b>						
Time	B (se)	2.65 (.58)***	1.34 (.61)*	.04 (.03)	.04 (.03)	.00 (.03)
Time x Type	B (se)	.58 (1.21)	1.44 (1.27)	-.04 (.05)	.19 (.07)**	.03 (.06)
<b>Time x Treatment</b>	B (se)	-.41 (1.21)	1.35 (1.27)	-.05 (.05)	.00 (.07)	.06 (.06)
<b>Time x Trtmt x Type</b>	B (se)	.94 (2.29)	<b>4.16 (2.41)†</b>	<b>-.19 (.10)†</b>	<b>.24 (.121)†</b>	<b>.26 (.10)**</b>
<b>Time x Trtmt x Subsidy</b>	B (se)	-.85 (2.72)	-.92 (2.83)	.10 (.12)	-.00 (.15)	-.03 (.12)
Time x Type x Subsidy	B (se)	.53 (2.72)	2.47 (2.83)	.20 (.12)†	.04 (.15)	.07 (.12)

Significant treatment effects are bolded.  
 †p < .10, \* p < .05, \*\* p < .01, \*\*\* p < .001

### **Treatment Effects on Child Outcomes**

These analyses revealed significant effects for the child-level covariates, as one would expect. In general girls scored better on all measures than boys (e.g. higher scores on the assessments, better behavior and social emotional ratings); minority children scored lower on the PLS and higher on anxiety/depression; subsidized children scored lower on both the Bracken and PLS and were rated lower in social competence and, older children scored significantly higher on the Bracken and marginally lower on the PLS Language standardized measures than did younger children. Older children were also rated significantly higher in social competence and lower (better) on conduct problems.

After accounting for child characteristics, the results show that there were no main effects of treatment; however, significant interactions with treatment emerged. Effect size was calculated as the HLM coefficient times the standard deviation for the predictor divided by the standard

deviation for the outcome variable. The three-way interaction of time, treatment and type of care indicates that children in classrooms served by PFI consultants showed significant improvement over time on the PLS (language skills) compared to children in classrooms served by control consultants (effect size  $d = .44, 4.16 / 9.41$ ). A similar treatment effect was not seen among children in FCC homes ( $d = -.10, -.97 / 9.41$ ). This effect is illustrated in Figure 7-1. No treatment effects were seen for the Bracken school readiness score.

Treatment was related to all three teacher-rated socio-emotional outcomes, but only for children in classrooms. The associations are in a negative direction. Children in PFI classrooms were marginally lower on social competence in the spring compared to the fall, marginally higher on conduct problems and significantly higher on anxiety/depression compared to control children. The effect size for the anxiety/depression change from fall to spring was .24 for PFI children in centers and -.15 for control children in centers. This effect is illustrated in Figure 7-2. There was no substantial change for children in homes (PFI FCC:  $d = -.04$ , control FCC  $d = .04$ ).

Some differential effects on the socio-emotional outcome measures were observed for children who received child care subsidies. Subsidized children in classrooms or homes served by PFI consultants were rated by their teachers/providers as having significantly better social skills in the spring than were subsidized children in classrooms or FCC homes served by control consultants ( $d = .25, .11/.44$ ). A similar treatment effect was not seen among non-subsidized children ( $d = -.30, -.13/.44$ ). The control subsidized children were rated the least socially competent (adjusted mean = 2.72) and the control non-subsidized children were most socially competent (adjusted mean = 2.98). This effect is illustrated in Figure 7-3.

In terms of change over time in social competence among subsidized children there was a marginally significant three-way interaction between time, type, and subsidy status. Subsidized children in centers showed a small improvement from fall to spring ( $d = .25, .11/.44$ ) whereas small but non-significant decreases were seen among non-subsidized children in centers ( $d = -.30, -.13/.44$ ).

Subsequent to these analyses, we ran a second set of analyses, removing subsidy status from the model, but adding provider experience and Modernity total score as predictors. We included three-way interactions of each variable with time and treatment as well as lower order interactions. Provider experience was not related to Bracken scores, PLS scores, or Conduct Problems. There was, however, a marginal negative effect on Anxiety/Depression. Additionally, there was an interaction between treatment and experience on social competence. Experience has a positive effect on competence for the PFI group, but not on the control group. There was evidence for a small, positive main effect for Modernity on Social Competence, and small, negative effects on Conduct Problems, and Anxiety/Depression. The effect on Conduct Problems, however, is moderated by time such that the effect is smaller in the spring than in the fall.

We also ran analyses including the quality score (FDCRS or ECERS-R total mean score) and number of consultation visits (dosage) and though there were main effects of these variables on most child outcomes, there were no interaction effects for either variable. The main effects for quality were highly statistically significant and in the positive direction with quality associated

with higher Bracken, PLS, and social competence scores and lower scores on conduct problems and anxiety/depression. The main effects for dosage were significant for the PLS (more visits related to higher scores) and two of the behavior ratings (more visits related to lower social competence and to increased conduct problems).

## **Summary**

Child level effects for PFI were seen only among children in centers, not in homes. Children in classrooms that participated in PFI rather than control interventions had better receptive language skills, whether looking at the group differences in the spring or at change over time in language skills from fall to spring. Elements of the PFI intervention certainly focused on teacher-child verbal interactions as well as on ways to enrich the language/literacy environment. Perhaps the PFI-guided assistance given to teachers was better received, more readily incorporated into the classroom day, and/or more closely linked to child language outcomes than that given to teachers by control consultants. Regarding the lack of a similar PFI effect for children in FCC, perhaps the amount and variety of changes and improvements related to language learning that can be made are fewer in FCC than in classrooms, or there are fewer other caregivers (often no other caregivers) who can help implement changes to a degree that might result in child language improvements.

The fact that social skills were rated lower and conduct problems and anxiety/depression rated higher among PFI classroom children may be related to their higher language skills—a greater ability to express problems or frustration and thus be identified. While the PFI classroom children are less optimally rated than the control classroom children, we should note that these differences are slight and that most children are still in the normal range of development.

A positive effect of the PFI intervention was that children's subsidy status was not related to their teacher or provider's rating of their social competence whereas in the control group, as often seen in research, subsidized children were rated lower in social competence than non-subsidized children. PFI consultants are expected to confer with their consultees on strategies for supporting children's socio-emotional development as well as practices that could enhance the social and cognitive learning of children from low-income families. These activities may be related to the more optimal social competence ratings for subsidized children.

Figure 7-1. Preschool Language Scale Over Time by Treatment Group (adjusted means)

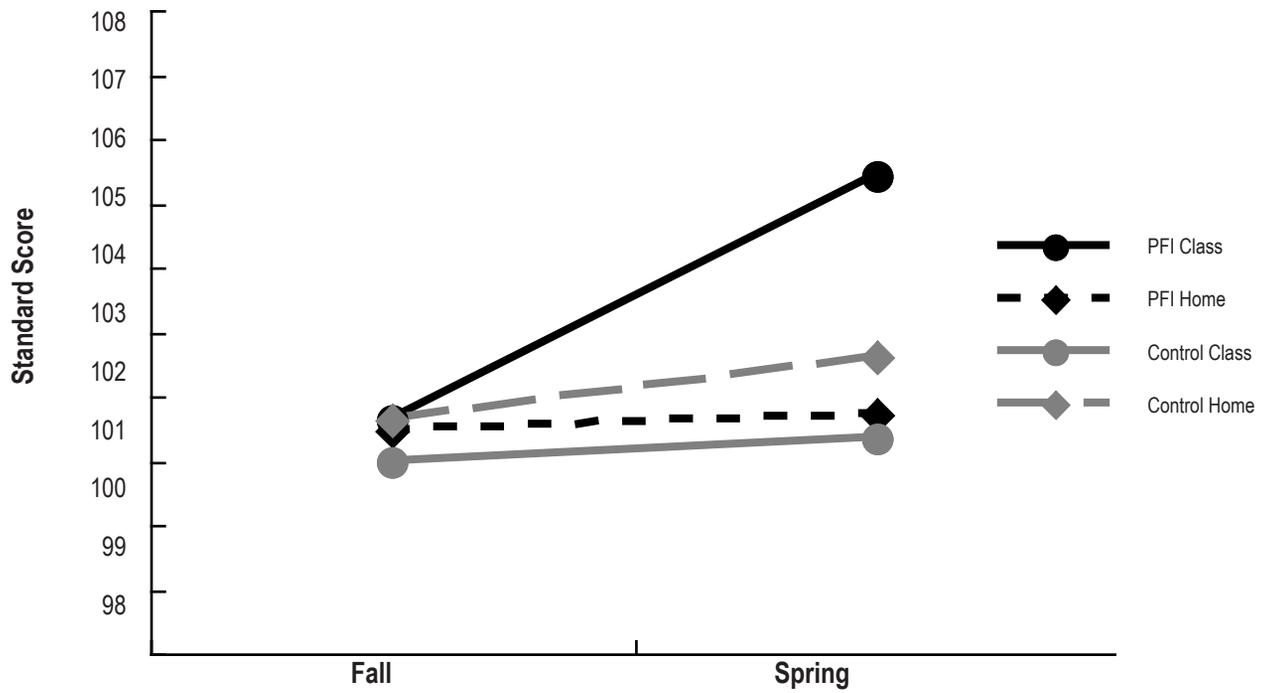


Figure 7-2. Anxiety/Depression Over Time by Treatment Group (adjusted means)

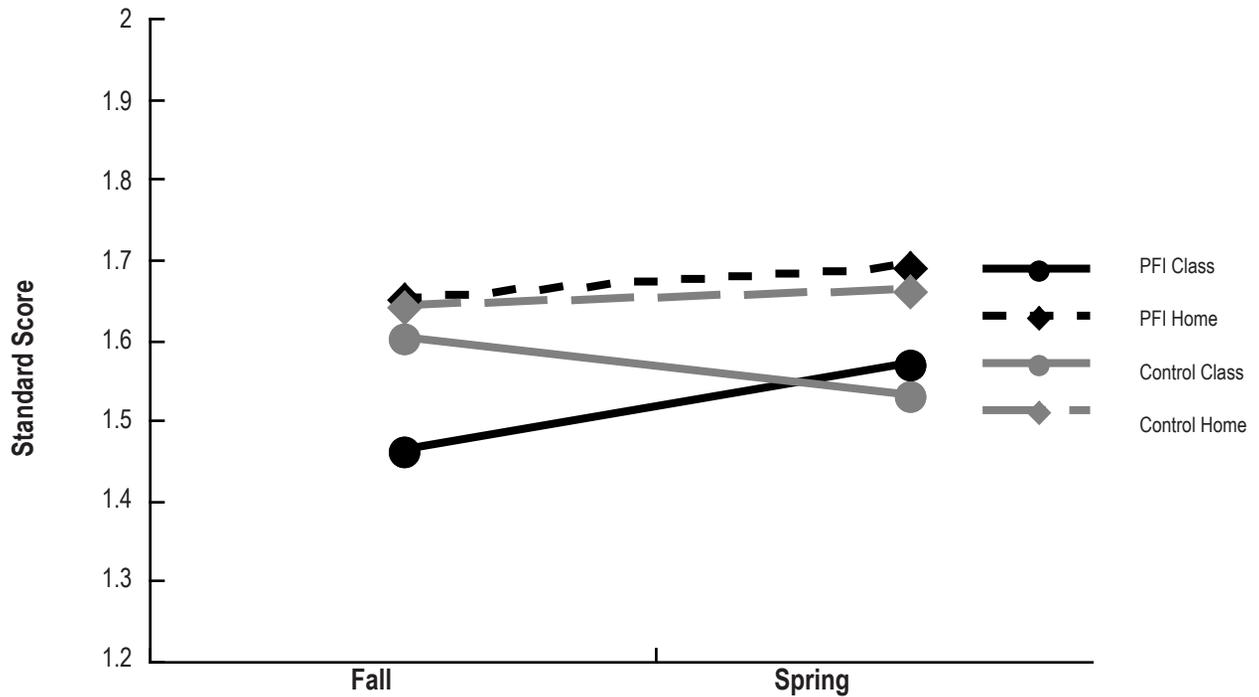
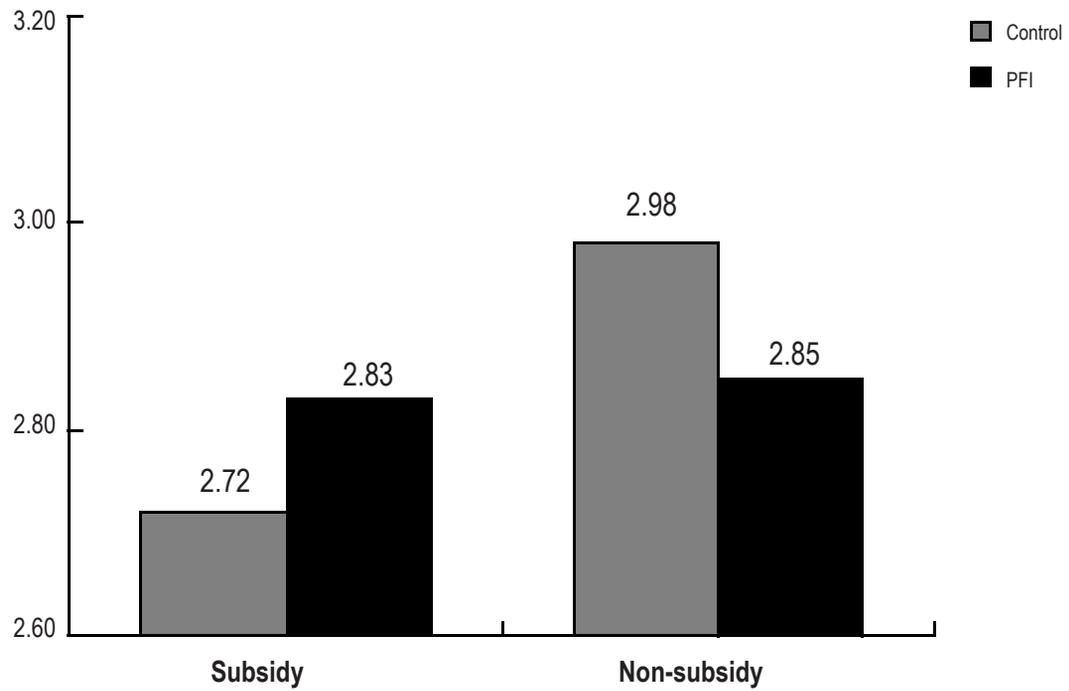


Figure 7-3. Spring Social Competence Composite (signif. trt x subsidy interaction, adj. means)



# Chapter 8: Fidelity of PFI Implementation

UNLESS THE CORE COMPONENTS OF THE INTERVENTION ARE CLEARLY DEFINED and carried out in a consistent and accurate way, replication by other researchers and implementation by practitioners will not be possible. This chapter describes how we measured and analyzed fidelity to the PFI on-site consultation model within the PFI consultation group and the challenges of implementing PFI with fidelity. We devote a separate chapter to this topic because of its importance in understanding the modest quality outcome results achieved by the intervention.

## Implementation Fidelity Overview

The concept of implementation fidelity in the study of intervention programs is evolving, with the terms implementation fidelity, implementation integrity, treatment fidelity, and treatment integrity being used interchangeably. The most basic definition of treatment fidelity is the degree to which an intervention is implemented as intended (Gresham, 1989), but it has many potential dimensions. Others would add treatment receipt and enactment as necessary components of fidelity (Bellg et al., 2004) or fidelity related to the study design and the training of those who deliver the intervention (Ory, Jordan, & Bazarre, 2002).

Fidelity has the potential to impact the internal and external validity of a study. Without fidelity data, it is not possible to draw accurate conclusions about an intervention's effectiveness, for example, to distinguish between ineffective interventions and potentially effective interventions that were implemented poorly (Gutkin, 1993; Moncher & Prinz, 1991; Power, Blom-Hoffman, Clarke, Riley-Tillman, Kelleher, & Manz, 2005).

Several factors have been linked to treatment fidelity, including intervention complexity, time required for implementation, availability of necessary resources, number and motivation of the people involved, support of administrators, prior training of participants, and the participants' perceptions of the intervention's effectiveness (Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000; Ikeda, Tilly, Stumme, Volmer, & Allison, 1996). Generally, the level of fidelity decreases as the intervention complexity, time requirements, necessary materials, and numbers of people needed to assist increase (Lane, Bocian, MacMillan, & Gresham, 2004). Monitoring fidelity throughout a study can increase adherence to the intervention being tested, optimize statistical power, and possibly lead the researcher to detect intervention effects with fewer participants (Resnick et al., 2005). Yet, the findings of several systematic reviews of treatment fidelity across related fields with extensive histories of intervention research suggest that researchers should pay more attention to developing, monitoring, and evaluating fidelity (Dane & Schneider, 1998; Moncher

& Prinz, 1991; O'Donnell, 2008; Peterson, Homer, & Wonderlich, 1982; Sheridan, Welch, & Orme, 1996). Noting the limited empirical investigation of intervention implementation, Noell and Witt (1999) suggested that the literature has provided mainly post hoc explanations for the lack of fidelity that emphasize extra-experimental factors and constructs such as consultee resistance. Potential barriers to addressing fidelity include the cost of directly observing implementation, the lack of appropriate measurement tools difficulty, and the difficulty operationalizing relationship-based interventions (such as PFI) (Gersten, Baker, & Lloyd, 2000). All were issues for the QUINCE team in documenting PFI fidelity.

### **Implementation Fidelity in the QUINCE Study**

The measurement of fidelity in the study of consultation effectiveness is complicated by the multiple points of contact in the process. In our study these are consultants, child care providers, and the children in their care. The “links-in-the-chain” problem (Fuchs, Fuchs, Dulan, Roberts, & Fernstrom, 1992, p.162) is illustrated in the following steps. First, a researcher must train the consultants who will participate in the study. The consultants then must interact with consultees from diverse backgrounds in a variety of settings (child care classrooms and family child care homes). The consultees, in turn, interact with the children they teach and other adults involved in their programs. Their work environment is a functional system with many parts, all of which have the potential to be affected by the introduction of simple changes. Links in the chain are added through increased participation by any new players in the process, such as the supervisors and colleagues of the consultants and consultees, or the families of the children. These multiple transactions and contextual variables increase the difficulty of implementing interventions with the intended strength and integrity, in terms of both the consultants’ adherence to the components of a consultation procedure and their consultees’ follow through to address consultation goals.

Given that the PFI consultation model, by definition, required time, materials (e.g., assessment instruments, documentation forms), and repeated and complex interactions with people at multiple points in the process, we anticipated challenges with fidelity. As described in chapter 2, procedures to enhance and support fidelity included collaborating with state liaisons who maintained direct contact with the consultants throughout the study, standardizing consultant training, and using multiple methods of communication and documentation during implementation.

### **Measuring Fidelity**

As the study progressed, we realized the need for a fidelity measure that would reflect the variation in implementation among the PFI consultants. We developed a fidelity index with nine items that addressed fidelity primarily along dimensions of exposure (i.e., number and regularity of visits), adherence or implementation of the model’s key components (i.e., accuracy of environment rating scale administration, thorough documentation, understandable action plans that addressed child outcomes and low-scoring rating scale items), and quality of delivery (i.e., degree of collaboration, use of consultation skills).

These dimensions of exposure and adherence could be assessed and monitored through documentation completed by consultants (see Table 1). The contact summary form, for example, was completed by the consultant after every contact with consultees to document the type of contact (phone, email, face-to-face), length of contact, consultation stage, reflections on consultee engagement, and next steps. For the 112 teachers and FCC providers who completed the PFI intervention, more than 1,000 contact summary forms were completed by the consultants with a mean of 16.2 visit contacts and 10.4 phone call contacts per caregiver. Action plans described the consultee's priorities for change and tracked the accomplishment of their goals. All consultants were to complete an action plan per site and these were available for 109 of the 112 providers who completed intervention. Action plans were often revised as the work progressed. A final report written by the consultant with input from the consultee summarized the consultation process, changes made, and recommendations for continued improvement; 80% of consultants completed these. These documents were reviewed as part of fidelity coding.

The quality of delivery was more difficult to assess. Contact summaries and action plans were two sources of partial information. Thorough and detailed contact summary notes described consultants' reflections on effective communication and collaboration and their strategies to resolve challenges in the consultation relationship. Successes could be seen in well-specified action plans that were clearly tied to the assessment reflected successes. However, sometimes documentation was brief or silent as to quality.

The 9 fidelity items could be scored from 1 (very little evidence of PFI implementation) to 4 (highest level of PFI implementation) with each score specifically operationalized for the type and amount of evidence needed to rate that score. One PFI study team member reviewed all available documents and scored all 9 items for each of the 112 sites. The 9 item scores were averaged to obtain an overall fidelity score for each consultant by site. Most consultants had multiple sites (mean = 3), so their overall fidelity score was the average of their site fidelity scores.

To assess reliability of coding, three other study team members completed the fidelity index on 11 (32%) randomly selected consultants. Cohen's Kappa was computed for each item. All indicators were substantial (e.g., > .60) except for Collaboration which had a "moderate" kappa of .5 (Landis & Koch, 1977). Table 7-1 presents each fidelity index item and sources of data, descriptive statistics, and Kappa coefficients.

## **Fidelity Results**

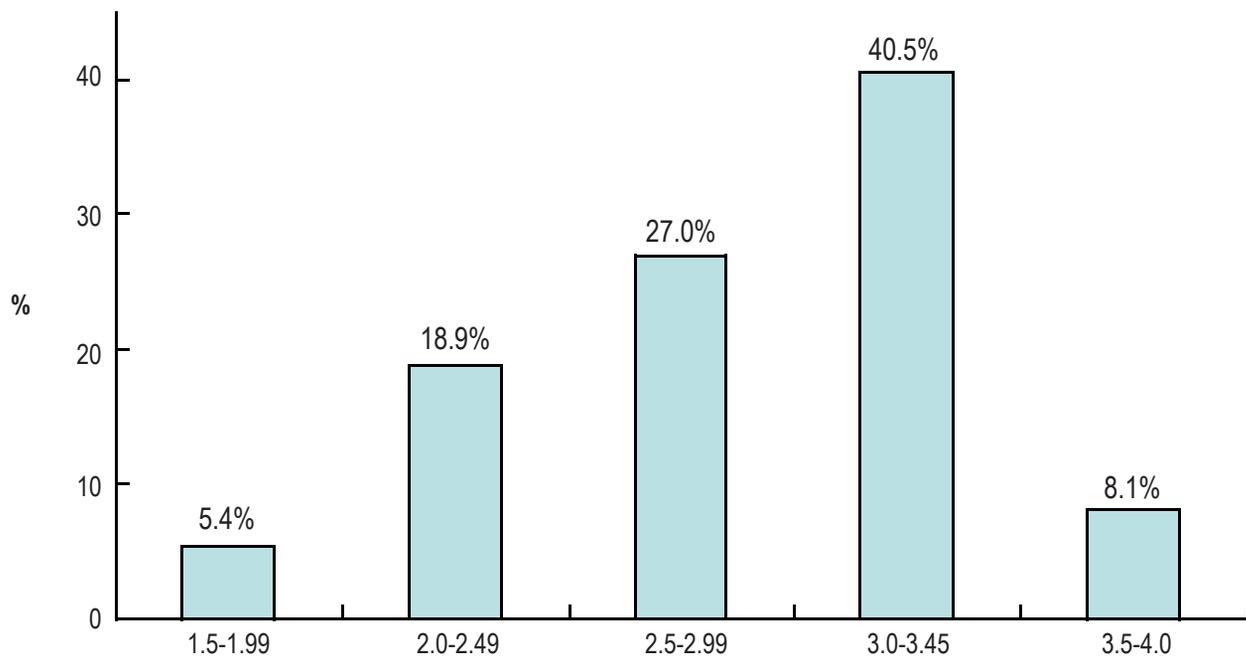
Table 1 includes the mean fidelity rating for each item of the index in order from high to low. The overall mean was 2.92 (SD=.51). At the item level, consultants generally made an appropriate number of visits and created opportunities for the consultees to make decisions, but making regular visits (two times a month) was challenging, as was scoring the rating scales accurately and tying action plans to assessment results.

Figure 7-1 presents the distribution of 37 consultants by mean fidelity score. At the high end of fidelity, only 8.1% had a mean score of 3.5 or higher. A large number (40.5%) had fidelity scores in

the 3-3.49 range. Thus, slightly fewer than half of the consultants seemed to be implementing PFI at an “average” level or above and a good number of consultants were at the low end of the range.

Item	Sources of Data							Descriptive Statistics		
	Contact Summaries	Stages and Tasks Checklist	Env. Rating Scale Data - Consultant	Env. Rating Scale Data - Indepdt. RA	Consensus Ratings w/ Provider	Action Plan (AP)	Final Report	M	SD	Kappa
Collaborative decision-making	✓	✓		✓	✓	✓	✓	3.93	.60	.50
Number of visits	✓						✓	3.48	.72	.74
AP goals: Child outcomes addr's'd						✓		3.13	1.05	.87
AP goals: Strategies clear, defined						✓		3.11	.42	.64
Thoroughness of documentation	✓	✓	✓		✓	✓	✓	3.03	.87	.69
Diverse consultant skills used	✓		✓		✓	✓	✓	2.77	.83	.61
AP goals: Address lowest rated items			✓		✓	✓		2.72	.92	.65
Regularity of visits	✓						✓	2.57	.79	.66
Env. Rating Scale scoring accuracy			✓	✓				2.12	.92	NA

**Figure 8- 1. Distribution of Consultants by Fidelity Score**



For policy considerations, we tried to identify consultant and agency characteristics that predicted fidelity. An HLM regression analysis (providers nested within consultants) using seven consultant characteristics to predict fidelity scores – education, years experience in early childhood, years experience as a consultant, Professional Motivation, Developmentally Appropriate Attitudes core, Modernity score, and depression -- was non-significant,  $F(9,27)=.78$ ,  $p > .05$ .

We considered the possibility that a significant barrier to fidelity might be the PFI consultation model's inconsistency with consultants' previous experiences and beliefs and with typical agency practices. To investigate this hypothesis, to the regression reported above, we added three agency predictors--average caseload, typical hours of service to a provider, and whether or not their typical consultation was assessment-based. We found no evidence that the typical agency characteristics were related to fidelity of their consultants' PFI implementation. The strongest correlation between fidelity and any agency characteristic was between fidelity and size of an agency's typical consultant caseload ( $r = -.26$ ), although even this was not statistically significant.

## **Discussion**

Similar to other studies of treatment fidelity, we found the overall implementation of the PFI model to vary widely by consultant. The level of specific indicators deemed central to the PFI model was relatively low. For example, even though 70% of agencies already used an environment rating scale in their quality enhancement approach, PFI consultants had difficulty scoring the scales accurately. Although community agencies typically train consultants to a level lower than might be expected of study research assistants, inaccurate assessment data cannot guide the intervention goals or activities effectively. In addition, PFI consultants had difficulty using scores to inform goals and strategies for change. Some consultants reported that they found it difficult to address the weakest program areas during discussion of their assessment results out of concern for the relationship with their consultees. Others jumped to goal planning prior to completing the discussion of rating scale results because of pressure from their agencies to spend incentive money in participating programs by a fiscal year deadline.

Several conditions potentially limited PFI implementation in this study. The fact that the PFI consultation model was more complex and demanding than the typical quality enhancement activities conducted by participating agencies seemed to be a factor. The requirement that the PFI consultant guide an ongoing problem-solving process involving joint program assessment and action planning proved daunting. Some consultants reported during training and implementation that they had not previously viewed their professional role as that of a change agent, but rather saw themselves as a monitor or trainer. Although the agencies that voluntarily participated in the study agreed to allow consultants to implement the PFI consultation model as part of their jobs, several consultants cited agency time and task demands outside the study as limiting the regularity of their visits with PFI consultees. Similarly, the amount of documentation expected of PFI consultants was greater than that typically required by agencies, and substantially different in content. These contextual factors may have impeded the ability of PFI consultants to implement the model successfully (Fixsen et al., 2005).

Other factors that may have impeded a higher level of implementation of the PFI model related to the conduct of the study as a randomized control trial. All consultants had been hired by their agency, not the study team, precluding any selection of consultants who might have a stronger understanding of a partnership process. The study team did not directly supervise the consultants and purposefully did not train their direct supervisors in the PFI model because the agency leaders needed to supervise the control consultants as well. Previous research (Wesley, Buysse, & Keyes, 2000; Wesley, Buysse, & Skinner, 2001) has demonstrated the importance of supervisors' understanding and support of the consultation model. In addition, the study was conducted during the first year that consultants were implementing a new approach. These conditions we imposed on the study in order to maintain its scientific integrity probably worked against more complete absorption and adoption of the PFI model. In typical training, supervisors and all consultants participate and can support each other as they learn new procedures.

Related to fidelity research questions 2 and 3, it is puzzling that none of the expected consultant and agency characteristics were significantly related to fidelity of consultants' implementation of the intervention. For example, the proportion of PFI consultants who screened positive for depression (32%) seemed rather high and we were surprised that it was not related to fidelity. The simplest explanation is that our sample size of 37 consultants was too small to find relations unless they were quite strong. Another interpretation is that our measurement tool—the fidelity index—was inadequate to the task. Fidelity measurement has been neglected in many educational fields (O'Donnell, 2008) and we found little guidance in the literature. It was challenging to develop an index that reflected the consultant-provider relationship, not just the consultant's knowledge and skills in delivering the model. An observational tool seems warranted and, in the second year of the study, we created an observation checklist for state liaisons to complete while accompanying a consultant on a classroom or family child care home consultation session. The checklist assessed aspects of the consultant's delivery, such as preparedness, communication skills, and encouragement of the consultee's active participation in the consultation process. Because we began this process well into the study, these data were available on only 40% of the consultants. In the future, such observations should be conducted throughout a study.

Perhaps there are personal characteristics that do relate to faithful delivery of an intervention that our consultant measures did not tap. At the agency level, we drew from the limited data sources we had, but wish we knew more about the consultants' supervisors within the agency – their skills, knowledge, and supportiveness. These are areas for further research.

# Chapter 9: Conclusions and Discussion

**T**HIS STUDY HAS PROVIDED EVIDENCE THAT ON-SITE CONSULTATION can improve child care quality. The specific intervention studied—the Partnerships for Inclusion model of on-site consultation—was more effective with family child care homes than the typical consultation programs offered by the 24 agencies that participated in the study. Among child care classrooms, however, quality improved whether the teacher received PFI or one of the control group interventions. All findings must be considered with the knowledge that the control group in the QUINCE study was not a no-treatment group—every participant received some type of services, generally on-site consultation, and the PFI consultation model was compared to “business as usual.” In this final chapter, we will first consider the quality outcomes, then child outcomes. We will then focus on consultant turnover and the state of the system of support for early childhood programs in general. Next, we compare the PFI intervention and outcomes with other recent studies of professional development to see what we can learn from them. Finally, we conclude with some of the many lessons we have learned about supporting the implementation of a consultation model and we offer these in combination with suggestions for future research in this area.

## **Family Child Care Outcomes**

PFI providers scored significantly higher than control providers on the FDCRS Teaching and Interactions quality factor at the end of intervention and made significantly more gains from beginning to end of intervention on Teaching and Interactions as well as the Provisions for Learning and Health factor. The effect sizes were in the moderate range, .32-.37. The gains of PFI providers on the ECERS-E were also greater than for control providers. Neither treatment group improved over time on the Tone and Discipline factor of the FDCRS or on Sensitivity. Once the intervention ended, neither PFI or control group showed any further gains, but at least there were no losses.

The average number of consultation visits made to FCC homes was approximately the same in the PFI and control groups, so why would PFI be more effective with FCC providers than the typical consultation approach? Attitude change does not seem to be the reason as PFI had no effects on any measures of FCC provider beliefs and attitudes. Assuming that attitudes and beliefs underlie much of human behavior, we conclude that changing beliefs and attitudes is difficult to do, but not necessary to effect changes in caregiving behaviors.

What other reasons might account for the PFI effect? One difference between PFI and control was that all PFI providers used the FDCRS and ECERS-E assessments with their consultant at the beginning of intervention, whereas only some of the control interventions incorporated a baseline assessment of quality in their service plan. Another difference is that PFI consultants had

been trained on a specific consultation approach and were following the PFI model, albeit with varying degrees of fidelity, whereas among control participants there was much more variability. No agency had a specified model or explicit or detailed training, so the control consultants received varying types and amounts of training and support.

Three quality outcomes seemed to respond to the PFI intervention— the Teaching and Interactions factor of the FDCRS, the Provisions for Learning and Health factor, and the ECERS-E total score—but not the Tone and Discipline factor nor the Sensitivity measure. These latter two measures may represent a lifetime style of interpersonal interactions, difficult to change, whereas Teaching, Provisions, and the ECERS-E measures may be more amenable to change. PFI consultants provide education (sharing new information), recommendations for new learning activities for children, suggestions for reorganizing the environment or daily schedule to better use space and time, and they specifically focus on a provider’s role as an interaction partner with the children in her care. These strategies may account for the stronger PFI effect on quality in these three domains. In addition, after their early consultation visits, including use and discussion of the FDCRS and ECERS-E, the PFI providers would have known their own areas of strength and weakness relative to accepted standards of good quality care and known where they could improve. This was not uniformly the case among the control group.

Given the very low baseline quality scores of both PFI and control groups, there was definitely room to improve, but only the PFI group did. The magnitude of the PFI effect was in the moderate range. Earlier studies of PFI included few family child care providers but the pre-to-post change in those studies was along the order of an entire point on the FDCRS total mean score or subscale scores. In these previous studies the consultants were either directly supervised by the PFI model developers or were in close contact with them, whereas in the QUINCE study, the consultants were scattered across 24 agencies in five states and were supervised by someone recently trained in PFI. In addition, many had other caseloads and responsibilities and being a PFI consultant was not their full-time work. Thus, fidelity of implementation was lower than the research team desired. Greater fidelity may have led to greater effect sizes.

Another factor that may have influenced effect size is that a randomized study is a more stringent test of any model because to the extent that individuals self-select into a particular program (whether a consultant who signs up for a particular training or a provider who desires quality enhancement services), a randomized study with a comparison group removes that potential bias that works in favor of seeing improvements in a study that has only a treatment group. What we observed in QUINCE may be a better approximation of the degree of quality improvement that would be seen if PFI were widely implemented with “typical” levels of support and monitoring of consultants (e.g. very little). On the other hand, in spite of these limitations, there were indeed significant quality gains among the PFI FCC providers and later in this chapter we speculate on conditions that might have led to greater gains.

## **Classroom Outcomes**

Quality outcomes for classroom teachers did not mirror those of family child care providers. Both PFI and control group classrooms improved significantly over time on both classroom quality factors, Teaching and Interactions and Provisions for Learning, and there were no significant group differences. Quality scores significantly improved in each time period, indicating that both PFI and control groups made progress and continued to make progress even after their interventions had ended.

Perhaps the control interventions for teachers were somewhat like the PFI model. The teachers in this study were being served by one of 14 agencies in 3 of the study states (CA, MN, NC) and all but one of these agencies used the ECERS as a component of their typical quality enhancement intervention. They also typically made from 10-15 visits to each provider, sometimes more, and provided an average of 25 hours of on-site time. In these important ways, the PFI and control interventions for classroom teachers did not differ. On most characteristics, the PFI and control teachers did not differ either. However, controls had somewhat higher education (28% with AA or BA compared to 23% for PFI) and significantly more control teachers were currently taking college courses (44% versus 25% for PFI). Nevertheless, when entered as a moderator in the quality analyses, teacher education was not significant.

Participating in the PFI treatment affected some beliefs and attitudes of teachers. At the end of treatment PFI teachers had significantly more child-focused attitudes and on the professional motivation measure, PFI teachers did not lose ground as did the control teachers. Given the number of tests we ran, we should not over-interpret these few significant findings, but the PFI intervention process does emphasize that improving child outcomes is the ultimate goal of any activities built into the action plans and perhaps thus leads teachers to professionalize their thinking about how to best teach young children.

## **Two Similar Quality Outcomes for Teachers and FCC Providers**

*ECERS-E*. The results on two of the observational quality measures were similar for teachers and FCC providers. No changes on the observational measure of caregiver sensitivity were observed in either classrooms or FCC homes. On the other hand, on the ECERS-E both groups showed a similar treatment effect: significant increases on the ECERS-E and significant differences between PFI and control. The effect sizes of the two scales, Literacy and Numeracy, were among the largest we saw in this study ( $d = .34$ ). The ECERS-E was not being used by any of the partner agencies prior to the study, so it was a unique addition to the PFI consultants' tools and processes, used with both teachers and FCC providers. Some of the items on the ECERS-E Literacy and Numeracy scales were very concrete and readily addressed with specific activities that teachers and providers could engage in with children, the addition of specific materials, and/or making materials more available for children. The ECERS-E also had the advantage of being a new measure which may have added to its interest and use.

Although the ECERS-E proved sensitive to the PFI intervention, consultants found it challenging to use with teachers and FCC providers who served children under 3-1/2 years of age because the measure is more specific to pre-kindergarten classrooms. In fact, the authors did not recommend its use with classrooms of 3s nor did they have any previous experience using the measure in FCC homes. Most of our study classrooms were comprised of 4s, or 3s and 4s, so it was usually appropriate for them, but amongst the FCC homes, especially those with younger children, we believe that consultants may have emphasized the ECERS-E somewhat less.

*Experience.* Years of experience with young children acted as a moderator for both teachers and FCC providers, with PFI having stronger effects among those with more years of experience in early childhood. Some quality enhancement programs focus on beginning providers, due to funding limitations or a presumption that new providers need help more than experienced providers. Our evidence suggests that PFI on-site consultation could benefit any provider, but particularly those with more years of experience. Later in this chapter we discuss whether a tiered technical assistance model might be more effective and economical, with new teachers and providers receiving less intensive and more targeted help and those with more experience receiving more intensive types of support such as on-site consultation. Providers with a number of years in early childhood, yet still needing improvement, may be able to understand and utilize the help of a consultant, thus enabling a change in practices, activities, and/or learning environments. This study's results regarding experience provide some support for such a tiered TA model.

## **Child Outcomes**

The study provides strong evidence to support the many other studies relating quality of the learning environment to children's outcomes, in both FCC homes and classrooms. Strong associations were found between all the observational measures of quality and child outcomes, but our main research question concerned possible differences related to the PFI intervention. Paradoxically, given that PFI effects on quality measures were observed in FCC homes and not classrooms, PFI effects on child outcomes were observed in classrooms but not FCC homes. Children in PFI classrooms, compared to control classrooms, improved in receptive language skills.

The PFI intervention focuses on, among other things, the importance of language and literacy development, on teacher-child verbal interactions and ways to enrich the language/literacy environment, perhaps to a greater degree than the control interventions. PFI training of consultants emphasizes the interactional nature of the helping process, so perhaps the PFI-guided assistance given to teachers was better received and acted upon. PFI training helps consultants emphasize the links between teacher/provider behaviors and child outcomes—the ultimate goal of quality enhancement—possibly leading to greater understanding of why certain behaviors or activities are important for children's development. PFI links quality improvements to an observational self-assessment (as well as one by the consultant), so self-identified or consultant-identified changes may be more readily incorporated into the day. However, if any of these changes were made by teachers,

they were not readily observed with the measures we used. Although the trajectory of change of the PFI teacher group continued to increase at a somewhat higher rate than the control group, the differences were not statistically significant. These findings illustrate the importance of using observational measures of classroom and FCC home quality that are most closely linked to the child outcomes we desire (Child Trends, 2009).

A possible explanation for the lack of language improvements among children in the PFI FCC homes group—where there was a quality change—is that in spite of the improvement, the overall quality of the average FCC program may not have been sufficient to have a notable impact on children’s development. Our study provides no evidence of a threshold effect above which quality differences might matter more for children, but even at the end of intervention, the average FCC home in the PFI group was still rated about a 4.0 on the three FDCRS factors and below a 3.0 for ECERS-E Literacy and Numeracy scores.

Another seeming paradox in the child outcomes is that, in spite of scoring significantly better than controls on the language measure, the PFI children were judged to be significantly more anxious/depressed, marginally lower on social competence and marginally higher on conduct problems. Had the children’s improved language skills in the spring caused teachers to expect more from them at the end of the year than when they had rated them in the fall? The timing of the teacher and child assessments may have played a role. PFI teachers had significantly higher modernity scores (more child-focused) at the end of consultation, but these means decreased by the 6-month follow-up assessment and were no different than control teachers (or for that matter, either of the FCC groups). Children’s first assessments (fall) were closer in time to the teachers’ post-treatment questionnaires and the spring child assessments were closer in time to the collection of the follow-up questionnaires when modernity scores had fallen back. Perhaps the children’s ratings were linked to these changing beliefs scores? In the end, without further attempts at explanation, we conclude that the socio-emotional ratings, while somewhat lower, were still within the realm of normal development, and that significant growth in children’s language abilities is always a welcome finding.

### **Turnover: A Systemic Issue in Our System of Child Care Supports**

Three findings most challenging to the study, and to the enterprise of quality enhancement in general, were the high turnover rates of quality consultants and teachers/FCC providers, and the evidence we found that caregivers of lower quality drop out of interventions at a higher rate than caregivers of relatively higher quality. We began the study with a focus mainly on improving quality, but the turnover rates among consultants and providers have made us think also about the early childhood infrastructure. Yes, we do want high quality center and FCC programs to support the development of young children, but at a basic level, parents also need to be assured of some consistency in the availability of child care. Likewise, community-based resource agencies need to be assured of consistency and quality among their own staff. Without either of these, quality enhancement efforts are struggling uphill. Thus, the child care infrastructure (e.g. Child Care

Resource and Referral Agencies, CCR&Rs) needs to support the availability of care as well as the quality, and focus, too, on the quality of its own staff. These are complicated, challenging tasks, hampered by the weak “system” of child care supports in our states and communities.

The QUINCE study recruited agency partners and their consultants a year before the 2006 NACCRRA national survey (Smith, Sarkar, Perry-Manning, & Schmalzried, 2006), and the similarity of our sample and the national sample of CCR&Rs is striking. Most community-based agencies attempt to promote quality enhancement in a variety of ways, including pre-service and in-service training courses and scholarship and grant programs. In addition, 72% of CCR&Rs surveyed provide on-site technical assistance, inconsistently called coaching, mentoring, consultation, or just TA. This help is provided by individuals with a wide variety of qualifications and competencies. They focus on a variety of content and visit their clients anywhere from just a few on-site visits to an unlimited number. In the agencies participating in our study and in both the PFI and control groups of consultants, we saw this variety.

In the NACCRRA national survey, agencies reported an average consultant turnover rate of 26% annually. In light of this, our QUINCE turnover rate of 36% over 18 months does not seem discrepant. Such high rates of attrition can perhaps be explained by agency conditions. A study of home visitors in an Early Head Start program with high turnover reported dissatisfaction with roles, work atmosphere, and job conditions as reasons for leaving (Gill, Greenberg, & Vazquez, 2002). In the QUINCE study, agency time and task demands outside the project were often cited as challenges by consultants. Personal challenges may have influenced turnover. At baseline, 24% of consultants screened positive for depression (32% PFI, 19% control).

Systemic conditions are potential causes of consultant turnover. Just as a career path is often advised as a way to reduce provider turnover, establishing a clear career path for consultants may help. Few states have developed standards and qualifications for the individuals who provide on-site consultation, but they are needed. It might be helpful to have a credential to be a quality improvement specialist (NACCRRA, 2006) or to implement a system of results monitoring to ensure that teachers and FCC providers served by a consultant do indeed make progress. More effectiveness studies are needed to help guide the field as to which consultation programs can make a difference and the conditions under which results can be optimized. We are not sure that such steps would reduce the turnover seen among consultants, but they might help. When unprepared (by experience or education) and not well-supported individuals are given a very challenging task with little guidance, it should not be surprising that they leave their jobs. Even well-qualified consultants look for other opportunities if not given support, encouragement and an occasional salary boost.

### **QUINCE in Relation to Other Quality Enhancement Studies**

Other studies of quality enhancement were conducted simultaneously with QUINCE and it may be instructive to compare these other interventions and results with our study. In this section we consider Right from Birth, MyTeachingPartner, and the Family Child Care Network Impact Study.

*Right from Birth.* The Ramey's Right from Birth intervention was delivered to family child care homes and infant-toddler classrooms in Mississippi. The interventions compared were a 30-hour group training program delivered over 3 Saturdays and a second group that attended the group training and received 20 days of on-site coaching, generally 4 entire days a week for 5-6 weeks. The principle of massed versus spaced practice led the Rameys to believe that substantial behavioral change might be possible if the support, advice, modeling, and reinforcement provided by a consultant were packed into an intense but short period of time ("short" relative to most consultation studies). The theory was supported, evidenced by large gains over time for the group training plus coaching group (Ramey, Ramey, Grace, & Davis, 2008). Similar to PFI consultation, RFB uses the FDCRS or ITERS as a baseline assessment (although not self-administered) and then the coach helps address weak areas during her 20 days of side-by-side on-site coaching.

Different than QUINCE PFI, the three RFB study coaches were hired, trained, and directly supervised by the project investigators in Mississippi (Drs. Grace and Davis) who provided extensive oversight of the intervention. Coaches also had \$900 with which to buy learning materials and supplies for each site. We believe the fidelity of the RFB coaches to the intervention model, the total number of hours of intervention, and the sizeable monetary resources for each provider were noteworthy differences between RFB and PFI.

A remarkable finding of the RFB study concerns the comparison group that did not participate in coaching: providers who received only the group training (plus \$900 of materials) made considerable gains in quality over time. Although we often disparage typical "one-shot workshops," the RFB study showed that carefully planned, well-conducted, and conceptually linked training sessions with some financial support for carrying out new activities can make a meaningful difference in quality. One caveat about the RFB study is that the sample size is small--28 infant-toddler teachers completed coaching (18) or workshop (10) conditions and the comparable numbers for family child care providers were 17 and 15. Reports from the providers themselves indicate that the idea of having the coach on-site every day for an intensive period of time was not an obstacle.

*MyTeachingPartner.* Another recently developed consultation intervention is MyTeachingPartner (MTP) developed by Bob Pianta and colleagues (Pianta, Mashburn, Downer, Hamre, & Justice, 2008). MTP consists of two main components: (1) access to video clips of high-quality teaching and (2) web-based consultation that provides ongoing feedback to teachers through a protocol that focuses on specific dimensions of the Classroom Assessment Scoring System (CLASS, Pianta, LaParo, & Hamre, 2008). All teachers in the MTP study were state-funded pre-k teachers. They received initial group training on a language-literacy curriculum and a socio-emotional development curriculum, and each received a laptop computer. The experimental conditions were access to the video clips (Web Only) and access to the video clips plus twice monthly video and written communication with a consultant who edited tapes to give teachers feedback, wrote notes to call attention to specific aspects of a teacher's behavior, and met on-line in a video-chat to discuss the prompts and feedback (MTP Consultation).

Both groups submitted video clips of themselves leading instructional activities every 2 weeks and these were coded using the CLASS. Compared to Web Only teachers, those in MTP Consultation group had small but significantly higher rates of change on 3 of the 10 CLASS dimensions. In fact, the rates of change for the two treatment groups on Teacher Sensitivity (none for the Web Only and a slightly upward slope for the MTP group) look almost identical to the QUINCE rates of change for ECERS-E over time (see Figure 6-3). Two of the three CLASS dimensions (Teacher Sensitivity and Instructional Learning Formats) were moderated by the density of poverty children in the class with high poverty classes showing change over the school year for MTP Consultation compared to Web Only, but low poverty classes (< 50%) actually showing declines over the school year in the quality of their interactions.

Notable differences between PFI and MTP interventions are in the delivery system (in-person versus via the Web), the assessment tools on which the interventions are based (ECERS/FDCRS and ECERS-E versus CLASS), and the qualifications and supervision of the consultants (24 scattered agencies versus university employees), presumably leading to greater fidelity within MTP. In spite of these major differences, the intervention outcomes were quite similar—positive trajectories of change on quality observations for the MTP Consultation and PFI groups and flat slopes for the MTP Web Only group and the control group of FCC homes in the QUINCE study. From two very different intervention models for quality enhancement, similar modest outcomes resulted. One wonders about the capacity of teachers to incorporate and make changes in their teaching and caregiving interactions, the best ways to motivate such changes, and the durability of any changes resulting from our interventions. The sensitivity of our measures of “quality” change should also be of concern.

The attrition rates were also notably similar in the MTP and QUINCE studies, 35% for MTP and 37% for our study. Over the summer between spring recruitment and fall study start-up, MTP study teachers moved or lost interest and several teachers in both MTP treatment groups did not follow through with consultation and/or accessing the Web. Even in a more highly educated group of state-funded pre-k teachers (compared to QUINCE’s less educated group of child care teachers and FCC home providers), attrition was higher than the researchers hoped to see. We also note that the MTP study conducted random assignment at the district level so that all teachers in each locale were receiving the same intervention and were free to talk about it with each other. We considered this procedure for QUINCE but our sample size of agencies in most of our study states was too small and some agencies served considerably different populations.

*Family Child Care Network Impact Study.* Fewer studies of professional development for FCC providers have been conducted than interventions for center-based teachers, but the recent report of the Family Child Care Network Impact Study (Bromer, Van Haitisma, Daley, & Modigliani, 2008) provides a useful contemporaneous comparison to QUINCE. The Chicago study included 150 licensed FCC providers in three groups: 80 network-affiliated providers, a matched group of 40 unaffiliated providers, and 30 providers served by a provider-led association. Provider-led associations had no paid staff and offered only peer support groups and mentoring. Network-

affiliated providers were served by a social service organization with paid staff who helped FCC providers with education and training, consultation visits to homes, lending libraries, and business services. This group had significantly higher FDCRS scores than the other two groups. Effect sizes are not reported, but they would appear to be in the same range as PFI and MTP.

A serendipitous finding was that some of the network-affiliated agencies employed coordinators who had a post-BA infant-studies certificate from a local university, customized for those serving FCC providers. Providers served by agencies employing these specially trained coordinators had higher FDCRS and CIS sensitivity scores than those served by the provider-led associations or the unaffiliated comparison group. The authors conclude that staffed networks can improve and maintain quality and that specially trained coordinators are central to the effectiveness of the agencies' quality enhancement efforts. From extensive lists of various services offered by each agency in the study, individual and combination services were used to predict quality controlling for provider characteristics such as education. In addition to again concluding that a specially trained coordinator was important to an agency's effectiveness, other predictors were on-site visits, regular networking opportunities, telephone help, coordinator/provider ratio of 1:12 or fewer, and frequency of visits at least 10 times in 6 months.

This study did not randomly assign providers to type of affiliated association, so certain demographic characteristics were used to try to control for self-selection, but the possibility remains that higher quality FCC homes manage to link themselves with agencies that provide consultation and support in more intensive ways than voluntary organizations. However, within the most intensive services group of this study, where selection factors would have been similar, the finding that consultants with a particular type of specialized training served providers who had higher quality scores is very intriguing. It fits with the PFI notion that preparation of consultants to work effectively with teachers and providers is critical to their effectiveness.

## **Lessons Learned and Recommendations for Future Research**

The QUINCE study underscores the challenges of studying effective collaborative consultation in real-world settings and doing so in a randomized control trial. How should a researcher deal with these constraints? The study team has learned many lessons about supporting the implementation of a consultation model and we offer these in combination with suggestions for future research in this area.

Given the focus on quality and the movement across the nation toward quality rating and improvement systems, it is critical that more studies be conducted on methods of enhancing child care quality. Such studies should include a range of technical assistance services such as training, coaching, and consultation and distinguish among these terms and other professional development approaches such as mentoring and supervision. Different models may be more effective for different types of providers, in different regions, or for different purposes. For example, the high rate of consultant turnover is a consideration in matching technical assistance with program need. Perhaps brief, focused interventions should be the initial domain of newly hired consultants with opportunity

to learn and practice more intensive models such as PFI for those who demonstrate their continuing commitment to their work. Likewise, tiered technical assistance services that vary in scope and intensity should be considered for providers based on their needs and initial levels of participation.

Future consultation studies should involve standardized manuals, process guidelines, and protocols that can be scored to determine the integrity of the consultation process. Along with reporting whether the consultation process as a whole produces a desired outcome, it will be especially challenging to design studies that can answer the question of how each stage of a consultation process contributes to the outcome. This will require highly differentiated consultation components and a comprehensive plan for documentation including third-party observations of the consultant in action.

The QUINCE study provides a model for addressing multiple dimensions of fidelity. One lesson learned by the QUINCE study team was the need for earlier, more frequent, and more specific communication with community agencies and the consultants themselves about these fidelity dimensions and the types of supports required to implement an intensive model of consultation such as PFI. For example, during the initial fieldwork and continuing throughout implementation, we could have discussed more case vignettes to illustrate likely threats to fidelity and what forms of flexibility are acceptable within the model. We question whether training of liaisons before, rather than with, the consultants might have helped them to better guide and support the consultants in their work. Closer ongoing contact with consultants' supervisors would have provided opportunities to reinforce the dimensions of adherence, exposure, and quality of service. In future studies it will be important to address the challenge of establishing close communication with supervisors without undermining randomness.

Just as participatory research methods challenge conventional practice about how research is conducted, partnering with agencies on a study involving community-based consultants requires addressing fidelity up front (Power, et al., 2005). Our experience in the QUINCE study leads us to believe that agencies should be part of the discussion about what information is important to monitor implementation fidelity and the process of collecting fidelity data. One challenge to the field is to determine how this discussion can occur while maintaining the integrity of experimental designs, or develop new research designs that will enable more communication between the research team and the study groups. Random assignment of entire agencies to treatment or control groups would have allowed for thorough discussion of the PFI model with all consultants and supervisors in a particular agency, although the large number of agencies required for such a study would be daunting.

Because consultation is a process that is intended to contribute to the consultee's implementation of an intervention, it may be important in future studies to be more intentional about measuring receipt and enactment by consultees. Although we could monitor consultees' implementation of the consultation-derived action plan in the QUINCE study, we were not able to draw conclusions about what consultation strategies work best with which consultees in what contexts under what circumstances. Ideally, future studies would begin to provide such direction

to the field in order to design quality enhancement efforts strategically, and to maximize results of quality enhancement efforts. This is especially important, given the evidence-based practice movement in early childhood and the increasing focus on accountability.

Consultation is an increasingly utilized method of quality enhancement in both early childhood classrooms and family child care homes. Agencies have begun to understand that it is important to implement models of consultation that have proven effective, but beyond that, we need to conduct the research that helps agencies and supervisors know how to train, support, and measure the fidelity with which consultants deliver their services.

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