

THE SOUTH CAROLINA CLASSROOM QUALITY RESEARCH PROJECT

Analyses of ECERS-R Data and Teacher
Attitudes toward the ECERS-R Process

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Prepared by the
South Carolina ECERS Quality Study Team

SERVE Center
at the University of North Carolina
at Greensboro

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THE SOUTH CAROLINA CLASSROOM QUALITY RESEARCH PROJECT
Quality in Early Childhood Classrooms in South Carolina:
ECERS Observations and Other Factors

I. Introduction

The South Carolina Classroom Quality Research Project is designed to provide a multi-faceted look at the quality of early childhood classrooms in South Carolina schools. One strand of the research project was designed to collect and analyze data on the ECERS-R Observation System that was initiated by the South Carolina Department of Education in 2004. Data were collected to examine teachers' perceptions of the initiative and its impact on teacher attitudes and practices, as well as preliminary data on the relationship between children's performance in school and the overall quality of early childhood classrooms where they are enrolled. The second strand of the project examined factors that might be related to differences in the quality of early childhood classrooms. For this strand, data were collected on teachers' attitudes toward various early childhood practices and on their reported practices in the classroom.

The overall project is comprised of four related studies. In the first study, secondary analyses were performed on ECERS-R data collected by the South Carolina Department of Education. Findings from this study provide an indication of the quality of four-year-old (4K) and five-year-old (5K) kindergarten classrooms within South Carolina and factors associated with quality ratings. In the second study, survey data were collected on: 1) teacher attitudes related to the ECERS-R observation process and 2) changes teachers report making in their classrooms as a result of the process. Focus group data were also collected from persons who conducted the ECERS-R assessments. In the third study, additional survey data were collected on teachers' beliefs and attitudes related to early childhood practices in general and on the frequency of various practices in their classrooms. Finally, data were collected on teacher perceptions of children's skills and abilities in 4-K, 5-K, and first grade classrooms. The overall purpose of the project is to study the implementation of the ECERS-R Observation System in the primary schools and to examine factors related to the quality of early childhood classrooms. In combination, the four studies provide an in-depth look at the quality of classrooms, examining quality from a variety of angles.

Following a brief summary of the history of the project and a review of previous research, this report will describe the process and findings of each study. Each study is addressed in a separate section that includes a description of the methodology and a summary of the findings. Based on the findings, implications of this work for the development and implementation of

environmental rating systems to assess the quality of early childhood classrooms and the provision of support for quality programs are discussed, and recommendations are provided at the end of the report.

II. History and Related Background

Partners for the Research Project

This research was conducted as a collaborative project between SERVE and researchers from South Carolina. SERVE is the Principal Investigator, two researchers from South Carolina assisted with the project, and staff from the Office of Early Childhood Education within the South Carolina Department of Education provided technical support in the data-collection process.

SERVE's Involvement

SERVE operates the Regional Educational Laboratory funded by the U.S. Department of Education, Institute of Educational Sciences to support the improvement of learning opportunities and educational agencies. At the request of the South Carolina Department of Education, SERVE undertook this research project to examine the implementation of the ECERS-R observation process, including factors related to ECERS-R observation scores, teachers' perception of the ECERS-R process, changes that were made to classrooms, and the relationship between classroom ECERS-R scores and children's readiness for school. This project is the basis for a Memorandum of Understanding between SERVE and the South Carolina Department of Education.

South Carolina Researchers

Dr. Laura Hooks from the University of South Carolina—Upstate and Dr. Betty Jo Marshall from the University of South Carolina at Beaufort assisted in the design and implementation of the study. Their expertise was invaluable in ensuring that the research project accurately reflected issues pertinent to the ECERS-R evaluation process.

Review of the Relevant Literature

Previous Research on Early Care and Education Programs

The linkage between quality early care/education programs and improved student outcomes has been fairly well established. Decades of research have clearly demonstrated that high-quality early care/education can promote positive developmental outcomes, both while children are in the program and later as they enter school (e.g., Barnett, 1995; Guralnick, 1997; Karoly, Greenwood, Everingham, Hoube, Kilburn, Rydell, Sanders, & Chiesa, 1998). These findings appear to be particularly applicable for young children who are living in situations that place them at greater risk for school failure (e.g., poverty, low level of maternal education, single-parent household, and other factors that may limit their access to resources and experiences that enhance learning and development). Research indicates that these children are, in fact, the ones who benefit most from quality early childhood services.

Findings from two large-scale studies provide strong evidence that high-quality, early childhood education programs can have substantial effects on children's lives. In the Cost Quality and Outcomes in Childcare Centers Study (Cost, Quality, and Outcomes Study Team, 1995) researchers found that children in high-quality childcare programs performed better on measures of cognitive and social skills in childcare and at least through the end of second grade (the latest data point that has been reported). High-quality childcare seemed to have the greatest impact on children who are traditionally at risk of school failure (i.e., whose mothers had low education levels) and, conversely, when these children are enrolled in poor-quality childcare, they are at greater risk for doing poorly in school.

Similar results were found in a study conducted by the National Institute of Child Health and Human Development (NICHD, 2001). In this study, researchers examined the effects of children's experiences in childcare and their development over time. This study involved a total of 1,364 children and their families recruited from ten sites located across the country. Beginning in 1991, children were enrolled at birth, and plans are to follow the children to the year 2005 through their sixth year of school. Findings suggest that children in high-quality childcare arrangements score higher on tests of cognitive and language ability than children in lower-quality care. Children whose environments were stimulating and well organized scored higher on tests of vocabulary, short-term memory, and attention. Moreover, children from these environments got along better with peers. Together, these findings demonstrate the importance of high-quality care as it relates to children's intellectual development and preschool skills.

Encouraged by this evidence, a wide variety of school readiness programs and initiatives have been created. At the heart of these efforts is a belief that the early years constitute an especially sensitive time in children's learning and development. Moreover, many experts believe that failure to provide children with the necessary resources and supports may create later problems that are far more difficult and costly to remedy. Head Start and Even Start represent examples of federal school readiness programs; however, a number of states and local districts have implemented school readiness programs as well. Examples include North Carolina's Smart Start program, Georgia's lottery-funded pre-kindergarten program, and South Carolina's current pre-kindergarten program.

Early Childhood Environment Rating Scale–Revised as a Measure of Classroom Quality

The Early Childhood Environment Rating Scale-Revised (ECERS-R), a measure of quality in preschool environments, has been integral to the study of quality in preschool settings for researchers and practitioners alike (also in its earlier version, the ECERS; Harms & Clifford, 1980). The scale is designed to provide data on structural, process, and administrative elements of classrooms serving children ages two to five years. For each item, indicators of classroom quality are rated on a 7-point Likert scale, indicating a range of quality from inadequate (1) to excellent (7). The individual items are presented in seven ECERS-R subscales: Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interaction, Program Structure, and Parents and Staff. A score of 5.0 is considered to be the minimum score needed to indicate a program is of good quality.

The ECERS-R measure has been used extensively in the field and has well-established validity and reliability. The validity of the measure is supported by high correlations between the scale items and ratings of items as highly important by a panel of nationally recognized experts, and between scale scores and ratings of classroom quality by experts. The ECERS-R has also been shown to be a reliable measure of classroom quality. During the field test process, the percentage of interrater agreement across all indicators was 86.1%. For individual items, the interrater agreement for exact agreement on the ratings was 48% and was 71% for agreement within one point. Pearson product moment correlations between two observers' ratings were .921, and the scale demonstrated good internal consistency. The interrater internal consistency for the total scale was .92, and the subscale internal consistencies ranged from .71 to .88 (Harms, Clifford, & Cryer, 1998). A series of factor analyses have been conducted on the ECERS-R to examine the validity of the subscales and

determine the factor structure of the revised scale. Results have varied, with some analyses suggesting the ECERS-R is one factor and others suggesting more than one factor but none support the original seven subscales (Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005; Holloway, Kagan, Fuller, Tsou, & Carroll, 2001; Perlman, Zellman, & Le, 2004; Sakai, Whitebrook, Wishard, & Howes, 2003). Taken together, results of these analyses indicate that the ECERS-R is a valid and reliable measure of the quality of early childhood classrooms but support for using the individual subscales of the instrument as unique elements of quality is limited.

Teacher Beliefs and Practices as Related to Quality

Previous research has found that there are a number of indicators of high-quality, early childhood programs (e.g., staff-to-child ratio and group sizes); however, one of the most consistent findings relates to teachers' beliefs and reported classroom practices. Teachers' practices in the classroom are key determinants of quality and are related to how well children perform on various measures of child outcomes. Young children's learning and development is linked to the educational qualifications of their teachers (e.g., degree, area of study). Early childhood teachers who are more highly qualified are able to provide more effective learning opportunities, and they tend to have higher-quality classrooms (Espinosa, 2002). However, beyond educational qualification, other teacher characteristics influence the quality of the early childhood classrooms as well. Research focused on high-quality classrooms maintains that teacher's beliefs and attitudes relate to their perceptions and judgments about children's learning, and in turn, influence their behaviors and practices in the classroom.

Much of the research examining teacher beliefs and attitudes has focused on the extent to which teachers institute developmentally appropriate beliefs and practices (DAP). Buchanan, Burts, Bidner, White, and Charlesworth (1998) conducted a preliminary study to identify classroom characteristics and teacher characteristics that are related to the developmental appropriateness of self-reported beliefs and practices of first through third grade teachers, finding that many primary teachers agree with DAP, and that developmentally-appropriate and developmentally-inappropriate beliefs and practices could be predicted by classroom and teacher characteristics. The strongest predictors were classroom variables such as the grade level the teachers were teaching, class size, the number of children on free/reduced lunch, and the number of children with disabilities in the classroom. Teachers teaching lower grades, smaller classes, fewer children on free/reduced lunch, and more children with disabilities had more developmentally appropriate beliefs and reported

practices. Teacher characteristics such as the amount of control teachers felt they had over their curriculum and the degree to which they had specialized training in early childhood education were also associated with more developmentally appropriate beliefs and practices.

Vartuli (1999) examined the relationship between teacher beliefs and observed classroom practices, finding that teachers' self-reports of beliefs and practices were related to observed classroom practices; teachers who indicated beliefs that were more consistent with developmentally appropriate practices also reported using more developmentally appropriate practices in their classrooms. More congruence was found with the preschool and kindergarten teachers--as the grade level increased, the self-report of developmentally appropriate beliefs and practices decreased; teachers with more years of experience and higher levels of education did not exhibit more developmentally appropriate beliefs and practices. However, teachers with an early childhood education degree did report significantly more developmentally appropriate beliefs and practices than did teachers with an elementary education degree. Similar findings were reported by McMullen (1999), who found that teachers who scored "higher" on DAP tended to have early childhood or child development degrees, and kindergarten teachers who had degrees in elementary education along with preschool experience also scored higher on DAP.

In some instances, researchers have contrasted the beliefs and practices of teachers and principals. Butterfield and Johnson (1995) explored the congruence between principals' beliefs about early childhood curriculum and early childhood standards and whether or not these principals' beliefs were reflected in their first grade teachers' reports of curriculum and teaching practices. Although principals agreed with guidelines on general beliefs about DAP, they did not agree with the instructional practices that were advocated by these early childhood guidelines. Also, principals' beliefs were not congruent with the teachers' reports of classroom practices; however, the principals' beliefs were more congruent with the early childhood standards than were the first grade teachers' practices.

In conclusion, research has shown that teachers in lower grade levels, teachers with a higher internal locus of control, and teachers with early childhood certifications or majors in early childhood education or development have reported higher levels of developmentally appropriate beliefs and that teachers with more developmentally appropriate beliefs also report more developmentally appropriate practices. Research also has shown that experience is related to developmentally appropriate beliefs and practices, but studies have shown a range in the strength of this correlation. Finally, research indicates that the views of principals may be related to the beliefs

and practices espoused by teachers. This factor, as well as others, suggests that further research is needed to determine exactly what elements are key to supporting and influencing teachers' practices.

Summary of Relevant Literature

In summary, research suggests that early childhood programs can positively affect children's learning and development in a number of ways, but that the quality of the classrooms is vitally important. High-quality classrooms benefit children the most. The quality of care and education teachers provide is related to a number of factors, including the degree to which they espouse beliefs that are consistent with developmentally appropriate practices. The remainder of the report describes four studies designed to examine factors related to the quality of early childhood classrooms in South Carolina's public schools.

III. Research Questions

This report presents an overview of the South Carolina Classroom Quality Research Project and the findings to date. What follows is a description of the methodology used and the findings of each individual study, followed by a discussion of the overall findings and conclusions. The research questions guiding the project include the following:

ECERS-R Observational Data on Classroom Quality

- *What changes were evident in the quality of classrooms participating in the ECERS-R observation process?*

Teacher Responses to the ECERS Observation System/Quality Improvement Initiative

- *What types of training and support did teachers receive to prepare for the ECERS-R observation process?*
- *How did teachers feel about the ECERS-R process?*
- *To what extent did teachers report making changes in their classrooms based on the ECERS-R observation process?*
- *What factors were related to teachers' attitudes toward the process and their ECERS-R rating score?*
- *To what extent were parents involved in implementation of the ECERS-R observation process?*

Teacher Beliefs and Reported Practices as an Element of Quality

- *Do teachers' beliefs and practices vary by characteristics of the teachers themselves or by characteristics of the classrooms or the schools in which they work?*
- *How are teachers' reported practices related to their own beliefs and attitudes?*
- *How are teachers' reported beliefs and practices related to their ECERS-R scores?*

Elements of Quality and Children's Readiness for School Success

- *To what extent is the quality of the 4-K and 5-K classrooms related to later student outcomes?*

IV. ECERS-R Observational Data on Classroom Quality

The first research study reported in this report is a summary of secondary analyses conducted with classroom observation data collected through the ECERS-R Observation system. We begin with a review of the South Carolina ECERS-R Observation System followed by the results of the data analyses.

South Carolina ECERS-R Observation System

In 2004, as part of a legislative initiative to provide quality early childhood services, the South Carolina Department of Education was mandated to assess all state-funded 4-K and 5-K programs housed within primary schools. Because the state's extant standardized testing begins at third grade, these schools do not fit the typical accountability system. As a result, policy makers agreed to accept environmental quality data rather than child outcome data for accountability purposes in these schools. This initiative stipulated the use of the *Early Childhood Environment Rating Scale (ECERS-R)* as a means of certifying programs as high-quality, early childhood programs. The intent was to provide accountability data for the schools—the ECERS-R scores would be part of their school report card—and the hope was that the process would also improve the quality of the classrooms and the teachers' professional practices.

The ECERS-R Observation System was initiated during the 2003-04 school year. To conduct the observations, a core group of eight assessors representing the Department of Education, First Steps, and the ABC Child Care Program/ Department of Social Services were selected. All of the assessors were trained to reliability by the authors of the ECERS-R.

The Department also initiated a multifaceted plan to help prepare schools for the upcoming assessment. The plan included initial training on the ECERS-R, technical assistance to prepare for the assessment, and a self-study completed by the schools themselves. Initial training was provided by the Department to introduce teachers and administrators to the ECERS-R instrument. For this initial training, the authors conducted a one-day training program on the ECERS-R. This training was available via distance education in seven sites across the state. It included an overview of the instrument and a discussion of the assessment process. This one-day training was rebroadcast three additional times in the spring.

In addition to this one-day training, an Accountability Workshop was provided to primary schools participating in the assessment process. Schools were asked to send a team to the training

Research Question

What changes were evident in the quality of classrooms participating in the ECERS-R observation process?

that included a school principal or administrator, the district early childhood coordinator, and a lead 4-K or 5-K teacher. Again, attendees received an overview of the assessment process and information regarding the scoring system. They also were given a copy of the ECERS-R scoring booklet.

After the initial training, the Department and districts provided follow-up support to schools as they prepared for the ECERS-R observation process. Opportunities for technical assistance were available to school staff and administrators. Staff members from the Office of Early Childhood Education (OECE) were available to provide assistance via on-site visits or email. In addition, a web page was added to the OECE website and included frequently asked questions regarding the ECERS-R and a link to information related to the ECERS-R was presented on the Frank Porter Graham home page (the developers of the ECERS-R). Schools and districts were encouraged to provide additional resources to their teachers to assist in preparing for the ECERS-R process; however, this was optional and not all schools offered additional support. Suggested school-level support included team meetings to discuss preparations, mentors to assist teachers, and additional training sessions on the ECERS-R.

A third part of the preparations was a self-study completed by schools. Schools were encouraged to use the ECERS-R on their own to assess the quality of their classrooms prior to the official ECERS-R observation visit. Based on results from the self-study, schools could make necessary changes to further improve the quality of their classrooms. ECERS-R observations were conducted in spring 2004 and spring 2005. In response to a legislative directive, the ECERS-R Observation System was discontinued after the spring 2005 data collection.

Overview of the Data-collection Process

Beginning in the spring of 2004, trained observers began conducting observations in a set of primary schools. Using the Early Childhood Environment Rating Scale (ECERS-R; Harms, Clifford, & Cryer, 1998) observations were conducted in 20 primary schools across South Carolina. The Office of Early Childhood Education (OECE) identified a two-week window within which the visit could be scheduled and communicated the timeframe to the school. This policy provided programs with a timeframe within which the visit would occur, but at the same time encouraged programs to maintain high-quality practices at all times. The assessor contacted the school 24 hours prior to the visit to inform the school of the confirmed date. Principals were able to specify three exclusion days during which visits could not be scheduled.

Within each of these 20 schools, one-third of the 4-K and 5-K classrooms were randomly selected for observation (N = 68 classrooms). Classrooms to be observed were randomly selected the day of the visit. Observers made ratings of classroom quality and teacher behavior using a 7-point rating scale on each of the ECERS-R items. A similar observation process was repeated in spring 2005. At this time, observations were conducted in 21 schools and included 76 classrooms. This sample included schools that had not previously been observed, as well as schools that were dissatisfied with their previous score and had requested a re-evaluation. In all, 28 schools participated in the ECERS-R process. Thirteen of those schools were observed in both spring 2004 and spring 2005. Within these 13 schools, a total of 16 classrooms received ECERS-R scores in both spring 2004 and spring 2005. The ECERS-R scores for each classroom were provided to SERVE for data analyses. For purposes of this study, extant demographic data were also collected from the South Carolina Department of Education website site and other sources to provide additional information on the schools (such as the size of the school and the type of area in which the school is located).

Measure

The ECERS-R (described in more detail in the introductory section of this report) consists of 43 items organized into 7 subscales: Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interactions, Program Structure, Parents and Staff. The scale ranges from 1 (inadequate level of care) to 7 (excellent care). Based on the observations, each classroom's ratings on all the items within each of the subscales except the Parents and Staff subscale were averaged to produce an overall quality rating score. These classroom scores were then averaged to index the overall quality rating score for the school.

Sample Characteristics

Of the 28 primary schools that participated in the ECERS-R process, most were located in rural areas (28.6%) or small towns (32.1%). The majority (57%) served children in pre-kindergarten through 2nd grade. The average enrollment for the schools was 501 students. Among the schools, there was a relatively high percentage of students receiving free/reduced lunch (M = 61.3%), and most of the schools were designated as Title I schools (73%). The majority of the schools served primarily Caucasian (M = 53%) and African American students (M = 42.2%).

Results

ECERS-R Scores by Classroom

ECERS-R observation data were initially collected in 21 4-K and 47 5-K classrooms across 20 schools during spring 2004 (Time 1). In spring 2005 (Time 2), ECERS-R observations were completed in 24 4-K classrooms and 51 5-K classrooms (grade level was missing in one classroom) in 21 schools. Sixteen classrooms were observed at both Time 1 and Time 2.

Table 1 presents a summary of ECERS-R scores from spring 2004 and spring 2005. Separate scores are shown for each subscale, as well as the total average score. Results from the observations indicate that scores from spring 2005 were significantly higher than spring 2004.

Table 1: ECERS-R Observation Scores at Time 1 and Time 2

Subscales	Time 1 (Spring 2004) N = 68	Time 2 (Spring 2005) N = 76
Space & Furnishings	4.47 (SD = .92)	5.50 (SD = 1.01)
Personal Care	2.39 (SD = .91)	3.81 (SD = 1.46)
Language-Reasoning	5.31 (SD = 1.19)	6.26 (SD = .73)
Activities	4.41 (SD = 1.17)	5.95 (SD = .87)
Interactions	5.24 (SD = 1.27)	6.35 (SD = .98)
Program Structure	5.20 (SD = 1.31)	5.99 (SD = .94)
Total Average Score	4.40 (SD = .87)	5.61 (SD = .74)

At Time 1, the mean total score on the ECERS-R was 4.40, somewhat below the recommended 5.0 score that indicates “good” program quality. Scores for each classroom ranged from a low of 2.28 to a high of 6.49. Examination of the individual subscales indicates that the overall lowest mean score was in the area of Personal Care ($M = 2.39$), while the highest mean score was obtained in the area of Language-Reasoning ($M = 5.31$).

At Time 2, ECERS-R classroom scores were significantly higher, ranging from 4.09 to 6.62, with a total mean score of 5.61. Again, the lowest mean score was obtained in the area of Personal Care ($M = 3.81$), while the highest mean score was in the area of Language-Reasoning ($M = 6.26$).

Sixteen classrooms were observed at both Time 1 and Time 2. To determine whether the quality of these classrooms improved from Time 1 to Time 2, we compared the means from Time 1 and Time 2. Results indicate that there was a significant increase in ECERS-R scores. The mean score for these classrooms at Time 1 was 4.19 (SD = .75). When they were observed again in spring 2005, the mean score was 5.87 (SD = .65), a statistically significant increase ($t = 7.63$, $df = 15$, $p = .000$). Moreover, there was a significant increase in each of the subscale scores. Table 2 shows the mean scores for the 16 classrooms that were observed at both Time 1 and Time 2.

Table 2: ECERS-R Observation Scores for Classrooms Observed in Spring 2004 and Spring 2005

Subscales	Time 1 (Spring 2004) N = 16	Time 2 (Spring 2005) N = 16
Space & Furnishings	4.60 (SD = .87)	5.77 (SD = .86)
Personal Care	2.23 (SD = .77)	4.45 (SD = 1.28)
Language-Reasoning	4.89 (SD = 1.04)	6.02 (SD = .68)
Activities	3.98 (SD = .88)	6.23 (SD = .80)
Interactions	4.98 (1.31)	6.46 (SD = .87)
Program Structure	5.04 (SD = 1.10)	6.11 (SD = .83)
Total Average Score	4.19 (SD = .75)	5.87 (SD = .65)

Overall, ECERS-R scores improved in 15 out of the 16 classes that were observed at both Time 1 and Time 2. The mean increase in ECERS-R score from Time 1 to Time 2 was 1.68, a relatively large increase on the seven-point scale. The improvement in ECERS-R scores for individual classrooms ranged from 1.07 to 3.43 points. The ECERS-R score for the one classroom that did not improve from Time 1 to Time 2 decreased by .27, a minimal change on the seven-point scale.

School-level ECERS-R Scores

To examine the ECERS-R scores for each school, classroom scores were aggregated by school. These data are important because the average ECERS-R for the school was the rating used to determine if the school met the required criteria for quality and were reported as part of the school's accountability "report card." A mean score of 5.5 was used as the criteria for certifying

that a school was providing a high-quality 4-K and 5-K program. At Time 1, the mean school ECERS-R score was 4.49 (SD = .86). The school with the lowest ECERS-R score had a mean score of 2.93, well below the 5.5 criteria. The school with the highest rating at Time 1 had a mean score of 6.49, well above the criteria. At Time 2, the mean school ECERS-R score was significantly higher: 5.57. The school with the lowest rating obtained a score of 4.05, while the highest rated school obtained a score of 6.62. Although the majority (n = 18 out of 20) of schools did not meet the 5.5 criteria for high quality at Time 1, most (n = 14 out of 21) did at Time 2.

Thirteen schools were observed at both Time 1 and Time 2. The mean increase in these schools' average score from Time 1 to Time 2 was 1.37, a statistically significant improvement. ECERS-R average scores for 10 of these schools increased by one point or more on the seven-point scale. The score for the school with the largest increase improved by 3.15 points from Time 1 to Time 2. ECERS-R scores for three schools did not increase. The decrease in scores for these schools ranged from 0.04 and 0.62 on the seven-point scale. Not only did ECERS-R scores for individual classrooms increase from Time 1 to Time 2, the mean scores for most schools improved as well.

Factors Related to ECERS-R Scores

To better understand factors that might contribute to differences in ECERS-R scores, additional analyses were conducted to examine possible differences in scores as a function of school or teacher characteristics. First, the classroom scores were analyzed by various features of the schools that housed the program (e.g., location/rural-urban status, size, Title I status, and whether the principal was certified in early childhood education). No statistically significant differences were noted, although classrooms in schools where the principal was certified in early childhood education tended to score higher at Time 1 than classrooms in schools where the principal was not certified in early childhood education.

The 4-K classrooms scored significantly higher at Time 1 than 5-K classrooms. The mean ECERS-R score for 4-K classrooms was 4.79 compared with a mean score of 4.23 in 5-K classrooms ($F_{2, 65} = 3.23, p < .05$). However, the mean scores for 4-K and 5-K classrooms were not statistically different at Time 2 (Mean = 5.67 for 4-K classrooms compared with a Mean of 5.62 for 5-K classrooms). Within the 16 classrooms that were observed at both Time 1 and Time 2, 6 were 4-K classrooms and 10 were 5-K classrooms. The mean increase in ECERS-R scores for the 4-K classrooms was 1.37 while the mean increase for 5-K classrooms was 1.86. These data, along

with the fact that the 5-K classrooms were rated essentially the same as the 4-K classrooms at Time 2, suggest that 5-K classrooms may have made greater improvements on their ECERS-R scores between Time 1 and Time 2.

In summary, ECERS-R scores for spring 2005 (Time 2) were significantly higher than scores from spring 2004 (Time 1) for both individual classrooms and for schools when the scores from their classrooms were aggregated. Differences in ECERS-R observation scores were related to only one characteristic of the classrooms or schools examined in this research project—the grade level of the classroom. During the spring 2004 (Time 1) observations, 4-K classrooms scored higher than 5-K classrooms.

V. Teacher Responses to the ECERS-R Observation System

The second study included in this report investigated teachers' views regarding the ECERS-R Observation System. The purpose of this part of the research project was to collect data on teachers' views related to the ECERS-R observation process and related to changes they may have made in their classrooms as a result of the ECERS-R process. We begin with a description of the data-collection process followed by results from the survey data.

Overview of the Data-collection Process

Teachers from 22 primary schools that participated in the ECERS observation process were surveyed in fall 2004 and fall 2005. The fall 2004 surveys were conducted between the first round of ECERS

observations (spring 2004) and the second round of ECERS observations (spring 2005) and included schools that were observed at Time 1 as well as Time 2. The fall 2005 data were collected after the final ECERS-R observation visits and after the ECERS-R Observation System had been discontinued.

The data-collection process was very similar for both the fall 2004 and fall 2005 surveys. A letter from the state early childhood coordinator was sent to each school-district superintendent and

Research Questions

- *What types of training and support did teachers receive to prepare for the ECERS-R observation process?*
- *How did teacher feel about the ECERS-R process?*
- *To what extent did teachers report making changes in their classrooms based on the ECERS-R observation process?*
- *What factors were related to teachers' attitudes toward the process and their ECERS-R rating score?*
- *To what extent were parents involved in implementation of the ECERS-R observation process?*

then to each principal informing him or her of the study and explaining its purpose. One district declined to participate in fall 2004, so schools ($n = 2$) from this district were not surveyed. Approximately two weeks later, survey packets were mailed to the principal of each school, along with instructions for distribution and return of the surveys. The survey packets were enclosed in an envelope and labeled by grade level. Principals were instructed to distribute the survey packets to teachers and then designate a collection place so teachers could return their surveys in the envelopes anonymously. Each packet contained instructions to the teachers which asked them to place their completed survey back in the envelope provided and return the survey, along with a signed informed consent form, to the place designated by their principal. Teachers were asked to complete the survey within two weeks. In fall 2004, principals returned the box of completed surveys to the early childhood coordinator within their respective district. All responses from the district were combined into one box and mailed back to the researchers. In fall 2005, principals returned completed survey packets to the research via self-addressed, pre-paid FedEx deliveries.

Measure

Fall 2004 data collection. Teachers received a packet containing a participant assent form plus a questionnaire that focused on their knowledge and attitudes toward the ECERSR, the training and support received prior to its implementation, and any changes they may have made in their classroom as a result of its use. In addition, teachers were asked to complete questionnaires about themselves including information regarding: (1) demographic characteristics (2) their highest degree earned (e.g., high school diploma through Ph.D.), (3) their major in college, (4) whether they held an early childhood teaching certificate, and (5) their years experience teaching young children.

Fall 2005 data collection. Survey packets were addressed by name to the teachers who had participated in the survey in fall 2004. Each packet contained a participant assent form plus a questionnaire. The questionnaire asked participants to verify what grade they taught in the 2004-2005 school year and what grade they were teaching at the time of this survey (2005-2006 school year). Data were also collected on participants' ethnic background and on the enrollment of their classroom in 2004-2005 and 2005-2006. Finally teachers were asked to indicate the extent to which they had made changes in their classroom based on the ECERS-R process, the extent to which they have continued any changed practices, whether they continue to use the ECERS-R instrument, and how they would have rated the quality of their classroom before the ECERS-R process and "now." Open-ended questions provided an opportunity for teachers to list specific classroom practices they

had changed, practices they had continued using, and any other specific ways they may have continued to use the ECERS-R instrument.

Sample Characteristics

Fall 2004 sample. A total of 188 teachers returned the ECERS-R survey packets, representing a return rate of 92% of the teachers surveyed. Half of the teachers (22 4-K and 72 5-K) had completed a bachelors degree and the other half reported education beyond the bachelors degree (21 4-K and 73 5-K). The majority (n = 157) of teachers who completed the ECERS-R survey majored in early childhood education in college. The remaining teachers (n = 31) majored in elementary education, secondary education, or some other related major such as special education. Most of the teachers (n = 142) had initially been certified in early childhood education. However, 43 teachers reported they had received their early childhood certification as an “add on,” and one teacher reported that she was currently working on her early childhood education certification.

Fall 2005 sample. A total of 380 survey packets were mailed to schools, following the same procedure as the year before. At the time of this report, packets had been received from 20 of the 22 schools (with 21 teacher packets in the schools from which packets are pending). A total of 270 teachers returned the packets, representing a return rate of 75.2%. Of the teachers who returned the packets in fall 2005, 33 (12%) were teaching in 4-K classrooms, 112 were teaching in 5-K classrooms (41%), 117 (43%) were teaching in first grade classrooms, and 8 (3%) were teaching in second or third grade classrooms (eight did not mark the grade they are currently teaching). Sixty-six percent of the respondents were teaching at the same grade level that they taught in 2004-2005. For purposes of reporting results on the ECERS-R survey, we will report teachers according to the grade that they were teaching at the time of the ECERS-R observation (fall 2004-2005). With two schools pending, a total of 135 out of the 181 4-K and 5-K teachers who returned a survey in fall 2004 also returned one in fall 2005 (a response rate of 75%).

Results

Reported Training and Support to Prepare for ECERS Process

Results of the fall 2004 teacher survey indicate that prior to the introduction of this quality initiative, most teachers (55%) were not familiar with the ECERS-R instrument or its use in classroom observations. Teachers in 4-K classrooms were somewhat more likely to indicate that they had received some type of training on the ECERS-R prior to the Department’s new initiative.

Fifty-eight percent of the 4-K teachers indicated they had had prior training on ECERS-R, compared with 41% of 5-K teachers.

In terms of the amount of training and support received in preparation for upcoming observations, almost all (93%) teachers reported that they had received some initial training on the ECERS-R instrument; however, there was a great deal of variation in the amount and type of training that were provided. Approximately 25% said they received around an hour of training, while at least 30% said they received three days or more of training. The remaining 44% of the teachers said they received one-half to one full day of training.

The amount of training and support teachers received after the initial training also varied. Although most of the teachers reported that they received additional training and support beyond the initial training (e.g., mentoring, meetings with the early childhood coordinator, informal meetings after school), almost a fourth of the teachers (24.9%) said they received no further training or support above and beyond the initial training. Teachers were asked to rate the level of various types of support they received in preparing for the ECERS-R visits on a five-point scale (ranging from “none” to “excellent”). Results from these ratings are provided in Table 3. Teachers indicated that team meetings were the most helpful in preparing for the upcoming ECERS-R observations ($M = 3.63$). Teachers reported that these meetings provided them with an opportunity to collaborate with peers on strategies and plans for implementation. This activity was followed by additional training and support ($M = 3.45$). In addition, many teachers received some funding or physical resources for their classroom. Seventy-percent of the respondents rated the amount of funding they had received as “average” or better. Finally, teachers rated time set aside for planning ($M = 2.95$) the lowest among the various types of support, perhaps because they felt they did not have enough planning to prepare for the ECERS-R visits.

Table 3: Teacher Ratings of Each Type of Support Received

Rating	Additional Training	Team Meetings	Funding/ Resources	Time for Planning
Mean Rating	3.45	3.63	3.38	2.95
None	4%	6%	5%	9%
Minimal	25%	18%	26%	32%
Average	15%	13%	22%	25%
Good	32%	32%	22%	23%
Excellent	24%	31%	26%	11%

Factors related to the level of support reported by teachers. The level of support teachers reported they received to prepare for the ECERS-R process did not differ according to the grade level they taught. Teachers in 4-K classrooms rated the level of support they received very similarly to teachers in 5-K classrooms. There were, however, differences in the amount of perceived support teachers reported based on the location of their school and the credentials of their principal. Teachers working in rural schools and in small-town schools reported that they received three or more days of initial training much more often than teachers in urban schools. Thirty-five percent of teachers in rural schools and 40% of teachers in small towns received three or more days of initial training, compared with only 7% of teachers in urban areas. Teachers in urban schools also reported that they received ongoing support in preparations for the ECERS-R process less often than teachers in rural and small town schools, although the difference was less dramatic. Sixty-one percent of urban teachers reported they received ongoing support, compared with 73% of rural teachers and 84% of teachers in small towns. In addition to these differences in the degree to which teachers received training and support, teachers' ratings of their satisfaction with different forms of support also varied by the area in which they work. Teachers working in rural schools and small towns indicated they felt the training they received was significantly more useful than teachers working in urban schools. Teachers from rural areas ($n = 55$) had a mean rating of 3.53 ($SD = 1.33$) and teachers from small towns ($n = 88$) had a mean rating of 3.78 ($SD = 1.02$) on the five-point rating of additional training. These ratings were significantly higher than teachers from urban schools ($n = 39$, $M = 2.69$, $SD = 1.20$; $F_{2,179} = 11.16$, $p < .000$). Teachers in rural areas also indicated the funding and other physical resources they received to prepare for the process were significantly more useful than teachers in urban schools. The mean for teachers from rural schools was 3.73 ($SD = 1.22$) compared with 2.97 ($SD = 1.34$) for teachers from urban schools ($F_{2,176} = 4.33$, $p < .05$). Teachers' ratings of the team meetings and time for planning did not differ by the area of the school.

Teachers working for principals with an early childhood certificate indicated they received significantly greater support during the process of preparing for the ECERS observations than teachers working for principals who were not certified in early childhood education. The number of teachers who reported they received three or more days of initial training was somewhat higher if teachers worked for principals certified in early childhood education. Thirty-nine percent of the teachers working for principals with early childhood certification reported they received three or more days of training as did 26% of teachers working for principals without certification in early

childhood education. The amount of ongoing training and support teachers reported was also related to the certification of their principal. Eighty-eight percent of teachers working for principals certified in early education indicated they received ongoing training and support, compared with 68% of teachers working for principals not certified in early childhood education.

Teacher ratings of support they received during the ECERS-R process were also related to the certification of their principal. Table 4 shows the mean rating on each of the different categories, with ratings from teachers working for principals with early childhood education certification compared with teachers working for principals who were not certified in early childhood education. Teachers working in schools where the principal is certified in early childhood education felt significantly more positive about each of the four types of ECERS observation preparations: training, team meetings, funding/resources, and time for planning.

Table 4: Mean Teacher Ratings of Support Broken Down by Certification of Principal

Type of Support	Principals with Early Childhood Certification (n = 66)	Principals Who Were Not Certified in Early Childhood Education (n = 116)
Additional Training*	3.98	3.15
Team Meetings*	4.06	3.38
Funding/Resources*	4.09	2.97
Time for Planning*	3.26	2.78

* One-way ANOVA's with F's ranging from 7.48 (for Time for Planning) to 40.87 (for Funding/Resources) were all significant at $p < .007$

Teacher Attitudes Regarding the ECERS-R

In general, teachers reported more positive attitudes and perceptions of the ECERS-R after the training and assessment had been conducted. Fall 2004 survey questions asked teachers to rate their knowledge of and attitudes toward the ECERS-R scale “before” the ECERS-R observation process and “now” on a four-point scale. Tables 5, 6, and 7 present descriptive information regarding teacher responses. In each case, teachers’ ratings of the current views about ECERS-R were significantly higher than their ratings of their reported views prior to the ECERS-R process.

Table 5: Teacher Knowledge of the ECERS-R

	Prior to Training/ Assessment	Following Training/ Assessment
Poor	79%	2%
Average	17%	37%
Good	3%	41%
Excellent	1%	20%

Note. N = 184

When asked to rate the degree of knowledge of the ECERS-R scale that they had prior to the training, more than three-quarters (79%) of the teachers rated their prior knowledge of the ECERS-R as “poor.” Only four percent rated their prior knowledge and understanding of the ECERS-R as “good” or “excellent.” When asked to rate their current level of knowledge of the ECERS-R scale (i.e., their knowledge after the training and support), 61% of the teachers rated their knowledge as “good” or “excellent.” Approximately one-third of the teachers (37%) rated their knowledge as average, and only two percent of the teachers rated their knowledge and understanding as “poor.” Teachers’ mean rating of knowledge before the ECERS-R process was 1.27 (SD = .58), compared with a mean rating of 2.80 (SD = .79) for their current knowledge, which was a significant difference between the two [$t(180) = 24.8, p < .000$].

Table 6: Teacher Attitude toward the ECERS-R

	Prior to Training/ Assessment	Following Training/ Assessment
Negative	14%	8%
Mostly Negative	17%	14%
Neutral	56%	27%
Mostly Positive	11%	40%
Positive	2%	11%

Note. N = 185

In terms of teacher attitude, approximately 31% of teacher indicated that their attitude toward the ECERS-R was “negative” or “mostly negative” before the training and observations were conducted. Fifty-six percent of teachers described themselves as “neutral” and only 13% reported that they felt “positive” or “mostly positive” toward the ECERS-R before the ECERS-R observation process. In rating their current attitudes toward the ECERS-R scale, only 22 percent of teachers rated their attitudes as “negative” or “mostly negative.” Approximately 27 percent

described themselves as “neutral” toward the ECERS-R, and over half (51%) of the teachers reported that they now felt “positive” or “mostly positive” toward the ECERS-R. Teachers’ mean rating of their attitude toward the ECERS-R before the training was 2.68 (SD = .91), compared with a rating of 3.34 (SD = 1.09) for their current attitude, which was a significant difference [$t(183) = 8.58, p < .000$].

Table 7: Teacher Perception of Usefulness of the ECERS-R

	Prior to Training/ Assessment	Following Training/ Assessment
Not at all	26%	4%
Somewhat useful	51%	44%
Moderately useful	15%	28%
Very useful	8%	24%

Note. N = 184

Finally, teachers were asked to rate their perception regarding the usefulness of the ECERS-R. Prior to the training/assessment, approximately one-quarter (26%) of teachers reported that they believed that the ECERS-R would not be a useful tool for examining the quality of their classrooms. At least half (51%) indicated they believed that the ECERS-R would be “somewhat useful,” and 23 percent reported they believed that the ECERS-R would be “moderately” or “very useful” for examining their classrooms. Following the training and assessment, only 4 percent of teachers indicated that the ECERS-R was not a useful tool. Approximately 44 percent rated the ECERS-R as “somewhat useful” and 52 percent of teachers reported the ECERS-R was “moderately” or “very useful” for examining the quality of their classroom. The mean rating of teacher perceptions of the usefulness of the ECERS-R before the ECERS-R process was 2.05 (SD = .85) compared with a mean rating of 2.71 (SD = .88) after the training. The ratings of usefulness after the training were significantly higher than ratings of usefulness before training [$t(181) = 9.77, p < .000$].

Training and support: Key factors related to attitudes toward the ECERS-R. In order to gain a better understanding of the factors that might contribute toward teachers’ attitudes toward the ECERS-R, we compared teachers’ ratings on the questions regarding their knowledge of, attitude toward, and perception of the usefulness of the ECERS-R according to the overall amount of training and support they reported. We looked at the relationship between teachers’ ratings of their attitudes toward the ECERS-R and the amount of training they reported receiving prior to the ECERS-R observation process, initial training as the ECERS-R process got underway, and ongoing

training/support throughout the ECERS-R process. The data indicate that teachers who received more training and support felt more positively toward the ECERS-R.

As mentioned earlier, slightly more than half of the teachers (55%) said they had not received training on the ECERS-R before the ECERS-R Observation System was initiated. The remaining teachers (45%) indicated they had training on the ECERS-R before the new system was put into place. These teachers might have been introduced to the ECERS-R through workshops or in their college courses. As one might expect, the teachers who reported that they had prior training on the ECERS-R indicated their attitudes were more positive toward the instrument before the ECERS-R Observation System was initiated. They rated themselves as more knowledgeable of the ECERS-R (mean rating of 1.42 compared with 1.15 for those who had not had previous training, $F_{1,179} = 10.3, p = .002$), indicated they had more positive attitudes toward ECERS-R (mean rating of 2.96 compared with 2.47; $F_{1,179} = 14.1, p = .000$) and felt that the ECERS-R was more useful (2.23 compared with 1.91; $F_{1,177} = 6.75, p = .01$). Teachers with training on ECERS-R prior to the ECERS-R Observation System also rated their attitudes toward ECERS-R more positively AFTER the training they received for the ECERS-R observation process (see Table 8).

Training provided as part of the ECERS-R observation process was also related to teachers' attitudes toward the ECERS-R. For purposes of these analyses, we divided the teachers into two groups: those who received less than three days of initial training and those who received three or more days of training on the ECERS-R. When comparing their ratings of how knowledgeable they were, how positive they felt, and how useful they thought ECERS-R would be PRIOR to the initial training, the group that received more initial training indicated higher ratings. The differences, however, were far more striking when comparing their ratings of their attitudes AFTER the ECERS-R process (see Table 8). The teachers who received three days or more of initial training felt far more knowledgeable of the ECERS-R ($F_{1,174} = 46.1, p = .000$), had a more positive attitude toward the instrument ($F_{1,176} = 25.3, p = .000$) and felt the instrument was more useful ($F_{1,177} = 8.32, p = .004$) after the ECERS-R observation process.

Table 8: Mean Ratings of Attitudes toward the ECERS-R After the ECERS-R Process

	ECERS-R Training PRIOR to the ECERS-R Process		Initial Training with the ECERS-R Process		Ongoing Training and Support	
	No (n = 100)	Yes (n = 82)	Less than 3 days (n = 124)	3 days or more (n = 55)	No (n = 44)	Yes (n = 136)
Knowledge of ECERS-R	2.61	3.04	2.58	3.35	2.26	2.92
Attitude Toward ECERS-R	3.19	3.54	2.61	2.95	3.05	3.46
Usefulness of ECERS-R	2.60	2.88	2.60	3.00	2.45	2.81

Teacher ratings also varied by whether they received ongoing support or training throughout the ECERS-R process. We divided teachers according to whether they reported no ongoing training or support versus those who reported some form of ongoing training or support. There was no statistically significant difference between the ratings of teachers who received some form of ongoing training/support and those who did not when we asked about their knowledge and attitudes BEFORE the ECERS-R process. Their ratings of knowledge and attitudes AFTER the ECERS-R process were, however, quite different. Table 8 shows that teachers who received some form of ongoing training and support rated their knowledge of ECERS-R higher ($F_{1, 175} = 17.71, p = .000$), indicated their attitude toward ECERS-R was more positive ($F_{1, 177} = 4.88, p = .028$), and indicated that they felt the ECERS-R was more useful ($F_{1, 177} = 5.63, p = .019$). Clearly, the training and support teachers received prior to and throughout the process were related to how they felt about the ECERS-R.

Finally, we examined whether teacher attitudes toward the ECERS-R instrument varied by where their school was located and whether their principal had an early childhood education certificate. While teachers' reported attitudes toward the ECERS-R before the ECERS-R process began did not differ by where their schools were located, their attitudes after the process did. Teachers in rural and small-town schools reported that they felt significantly more positive toward the ECERS-R ($M = 3.49$ for teachers in rural schools and $M = 3.50$ for teachers in small towns compared with $M = 2.89$ for teachers in urban schools; $F_{2, 181} = 6.82, p = .001$) and felt that the instrument would be significantly more useful ($M = 2.91$ for teachers in rural schools and $M = 2.83$ for teachers in small town schools compared with $M = 2.21$ for teachers in urban schools; $F_{2, 181} =$

9.67, $p < .001$). Similarly, while teachers working for principals with early childhood certification did not differ in their views of the ECERS-R before the ECERS-R observation process, they differed in their knowledge of and attitude toward the ECERS-R instrument after they participated in the ECERS-R observation process. Teachers working for principals with early childhood certification felt more knowledgeable of the instrument ($M = 3.15$ compared with $M = 2.59$ for teachers working for principals without early childhood certificates; $F_{1,179} = 23.68, p = .000$), felt more positive toward the instrument ($M = 3.78$ compared with $M = 3.10$; $F_{1,181} = 18.09, p = .000$), and felt the instrument was more useful to them in their practice ($M = 3.12$ compared with $M = 2.49$; $F_{1, 182} = 24.78, p = .000$).

Reported Changes to Classroom Practices in Fall 2004

Next, we examined the degree to which teachers reported they made changes in their classrooms during the ECERS-R process. Results from the fall 2004 survey indicated that teachers made changes throughout the ECERS-R process (see Table 9). For example, following the initial training, the majority of teachers (98%) reported that they made some change to their classrooms. At least half (50%) reported that they made substantial changes to their classrooms. Approximately 28% made a moderate number of changes, while 20% reported making few changes. Only 2% of teachers reported that they made no changes to their classrooms.

Table 9: Extent of Changes Made in the Classroom

Extent of Changes to Classroom	After Initial Training (N = 171)	After Self-Study (N = 149)	After ECERS-R Visit (N = 155)
No Changes	2%	3%	27%
Few Changes	20%	30%	33%
Moderate Changes	28%	38%	26%
Many Changes	50%	29%	14%

Following the initial training but prior to the official observation, teachers were asked to conduct a self-study of their individual classrooms. Again, the majority of teachers (97%) reported that they used the information obtained from the self study and made some change to their classrooms. Approximately 29% reported making substantial changes, 38% reported making moderate changes to the classrooms, and 30% reported that they made only a few changes. Three percent of teachers reported that they made no changes to their classrooms.

Teachers continued to make changes to their classrooms, even after the first official observation was conducted; however, there was an obvious decline in the number of changes teacher reported. At this point, 73% of teachers reported that they again made some change to their classrooms. Fourteen percent reported making substantial changes, while 26% made moderate changes to their classrooms. More than half of the teachers (60%) reported that they made little or no change following the official observation.

When asked to provide information on the type of changes that were made to the classroom, teacher responses tended to fall into four general categories: room arrangement, materials, schedule, and cleanliness/hand-washing. In terms of room arrangement and materials, teachers reported that using the ECERS-R encouraged them to re-evaluate their use of space and the ease with which children were able to access materials and move around the room. It also motivated them to expand the number and variety of materials offered in the classroom. Examples of changes included additional labeling of specific centers and equipment, as well as the creation of a science center where children were able observe elements of nature and conduct their own experiments.

Several respondents also reported making changes to their class schedule and classroom routines. Changes included providing children with more time in centers or small group activities and less time in “whole group” instruction. Teachers also reported greater attention to the way in which classroom routines (e.g., hand washing) were conducted and how children were transitioned between the various routines and activities.

Teachers working in rural and small-town schools reported making more changes after the initial training. The mean rural area teachers’ ratings of changes after the initial training was 4.37 ($n = 49$; $SD = .78$), and mean ratings for small town teachers was 4.42 ($n = 84$; $SD = .75$). In comparison, urban teachers rated the extent of changes in their classroom after the initial training significantly lower ($F 9.33$, $2, 168 = 9.83$, $p < .000$). Their mean rating was 3.74 ($n = 38$; $SD = .98$). Teachers in small towns also indicated they made more extensive changes in their classrooms after the self-study when compared with teachers from urban areas. Mean ratings of changes after the self-study was 3.52 ($n = 33$; $SD = .91$) compared with a mean rating of 4.08 ($n = 73$; $SD = .80$) for small-town teachers. Teachers’ ratings of the extent to which they made changes after the official visit did not differ by the area where their school was located.

Training and support related to extent of changes teachers reported. On the fall 2004 surveys, teachers who reported that they received greater levels of training and support during the

ECERS-R observation process indicated that they made more extensive changes to their classroom after the initial training and after their self-study process. Teachers who received three days or more of *initial training* (n = 55) indicated they made significantly more changes to their classroom after the initial training than teachers who received less than three days of initial training (n = 111). The mean rating of changes made after the initial training was 4.55 for teachers who received three days or more of initial training compared with a mean rating of 4.08 for teachers who received less than three days of initial training ($F_{1,164} = 11.42, p = .000$). Teachers who received three days or more of initial training also indicated that they made more changes to their classroom after the self-study process. Their mean rating of changes made after the self-study process was 4.10 compared with 3.81 for teachers who received less than three days of initial training ($F_{1,145} = 4.04, p < .05$). Teachers' ratings of the amount of changes they made in their classroom after the ECERS-R observation visit did not differ by the amount of initial training they received.

Teachers' ratings of the extent to which they made changes in their classroom also differed between teachers who received *ongoing training and support* as part of the ECERS-R process and those who did not receive ongoing support. As with results based on the amount of initial training teachers received, teachers who received some type of ongoing training and support (n = 144) reported that they made more changes after the initial training (M = 4.35) when compared with teachers who reported they did not receive ongoing training and support during the process (n = 36, M = 3.81, $F_{1,164} = 12.26, p = .001$). Teachers who indicated they received ongoing training and support also indicated they made more extensive changes in their classroom after the self-study process (mean 4.00 compared with a mean of 3.55 for teachers who did not receive ongoing training/support, $F_{1,142} = 7.07, p = .009$). The extent of teachers' reported changes after the actual ECERS-R visit did not differ by whether they received ongoing training and support, but clearly the amount of training and support teachers received was an important factor in explaining the degree to which they reported making changes in their classrooms after the initial training and after the self-study process.

Perceived Quality of Classrooms in Fall 2004

In addition to broadly enumerating the types of changes they made to the classroom, teachers also were asked to rate their perception of the quality of their classrooms before the ECERS-R process. Then they were asked to rate how they perceived the current quality of their classroom after the ECERS-R observation process. Table 10 presents the results from these ratings.

We asked teachers to think back to the time before the ECERS-R process started and indicate how they would rate the quality of their classroom at that time on a five-point scale (1 = poor to 5 = excellent). We also asked them to rate the quality of their classroom “now” (at the time they were filling out the survey in fall 2004) on the same five-point scale.

Table 10: Teacher Perception of Quality Before and After the ECERS-R Training/Assessment

	Prior to Training/ Assessment	Following Training/ Assessment
Poor	.6%	.6%
Needs Improvement	7%	.6%
Average	40%	8%
Good	42%	65%
Excellent	11%	26%

Note. N = 184

Approximately 8% of teachers indicated that the quality of their classrooms were either “poor” or “needs improvement” before the ECERS-R observation process was initiated. Forty percent rated the quality of their classrooms as “average” and 53% of teachers rated the quality of their classrooms as “good” or “excellent” when asked to think back to the quality of their classroom prior to the ECERS-R observation process. In contrast, when asked to rate the quality of their classrooms after the training or assessment was conducted, only 1% of teachers rated their classrooms as “poor” or “needs improvement.” Approximately 8% of teachers rated their classrooms as “average,” and 91% of teachers rated the quality of the classrooms as “good” or “excellent.”

Teachers’ average rating before and after the ECERS-R training and assessment were analyzed. The mean teacher rating of the quality of their classroom before the training or assessment process was 3.56. In contrast, the mean rating of the quality of their classroom after the training and assessment was 4.14. More than half (55%) of teachers indicated their classrooms were higher in quality after the ECERS-R training and assessment process compared with their rating of the quality of their classroom prior to the ECERS-R process. This represented a significant difference in teacher ratings ($F_{1,77} = 9.01, p = .000$).

Factors related to perceived quality of classroom. To examine what factors might be related to teachers’ perceptions of improvements in the quality of their own classrooms, we calculated the difference between their rating of their own classroom before the ECERS-R process

compared with their rating of the quality of their classroom after the ECERS-R process. The mean difference was .59 (SD = .874), indicating that, on average, teachers' ratings of the quality of their classroom after the ECERS-R observation process were a little more than one-half of a point higher than their ratings of the quality of their classroom before the ECERS-R process. The differences in teacher ratings ranged from -4.0 (for a teacher who rated her classroom much higher before the ECERS-R process) to +3. Teachers who received three days or more of initial training indicated significantly larger perceived improvements in the quality of their classroom. Their mean difference in quality ratings after the ECERS-R process was .852 (n = 54) compared with a mean difference of .483 for teachers who received less than three days of initial training (n = 120) (F 1, 172 = 6.71, p = .01). Similarly, teachers who reported receiving some type of ongoing training/support reported significantly larger improvements in their rating of the quality of their own classrooms. The mean difference for the group that received some type of ongoing training/support (n = 132) was .697, compared with a mean difference of .238 (n = 42) for the group that did not receive ongoing training/support (F 1, 172 = 9.05, p = .003).

Factors other than the training provided through the ECERS-R process were also related to teachers' views on the quality of their classrooms. The number of students enrolled in the classrooms was related to teachers' views of the quality of their classroom. Although teachers' perceptions of the quality of their classroom before the ECERS-R process were not related to the size of their classroom (r = .068, p = .368), there was a significant relationship between class size and teachers' perceptions of the quality of their classrooms after the ECERS-R process. Teachers working in classrooms with larger numbers of children enrolled rated the quality of their classroom lower after the ECERS-R process (r = -.199, p < .01) and reported small perceived increases in the quality of their classroom when their ratings before and after the ECERS-R process were compared (r = -.207, p < .01).

Finally, the difference in teachers' perceived quality of their own classroom before and after the ECERS-R process did not vary by the grade level of the classroom, but did vary by the geographic location of their school and the certification of their principal. Teachers working in rural and small-town schools rated the quality of their classrooms before the ECERS-R process significantly lower than teachers working in urban schools. The mean ratings for the three groups were as follows: rural schools—3.60 (SD = .74); small-town schools—3.32 (SD = .76); urban schools—4.0 (SD = .74) (F 2,176 = 11.57, p = .000). In contrast, there was no statistical difference in the teachers' ratings of the quality of their classroom after the ECERS-R process (M = 4.17 for

teachers from both rural and small-town schools compared with a mean rating of 4.00 from teachers in urban schools). The rural and small-town teachers perceived the quality of their classroom to have increased significantly more than the urban teachers (M increase of .57 for teachers in rural schools and M increase of .87 for teachers from small town schools, compared with a M increase of .05 for urban teachers; $F_{2, 175} = 13.96, p = .000$). Teachers working for principals with early childhood certification also reported that they perceived their classroom to be of significantly higher quality than it was before the ECERS-R process. Teachers working in schools where the principal had early childhood certification had a mean difference of .766 ($n = 64$) when compared with a mean difference of .491 for teachers working in schools where the principal was not certified in early childhood education ($n = 114$; $F_{1, 176} = 4.12, p < .05$).

Views on the ECERS-R System over an Extended Period of Time

Data from the second round of teacher surveys (conducted in fall 2005) indicate that 4-K and 5-K teachers who participated in the fall 2004 survey continue to feel positive about the changes they made in their classroom as a result of the ECERS-R Observation System in fall 2005. Two years after the process was initiated, teachers reported they have maintained the changes in their classrooms and continue to use the ECERS-R instrument.

Changes in classroom practices. Looking back on the ECERS-R system, the majority of the respondents in the 2005 survey indicated they had made changes in their classroom as a result of the ECERS-R system, and many indicated they have continued the changes. When asked to rate “the extent to which the ECERS-R Observation Process influenced you to make changes in your classroom” in fall 2005, the majority of teachers (86%) indicated they made moderate to many changes (see Table 11). In comparison, 13% indicated they made a few changes and less than 1% indicated they made no changes as a result of the ECERS-R Observation Process.

Table 11: Extent to Which Teachers Report Changes in Classroom Practices in Fall 2005

Extent of Changes	Extent to Which ECERS-R Process Influenced Changes (N = 135)	Extent to Which Changes Have Continued (N = 133)
Made/Continued No Changes	0.7%	3%
Made/Continued Few Changes	13%	13%
Made/Continued Moderate Changes	38%	43%
Made/Continued Many Changes	48%	41%

Teachers were asked to what extent they have continued to implement the changes they made in their classroom following the ECERS-R process. The majority (84%) indicated they have continued a moderate number or many of the changes they made as a result of participating in the ECERS-R process. Thirteen percent indicated they have continued a few of the changes they made and 3% indicated they have not continued any changes they made as a result of the ECERS-R process.

One hundred and ten of the respondents (81%) answered an open-ended question that asked them to describe the types of practices that they have continued to implement even after the ECERS-R process was discontinued. Four respondents' open-ended comments (4% of the teachers who responded to the question) indicated they have continued "everything" or "all the changes." Other respondents typically wrote about specific changes and included more than one type of change when listing what they have continued. A total of 343 different types of changes were mentioned. Each item within an individual's response was coded according to several themes that emerged among the responses, the number of respondents mentioning each theme was counted, and a percentage calculated to indicate the relative frequency for each them.

Respondents most frequently mentioned continuing changes they made to the materials in their classrooms. Many teachers indicated they have continued to label materials, to rotate their materials, to include multicultural materials, and to maintain the organization they established during the ECERS-R process. Twenty-two percent of the responses were related to this category. Sanitation practices and changes in their daily schedule were the next most frequent types of changes respondents mentioned. Thirteen percent of the responses were related to sanitation. Teachers indicated they have continued to maintain hand-washing procedures required by ECERS-R, to clean tables, and to sanitize materials. One teacher said, "My children are healthier now." Thirteen percent of the responses were related to scheduling changes. Most teachers who indicated this type of change reported they have continued to devote a substantial part of their day to center time and have continued to allow children more time for outside play.

Other types of changes that were mentioned less frequently included changes in the room arrangement (10%), child-initiated activities (4%), and teacher-child interactions (3%). Teachers reported they have continued to keep their classroom arranged the way they had it for the ECERS-R process. For instance, some teachers indicated they still have their centers arranged so noisy areas are separated from quiet areas, so they can visually supervise all areas, and so the number of required centers are available to children. Teachers also indicated they continued to offer children more choices in their activities to allow for more child-initiated activities. Respondents who

mentioned changes in their teacher-child interactions reported they continue to concentrate on asking children higher-level questions to promote critical thinking, to greet children in the morning, and to be conscious of their voice tone.

In general, these teachers seemed to indicate they have maintained as many of the changes made as a result of the ECERS-R process as they could. One teacher wrote, “These are areas that were important for me to maintain” when describing the changes she has continued, and another indicated she was pleased that ECERS-R had allowed her to “return to early childhood roots.”

One respondent out of the 110 teachers who responded to the open-ended question (1%) reported a negative view on the changes instituted during the ECERS-R process when she indicated, “I am having to teach K[indergarten] skills that were not learned last year by the K[indergarten children]. I am having to implement many motivational techniques and modifying behavior programs in my class. This class that went through the ECERS-R process cannot sit still.” The vast majority of teachers, however, who responded to the open-ended question indicated how they have continued changes made as a result of the ECERS-R observation process.

Continuing the use of the ECERS-R instrument. We asked teachers to indicate whether they continue to use the ECERS-R instrument in their class in fall 2005 (after the conclusion of the ECERS-R Observation System). Most of the teachers indicated they have continued to use the ECERS-R instrument in their classroom, even after the ECERS-R Observation system was discontinued. One hundred and twenty-three respondents (91%) indicated they do continue to use the ECERS-R instrument in their classroom and five respondents (4%) indicated they do not.

A total of 117 teachers (87% of the respondents) provided open-ended comments to explain how they are using the ECERS-R instrument. Thirteen teachers who provided open-ended responses (11%) indicated they are still using the entire ECERS-R as a guide in much the same way they were during the ECERS-R observation process. Writes one respondent, “I continue to use the same routine and procedures I did last year when I was formally evaluated by the state department.” One teacher responded “I use the ECERS-R on a daily basis,” and another said, “It’s a way of life now. It was a big mistake to discontinue.” Another teacher wrote, “My classroom is exactly as it was in 2004 - 2005. The only changes I have made are to continue to improve my knowledge of ECERS...”

Other respondents indicated they are using some parts of the ECERS-R instrument or striving to implement particular practices required to score well on the ECERS-R. These

respondents typically provided multiple responses so the individual responses were coded and percentages converted for each coding theme in the same manner as the open-ended questions regarding continued changes (described above). Many of the same themes were evidence in responses to this question as well.

The practice that respondents most commonly mentioned related to their classroom schedule. Twenty-five percent of the responses indicated respondents use the ECERS-R as a guide for their schedule by continuing to provide the required amount of time for learning centers, recess, or other particular aspects of their daily schedule. Respondents also indicated they continue to use the ECERS-R as a guide for their materials and activities—18.3% of the responses related to labeling materials and ensuring children have access to various materials required on the ECERS-R. Teachers indicated they have also continued to use the ECERS-R as a guide for their health and sanitation practices in 16.5% of their responses. They continue to teach children to wash their hands as required by ECERS-R, to sanitize tables and materials, and to attend to other hygiene practices included in the Personal Care Routines subscale.

Room arrangement was the next most common subject of teachers' responses. In 14.7% of their responses, teachers indicated the ECERS-R is still a guide they use in arranging their rooms to make sure they have the required centers, etc. Eleven percent of the open-ended responses indicated teachers are continuing to offer child-initiated activities and give children choices in the classroom. Teachers are also continuing to use the ECERS-R as a guide for their interactions with children (4% of the responses), striving to greet children individually in the morning, and having more one-on-one interactions with their children. Teachers also reported they use the ECERS-R as a guide for their instructional practices, offering small-group activities more often than they would otherwise (4% of the responses).

Of the 117 teachers who wrote open-ended comments, four respondents (3%) indicated they do not continue to use the ECERS-R or continue to use only part of it. Their comments indicated they do not feel the requirements of the instrument are realistic for teachers who are trying to meet other standards or requirements of the school system. Writes one teacher, "Parts of it [ECERS-R] just does not align to the standards we teach." Another echoed this sentiment when she wrote that the ECERS-R and state standards "often don't seem to be on the same page." One teacher indicated that she has continued some of the changes she made as part of the ECERS-R process but not everything. She wrote, "[It] is not at all realistic when trying to meet state standards. Too much emphasis on daycare type issues that we have no control over, which lowers our scores." Overall,

however, most of the teachers reported that they continue to use the ECERS-R scale to guide their daily classroom practices.

Teacher perceptions of the quality of their classrooms. In fall 2005, teachers continued to indicate that the quality of their classroom is higher than it was before the ECERS-R Observation System. Teachers were asked how they would have rated the quality of their classroom before the ECERS-R process and how they would rate the quality of their classroom after the ECERS-R process. Although 10% of the teachers felt their classroom needed much improvement and 41% indicated their classroom had been of average quality before the ECERS-R process, no teachers felt their classroom needed improvement and only 5% rated their classroom as average after the ECERS-R process (see Table 12). In contrast, 49% rated their classroom as good or excellent before the ECERS-R process and 96% rated their own classroom as good or excellent after the ECERS-R process. The teachers' ratings of the quality of their classroom now were significantly higher than their ratings of the quality of their own classroom before the ECERS-R process ($t = 14.24$, $df = 133$, $p = .000$).

Table 12: Teachers' Ratings of the Quality of Their Own Classroom in Fall 2005

Quality of Classroom	Prior to ECERS-R Process	After the ECERS-R Process ("now" in Fall 05)
Poor	0%	0%
Needs much improvement	10%	0%
Average	41%	5%
Good	42%	55%
Excellent	7%	41%

N = 135

It appears that two years after the initiation of the ECERS-R process, and almost six months after the process was discontinued, teachers continue to implement the practices they instituted as a result of the ECERS-R process, and they continue to feel positive about the resulting changes in the quality of their own classrooms.

ECERS-R Process from the Perspective of Outside Observers: Focus Group Results

To provide additional background information on the ECERS-R Observation System and the process for implementing and conducting assessments, a focus group was held with five of the eight assessors who carried out the ECERS-R observations. The focus group was conducted in the fall of 2005 by a member of the South Carolina Quality Research Team, using a pre-determined set of prompts. Three of the assessors were representatives from the Department of Social Services (DSS), while the remaining two were from the Department of Education (DOE). The focus group

was conducted to provide more in-depth information about the process that was used to conduct ECERS-R observations and the assessors' own perceptions about the changes that occurred within 4-K and 5-K classrooms.

Initially, participants were asked to provide their perceptions of the ECERS-R as an evaluation tool and a means for assessing quality. Participants reported that they viewed the ECERS-R as a reliable tool and believed that it provided assessors with a fairly accurate picture of classroom quality.

Next, participants were asked to describe their expectations regarding classroom scores and ratings on specific subscales. Answers varied, with the assessors from DSS reporting that they expected slightly higher scores than those reported by the DOE assessors. According to one DSS assessor, "I am coming from programs that are private—some public but mostly private—who do not have the funds to support it. So when I went into these programs (public schools) I was expecting to see higher scores."

In terms of specific subscales, all of the assessors reported that they expected to see higher scores on the personal care/routine subscale. This prompted some discussion regarding hand-washing routines. One assessor reported: "I actually found out that some [teachers] thought that children were healthier because of all of the hand washing, they had seen an increase in attendance and a decrease in absences due to colds and things, so that was good to hear." Another stated, "Right about the time of ECERS, we started hearing the media blitz about the importance of hand washing and the transfer of germs and that really supported what we are doing with ECERS." However, further discussion noted that many teachers were frustrated regarding their low scores, particularly when the score was a result of circumstances over which they had little control such as the availability of warm water in the classroom.

Several assessors expressed some concern regarding the activities subscale and time requirements constituting "substantial portion of the day." For example, one assessor stated, "... to see good programs that had the materials in place and were really striving in the 7s, to miss it by a few minutes was ...it was tough." Another assessor noted that the time requirements often affected the entire "Activities" subscale and this, at times, seemed unfair or excessive. However, assessors also noted that, "programs often don't let the children use the materials and equipment for long periods of time. The inclusion of substantial portion of the day gave a voice to that because it really showed that you can get all of these points if you let them use the materials."

Assessors also were asked to comment on the reception they received from principals and teachers. Most of the assessors reported that initially teacher and principals were somewhat unsure of and disgruntled by the process, “It was a huge paradigm shift for many, many classrooms.” However, assessors also reported that upon returning to schools to conduct follow-up observations, they found that teachers were much more positive about the ECERS-R and reported significant changes in the classroom (e.g., fewer behavior problems). While assessors agreed that it was the accountability requirement that prompted the initial changes in early childhood classrooms, they strongly believed that most principals and teachers came to accept the ECERS-R as a useful tool for improving classroom quality.

Assessors also noted a significant change in the attitude towards ECERS between the first and second year of implementation. The first year, many of the teachers and principals felt apprehensive because they were unfamiliar with the instrument; however, once they became more acquainted with the instrument through training and self-study they were more accepting of it and in some instances, welcomed the process. According to one of the assessors, “I had an early childhood coordinator come up to me and thank me because for the first time in however many years we are finally in the budget. I heard that so many times that we are finally able to get the things we need to get because of ECERS.” Another assessor reported that a teacher actually seemed relieved that she had received a low score on items pertaining to playground equipment and space, “If it is not in the report that it is unsafe they will never get me something new or change it.”

Finally, assessors were asked to reflect on the training that teachers and principals received and its overall effectiveness. In general, assessors agreed that while the training was helpful it was in and of itself not sufficient for programs that had little or no prior experience with the ECERS-R or the importance of developmentally appropriate practices. However, as programs acquired additional experience using the instrument, this led to higher satisfaction scores upon reassessment a year later. During Year 1, many programs received little more than a cursory introduction to the ECERS-R process; but, in the words of one assessor, by Year 2, “...schools had a tremendous amount of training, and I think that they had a tremendous amount of input within their training doing side by side conversations, taking an in-depth look at each one of the subscales, reading through the *All About ECERS*, etc. I mean I think a whole lot happened between year one and year two.”

Relationship to ECERS-R Observation Scores

In the previous sections, we have noted that teachers felt more positive about the ECERS-R itself and about the quality of their classrooms after the ECERS-R process. We also wanted to determine if their actual ECERS-R scores were related to their attitudes toward the ECERS-R process, the amount of training and support they received to prepare for the process, and to their own ratings of quality of their classrooms. For purposes of these analyses, we analyzed the survey responses from the sub-sample of teachers who also had ECERS-R observation scores. This sub-sample included 66 teachers (20 4-K and 46 5-K) who had ECERS-R data for Time 1 (spring 04) and 51 teachers (14 4-K and 37 5-K) who had ECERS-R data for Time 2 (spring 05). Although the actual ECERS-R scores did not differ by teachers' education level, college major, whether they had prior training related to ECERS-R, nor the amount of initial training they received, teachers who reported ongoing training and support for the ECERS-R process scored higher on their first ECERS-R observation ($F_{1,50} = 8.55, p = .005$). The mean ECERS-R score for teachers who received some type of ongoing training and support was 4.67, compared with a mean score of 3.88 for those who reported that they did not receive ongoing training and support. Class size was also related to the scores that these teachers received in the ECERS-R observation process. Teachers working in classrooms with larger class sizes received lower ECERS-R scores on Time 1 ($r = -.368, p < .01$) but not on Time 2 ($r = -.106, p = .456$).

Parental Involvement in the ECERS-R Observation Process

Finally, teachers were asked to report the extent to which parents had been informed and involved in the ECERS-R process. A large percentage of the teachers (41%) reported that parents had not been informed and were unaware that the observations were being conducted. For the 59% of teachers who reported parents were informed in some way, half indicated they had included some information about the process in their newsletters. Other strategies for informing parents mentioned by teachers included explaining the process to parents during phone calls and informal conversations.

Teachers also were asked to comment on parents' reactions to the ECERS-R process. Most teachers reported that they received very little comment or feedback from parents, and as a result, had little knowledge of parents' understanding or perceptions of the process. Within the group who did comment on parent responses, some teachers reported that parents felt "confused" as to the purpose of the assessment and a small number of parents expressed concern regarding its

implications for classroom instruction. Two teachers indicated that at least some parents in their classroom were not receptive to the ECERS-R process and that the parents felt that the state should send a letter home informing parents of the process. Other teachers reported that parents welcomed the process and offered to help if needed, etc.

Summary of ECERS-R Survey Data

In summary, results from our analyses of data related to attitudes and perceived changes in the quality of classrooms indicate that overall teachers felt positive about the ECERS-R process and the changes they made in their classrooms. Both teachers' responses to the surveys and observations from the ECERS-R assessors indicated that most teachers perceived that the ECERS-R process had a positive impact on the quality of 4-K and 5-K classrooms in the participating schools. Teachers continue to report positive attitudes toward the process and toward the changes they made in their classroom, even after the ECERS-R Observation System was discontinued. The amount of training and support teachers received as part of the process, however, was an important factor related to their attitudes and reported changes in their practices. Teachers who received greater training and support reported more positive attitudes toward the process and greater improvements in the quality of their classrooms.

VI. Teacher Beliefs and Reported Practices as an Element of Quality

In order to more fully understand the quality of early childhood classrooms in South Carolina schools, data were collected on teachers' beliefs about developmentally appropriate practices and on their reported practices. Data on teachers' beliefs and reported practices were collected from the ECERS-R schools and from non-ECERS-R schools to provide a broader view of factors associated with quality in South Carolina schools. First grade teachers were also invited to participate in this part of the research study to provide information on what children may experience as they finish the kindergarten program and transition to first grade.

Research Questions

- *Do teachers' beliefs and practices vary by characteristics of the teachers themselves or by characteristics of the classrooms or the schools in which they work?*
- *How are teachers' reported practices related to their own beliefs and attitudes?*
- *How are teachers' reported beliefs and practices related to their ECERS-R scores?*

Overview of Data Collection

Using the data-collection process described in the previous section, survey packets were distributed to all 4-K, 5-K, and first grade teachers in 42 schools located in South Carolina. Twenty-two of the schools selected to participate were the primary schools participating in the ECERS-R Observation Process described above (hereafter referred to as ECERS-R schools). The remaining 20 schools operated under a more traditional structure and enrolled children from kindergarten through fifth grade (hereafter referred to as matching schools). Schools were matched according to district, Title I status, and locale (i.e., rural, urban fringe, mid-size city, etc.). Data were collected in fall 2004 and fall 2005. The fall 2004 data is reported in this document. Data from the fall 2005 data-collection process are forthcoming.

Measures

Survey data were collected on teachers' beliefs related to classroom practices and on the extent to which they reported implementing various practices in their classroom. To provide data on their beliefs and attitudes, teachers completed the *Teacher Beliefs Questionnaire*, which consists of two subscales (the Teacher Beliefs Scale and the Instructional Activities Scale) (Charlesworth, Hart, & Burts, 1991; Charlesworth, Hart, Burts, Thomasson, Moseley, & Fleege, 1993). The *Teacher Beliefs Scale* (TBS) is a 37-item instrument designed to elicit teacher's personal beliefs about classroom practices and curriculum. The TBS begins with a question that asks teachers to rank the influence of each of the following on the way they plan and implement instruction after the needs of children are considered: parents, school-system policy, principal, self, state regulations, and other teachers. The remaining 36 items are belief statements that reflect a combination of developmentally appropriate and developmentally inappropriate items. Teachers are asked to rate the importance of each on a five-point Likert scale, with a rating of one being "not important at all" and a rating of five being "extremely important." Examples of the statements include, "As an evaluation technique in your classroom, standardized group tests are ____." Twelve of the items are constructed such that the lower (rather than higher) ratings reflect beliefs more consistent with practices considered to be appropriate for young children. In coding, these scales were reversed so that higher ratings indicated beliefs more consistent with developmentally appropriate practices on all items. Participant ratings on all 36 items were then summed to create a total TBS score for each teacher.

The *Instructional Activities Scale* (IAS) is a 34-item instrument that allows teachers to report how often children participate in certain activities within the classroom. The items include examples of practices considered to represent more developmentally appropriate activities (“participating in dramatic play”) and activities considered to be less developmentally appropriate (“Circling, underlining, and/or marking items on worksheets”). Teachers rated how often children in their classroom participate in each of the activities on a five-point scale from one (“almost never (less than monthly)”) to five (“very often (daily)”). Like the TBS, a number of the items (14) were recoded so that for all 34 items higher scores denoted more developmentally appropriate practices. Participant ratings on the items were then summed to create a total IAS score for each teacher.

Sample Characteristics

Participants in this study came from 4-K, 5-K, and first grade classrooms in 42 schools located in South Carolina. As mentioned above, 22 of the schools that participated in the study were primary schools serving children from pre-kindergarten to second grade, while the remaining 20 were traditional elementary schools, serving children from pre-kindergarten/ kindergarten to grade 5. Examination of the two groups of schools found no significant differences with regard to location of the schools (rural, urban, suburban, or small town), percentage of subsidized meals, total enrollment, or ethnic makeup of the student population.

Of the 598 4-K, 5-K, and first grade teachers asked to participate in this study, 531 teachers responded to the survey (88.8%) in fall 2004. This included 367 teachers from ECERS-R schools and 164 teachers from the set of matching schools. All respondents had completed at least a bachelors degree and slightly over half (51.1%) reported their education level to be a masters degree or higher. The majority (67%) reported majoring in early childhood education. Approximately 20% of the sample indicated they majored in elementary education, almost nine percent of the respondents indicated their major as “other,” and less than one percent majored in secondary education. Approximately 70% of the respondents indicated they had been initially certified in early childhood education. Thirty percent reported that they were certified for an older grade level but had an early childhood “add on” certification. The mean number of years taught for the total sample was 13.86 (SD = 9.1), with a range from 0-to-38 years. The group had a mean of 6.0 years experience teaching 4-K/5-K (SD = 7.7). Their experience teaching 4-K/5-K also ranged from 0-to-38 years. Additional analyses were conducted to determine if there were any significant differences between the two groups and only one significant difference emerged. There were

significantly more males ($N = 4$) in the matching schools than in the ECERS-R schools ($N=1$).

Results

Results from the Teacher Beliefs Scale

In the next set of results, analyses were conducted to examine teachers' beliefs regarding developmentally appropriate practices based upon scores obtained on the Teacher Beliefs Scale (TBS). Overall, scores ranged from 100.0 to 173.0 with a mean of 145.41 and a standard deviation of 12.83. The data were analyzed to determine if teachers' scores on the TBS were related to characteristics of the teachers themselves and to characteristics of the classroom and school where they work.

Teacher characteristics related to developmentally appropriate beliefs. Results of the survey indicate that teachers who had earned a degree in early childhood education ($n = 357$; $M = 146.81$; $SD = 12.74$) reported more developmentally appropriate beliefs than teachers earning a degree in elementary education ($n = 158$; $M = 141.59$; $SD = 12.78$), $F(3, 511) = 4.72$, $p < .003$). Teachers with specialized training in early childhood education scored significantly higher on the TBS within both the ECERS-R schools and the matching schools when they were analyzed separately. Results also indicate that teacher beliefs vary as a result of prior teaching experience. That is, teachers with more years of experience teaching 4-K and 5-K scored higher on the TBS ($r = .27$, $p < .000$), and teachers with more experience teaching first and second grade had lower scores on the TBS ($r = -.31$, $p < .000$). These differences were also noted when TBS scores from teachers within the ECERS-R schools but not the matching schools when data from the two types of schools were analyzed separately.

Classroom and school characteristics related to developmentally appropriate beliefs. Teacher beliefs also varied as a function of classroom and school characteristics. Looking first at classroom characteristics, teachers working in 4-K classrooms report beliefs that are considered more developmentally appropriate ($n = 65$; $M = 154.26$; $SD = 10.41$) than teachers working in either 5-K classrooms ($n = 211$; $M = 150.01$; $SD = 11.57$), or first grade classrooms ($n = 255$; $M = 139.34$; $SD = 11.45$; $F_{2,528} = 73.23$, $p = .000$). Additional analyses indicate that differences between the scores for each of the groups were significant. Analyses also indicated that the number of children within a classroom was related to teachers' scores on the TBS. Teachers with more students in the classroom scored lower on the TBS than teachers with fewer students in the classroom ($r = -.36$, $p < .01$).

In terms of school characteristics, teachers whose school served a higher percentage of children receiving free/reduced lunch reported more developmentally appropriate beliefs than teachers in schools with lower percentages of children receiving free/reduced lunch ($r = .12, p < .01$). Teachers working in ECERS-R schools reported beliefs more consistent with developmentally appropriate practices on the TBS. Teachers in the ECERS-R schools had a mean score of 146.52 ($n = 367; SD = 13.21$), and teachers in the matching schools had a mean score of 142.92 ($n = 164; SD = 11.59$) on the TBS ($F_{1,529} = 9.50, p < .01$). Teachers working in small-town schools reported beliefs more consistent with developmentally appropriate practices ($n = 178, M = 147.55, SD = 12.45$) than teachers in urban schools ($n = 121, M = 142.31, SD = 13.37; F_{2,528} = 6.17, p < .01$). TBS scores from teachers in rural schools did not differ significantly from either teachers in small-town schools nor teachers in urban schools ($n = 232, M = 145.37, SD = 12.55$). In addition, teachers whose principals had earned an early childhood education certification scored significantly higher on the TBS ($n = 155; M = 119.14; SD = 12.22$) than did teachers whose principals lack such certification ($n = 376; M = 112.82; SD = 12.94; F_{1,414} = 11.27, p < .001$).

Results from the Instructional Activities Scale

Next, we examined the extent to which teachers' reported practices are considered developmentally appropriate. This construct was measured using the *Instructional Activities Scale* (IAS). A total of 416 teachers provided complete responses to this survey. In a number of cases, teachers either overlooked or ignored some of the IAS items. In these instances, teacher scores were dropped from the remaining analyses. Of the 416 teachers who responded to the survey, 274 were teachers from ECERS schools and 142 were teachers from the matching set of schools. Overall, the distribution of IAS scores ranged from 72.0 to 156.0 ($M = 114.76; SD = 17.95$), suggesting that, in general, teachers were reporting moderately appropriate practices.

Teacher characteristics related to reported practices. Analyses indicated that teachers who earned a master's degree or higher obtained higher scores on the IAS ($n = 205; M = 116.80; SD = 17.03$) than teachers earning a bachelor's degree ($n = 193; M = 113.14; SD = 18.56, F_{(1,396)} = 4.22, p < .05$). Similarly, teachers who majored in early childhood education reported more developmentally appropriate practices ($n = 273; M = 118.50, SD = 17.02$) than teachers majoring in other areas of study such as elementary education or secondary education ($n = 113; M = 107.89, SD = 17.34; F_{1,402} = 33.85, p < .001$). This difference in IAS scores was true for both teachers in the ECERS-R schools and teachers in the matching schools. Correlations were then computed between

overall scores and teacher demographics. A significant relationship was detected in terms of teaching experience. Teachers with more years of experience teaching 4-K and 5-K scored higher on the IAS ($r = .45, p < .001$), and teachers with more experience teaching first and second grade had lower scores on the IAS ($r = -.44, p < .001$). These relationships between teachers' experience and their scores on the IAS were true for both teachers in the ECERS-R schools and the matching schools when the data were analyzed separately.

Classroom and school characteristics related to reported practices. Like the scores on the TBS, teachers' scores on the IAS differed by characteristics of the classroom and school in which they worked. In general, teachers working in 4-K ($M = 131.34$) and 5-K classrooms ($M = 126.71$) had the highest IAS scores. Although there was no significant difference between 4-K and 5-K scores, these scores were each significantly higher than first grade teachers' scores on the IAS ($M = 101.19$; $F_{2, 413} = 253.92, p < .000$). Class size was also related to teachers' scores on the IAS. Teachers working in classrooms with more children enrolled scored lower on the IAS ($r = -.417, p < .01$).

When we examined the data to determine if teachers' scores on the IAS differed by school characteristics, we found that teachers working in the ECERS-R schools had higher scores on the IAS ($M = 116.30, SD = 18.67$) than teachers working in the matching schools ($M = 111.80, SD = 16.15$; $F_{1, 414} = 6.0, p < .05$). Teachers working in small-town schools ($n = 133, M = 118.87, SD = 18.53$) reported practices that were significantly more consistent with developmentally appropriate practices than teachers working in rural schools ($n = 189, M = 113.97, SD = 16.89$) or urban schools ($n = 94, M = 110.61, SD = 18.22$; $F_{2, 413} = 6.27, p < .01$). Additionally, teachers whose principal earned an early childhood education certification scored significantly higher ($M = 119.14$) than teachers whose principal did not have an early childhood certification ($M = 112.82$; $F_{1, 414} = 11.27, p < .001$).

Relationship between TBS and IAS Scores and ECERS Scores/Survey Results

Analyses were conducted to examine the relationship between TBS and IAS scores and classroom ECERS-R scores, as well as variables related to teachers' perceptions of changes in the quality of their classroom during the ECERS-R process. In terms of the actual ECERS-R classroom observation scores, ECERS-R scores and TBS/IAS scores were available for 52 teachers for Time 1 and 34 teachers for Time 2. Teachers' scores on the TBS and IAS were positively related to ECERS-R scores. Teachers whose classrooms received higher ECERS-R scores during the Time 1

(spring 2004) rating period also had higher scores on the TBS ($n = 55$, $r = .309$, $p < .05$). Teachers who reported practices more consistent with the principles of developmentally appropriate practices (i.e., scored higher on the IAS) worked in classrooms that received higher ECERS-R scores (for Time 1, $r = .366$, $p < .05$; for Time 2, $r = .507$, $p < .01$).

Teachers' scores on the TBS were also related to the extent to which they reported improvements in their classroom during the ECERS-R Observation Process. Teachers ($n = 129$) with higher scores on the TBS (i.e., those reporting beliefs more consistent with developmentally appropriate practices) reported that they made more changes after the initial training ($r = .269$, $p < .05$) and after the self-study process ($r = .163$, $p < .05$). Although teachers' scores on the TBS were not related to teachers' ratings of the quality of their own classroom before the ECERS-R process, they were related to teacher ratings of classroom quality after the ECERS-R process. Teachers with higher scores on the TBS rated the quality of their classrooms after the ECERS-R process higher ($r = .190$, $p < .05$) and indicated that they felt the quality of their classrooms had improved more during the ECERS-R process ($r = .269$, $p < .01$).

In summary, teachers' beliefs about developmentally appropriate practices and the extent to which they report practices consistent with developmentally appropriate practices contribute important information to our effort to fully understand the quality of early childhood classrooms in South Carolina. Data from the TBS and IAS scores indicate that teachers' own education and experience are related to their beliefs and reported practices—teachers with higher education and education that focused on early childhood and teachers with more experience teaching younger children report more appropriate beliefs and practices. However, factors related to the teachers' work environment are also related to their reported beliefs and practices. Teachers working in smaller classrooms and classrooms serving younger children report more appropriate beliefs and practices. Also, teachers working in primary schools that serve only very young children (i.e., the ECERS-R schools that enroll children 4-K through second grade) and teachers who work for principals with specialized training in early childhood education report more appropriate beliefs and practices. Teachers' reported beliefs and practices are important because they are related to the observed quality of their classrooms. Teachers with more appropriate beliefs and reported practices worked in classrooms that scored higher in the ECERS-R observation process, and teachers who reported beliefs more consistent with developmentally appropriate practices reported that they made more changes in their classroom as a result of the ECERS-R observation process and rated the quality of their classrooms higher.

VII. Elements of Quality and Student's Readiness for School Success

A primary area of interest for this research project was to test whether children enrolled in 4-K and 5-K classrooms that received higher ECERS-R scores perform better in subsequent years of their school experience. An experimental study where students are randomly assigned to classrooms of varying levels of quality would be the ideal research design

Research Question

To what extent is the quality of the 4-K and 5-K classrooms related to later student outcomes?

to answer this question. Data should be collected to provide information from each child's teacher and from outside observers. Baseline data collected on the children's knowledge and development at the time they started attending the classrooms, as well as data after they are promoted to the next grade, would also be needed. This type of design was, however, not feasible because the project was initiated after the first round of ECERS-R observation data had already been collected and children enrolled in the observed 4-K and 5-K classrooms had been promoted to the next grade. The best the research team could do was to try to locate students who had been in the observed classrooms and ask their current teachers to provide information on their perceptions of how well the children were doing in their classrooms. The research team designed data-collection procedures that would hopefully provide data on a representative sample of children enrolled in the 4-K and 5-K classrooms that were observed during the ECERS-R process. The design, however, is quite limited and results should therefore be interpreted with extreme caution. A summary of the procedures and the results of this phase of the South Carolina Quality Research Project is provided in this section of the report.

Overview of Data Collection

In fall 2004, questionnaires were distributed to all 4-K, 5-K, and first grade teachers at each of the 22 ECERS schools. In addition to the packet containing a participant assent form and measures of their own beliefs/attitudes (see Section V for a full description of this packet), teachers were asked to complete rating scales to provide data on their perceptions of the readiness of a random sample of students within their classrooms. In order to determine which students to include in the sample, letters of informed consent were sent to the parents of all children in their classroom. Parents were asked to return the forms within two days. Approximately two days later, a reminder letter plus another copy of the consent form was sent home with students whose forms had not yet been returned. Once all of the consent forms had been collected, teachers were asked to complete a

readiness checklist on a random sample of the students whose parents had agreed they could participate. Instructions were given to 5-K teachers to complete readiness checklists on all students who they were aware had participated the previous year in the school-based 4-K program. Of the remaining students, teachers were asked to randomly draw consent forms of children whose parents had agreed for their child to participate. Teachers in 5-K classrooms were asked to draw 8 additional students. Teachers in 4-K and first grade classrooms were instructed to randomly select 12 students. Teachers completed the School Readiness Rating Scale (SRRS) on each of the students they randomly selected and provided the name of each child's teacher in the previous school year (2003-04).

During spring 2005, additional information was gathered from each of the original 20 primary schools. This included information that was not available in the fall such as attendance rates, retention rates, and discipline referrals. In fall 2005 teachers were again asked to complete the SRRS on a sample of students. Data analyses from fall 2005 are pending and are not included in this report.

Measure

Teachers completed the *School Readiness Rating Scale (SRRS)* to provide data on their perceptions of the readiness of the random sample of students within their classroom. The School Readiness Rating Scale is a 19-item instrument designed to measure children's development along two dimensions--readiness and social adjustment. The instrument was developed by Xiang and Schweinhart (Xiang, Schweinhart, Homann, Smith, & Storer, 2000; Xiang & Schweinhart, 2002) of the High/Scope Educational Research Foundation and has been used extensively to evaluate the Michigan School Readiness Program. Analyses of the instrument provided support for its use as a valid and reliable measure of children's development and learning.

Sample Characteristics

School Readiness Rating Scales were returned for a total of 4,074 students in fall 2004. Teachers indicated on the form which teacher each child had the previous year. Using the name of last year's teacher indicated on the form, we selected all students we could identify as being enrolled in a classroom that was observed in 2003-04 for further analyses. The final sample included a total of 635 students. Three hundred and seventy-one of the students were currently enrolled in first grade (i.e., would have been enrolled in a 5-K classroom that was observed in 2003-04), and 264 were enrolled in 5-K classrooms (i.e., would have been in a 4-K classroom that was

observed the previous year). The mean age at the beginning of the school year for students enrolled in 4-K classrooms in 2003-04 was 3 years 10 months (SD = 3.6 months) and the mean age for students enrolled in 5-K classrooms was 4 years 10 months (SD = 4.7 months).

The students included in the sample were from 19 of the ECERS-R schools and were matched back to a total of 57 classrooms that were observed in 2003-04. Sixteen of the classrooms were 4-K classrooms and 37 were 5-K classrooms (3 were missing the grade level for 2003-04). Teachers in this sample of classrooms were slightly less educated than the total sample. Sixty percent of the teachers in these classrooms had completed a bachelor's degree but had not completed graduate training at the master's level. Eighty percent of these teachers had majored in early childhood education, and 81% had an initial certification in early childhood education. Teachers in these classrooms had a mean of 9.96 years experience teaching in 4-K/5-K (SD = 7.64 years). The number of students per ECERS-R classroom ranged from 10 to 30, with a mean of 22.14 (SD = 4.16) students per ECERS-R classroom. The mean ECERS-R score for these classrooms in 2003-04 (Time1) was 4.45 (SD = .85). The ECERS-R scores ranged from 2.68 to 6.49.

Results

Teachers' SRRS scores on the 635 students who could be matched back to a classroom that was observed during the 2003-04 school year were analyzed to determine if there was a relationship between classroom ECERS-R scores and the ratings children received on the SRRS from their teacher in 2004-05. Possible scores on the 19-item SRRS ranged from 19 to 76. Actual scores for the 635 children included in the sample ranged from 19 to 76, with a mean of 60.45 (SD = 11.3). The mean SRRS ratings for first grade children were essentially the same as SRRS ratings for 5-K children (60.6 vs. 60.2). Students' scores on the SRRS were not related to the age of the child.

The quality of the classroom where students were enrolled the previous year was related to teachers' perceptions of their readiness for school. Students who were enrolled in a 4-K or 5-K classroom that received an ECERS-R score of 5.0 or higher in 2003-04 (the general criteria for being considered a quality classroom) were rated more positively by their current teachers on the SRRS. The mean SRRS rating for children enrolled in a classroom that received an ECERS-R score of 5.0 or higher (n = 205) was 61.8 (SD = 11.6), compared with a mean rating of 59.8 (n = 423) for students enrolled in 4-K or 5-K classrooms that received an ECERS-R score less than 5.00 the previous year ($F_{1,626} = 4.44, p < .05$). The data suggest a modest relationship between the

ECERS-R scores of classrooms where children were enrolled the previous year and their current teacher's perception of their readiness. The limitations of the research design, however, mean that we cannot conclude that the quality of the ECERS-R classrooms caused the differences noted in children's SRRS scores.

VIII. Overall Discussion and Recommendations

This study was conducted with the broad goal of examining the implementation of the ECERS-R Quality Rating System and the impact that the process had on the classroom and teachers' beliefs and practices. Specifically, the study investigated the extent to which the ECERS Observation System was effective in improving the quality of early childhood classrooms and the amount of training and support that was available to teachers. Also of interest were teachers' attitude and perceptions of the process and the extent to which these attitudes might have affected their ECERS-R scores. Finally, we wanted to determine to what extent the quality of 4K and 5K classrooms might be related to later student outcomes.

Improvements in Classroom Quality

Based on the results of this study, it appears that classrooms participating in the ECERS-R Observation System made significant improvements in the quality of their learning environments. These improvements were evident both in the actual ECERS-R scores and in teachers' own ratings of the quality of their classrooms. For the actual ECERS-R observation scores, significant changes were noted not only on overall mean scores but also on individual subscales. Furthermore, the improved ECERS-R scores were noted at the school level as well as the classroom level. Average scores that schools received were significantly higher at the second round of observations (spring 2005) than the first (spring 2004).

The noted improvements in classroom quality were not limited to the actual observation scores. Teachers themselves reported that they had made significant changes in their classrooms as a result of the ECERS-R observation process and that they felt very positive about the quality of their classrooms after the ECERS-R process. They indicated that the quality of their classrooms had improved. These views were expressed by teachers in fall 2004 and fall 2005, even after the ECERS-R Observation System had been discontinued. Taken together, the observation data and the survey data indicate that the majority of participating 4-K and 5-K classrooms made changes that resulted in improved classroom quality.

Factors Related to Improvements in Classroom Quality

The current study investigated a number of factors associated with improvements in classroom quality during the ECERS-R observation process. We examined the relationship between training and support provided in preparation for the ECERS-R process and changes teachers made in their classrooms and also looked at teacher-level, classroom-level, and school-level variables associated with improvements in 4-K and 5-K classrooms.

Training and support in preparation for the ECERS-R process. The amount of training and support that teachers received for the process was an important factor in the scores classrooms received and in the attitudes teachers had toward the process—teachers who received more training and support scored higher and felt more positive about the process. Although almost all teachers received some initial training and introduction to the ECERS-R process, teachers who received the most extensive initial training (three days or more) and ongoing support made the greatest changes and improved the quality of their classrooms. Teachers seemed to value opportunities to meet with peers to discuss preparations for the ECERS-R visits, continued training, and additional funding/resources to make changes to their classrooms as the most helpful in the ECERS-R preparation process. However, almost 25% of the teachers reported they received no ongoing support once the initial training on ECERS-R was completed. The initial training and ongoing support for teachers was important in helping teachers make changes in the quality of their classrooms and improve their ECERS-R scores.

Teachers indicated that once they felt knowledgeable of the instrument, the ECERS-R was a useful classroom evaluation tool. Although teachers expressed some doubts and negativity about the ECERS-R scale before they received training on the ECERS-R observation process, after the training most found the ECERS-R to be a useful tool for evaluating their classrooms and report that they made significant changes to their classrooms. This finding seems to be supported by reports from the assessors, who suggested that many teachers and principals were unfamiliar with the ECERS-R instrument and felt uncertain about its use.

Teacher-level characteristics and quality. Within the sample of teachers who responded to our ECERS-R survey, we examined the extent to which characteristics of individual teachers were related to the quality of their early childhood classrooms. It is interesting to note that the level and type of education teachers had completed was not related to their actual ECERS-R scores. ECERS-R scores for teachers who had completed master's-level training and teachers who had majored in

early childhood education were not higher than ECERS-R scores of teachers with lower educational levels or teachers lacking specialized degrees in early childhood education. This finding is somewhat inconsistent with previous research that has indicated that teachers with specialized early education degrees provide care that is of higher quality. It does, however, highlight the important role that the in-service training provided as part of the ECERS-R process and in helping teachers improve the quality of their classrooms. Differences in the actual ECERS-R observation scores were significantly related to the level of training and ongoing support teachers received, suggesting that perhaps the training and support provided as part of the ECERS-R process was a factor that “evened out” differences in ECERS-R scores that might have been associated with teachers’ degrees/level of education if the training and support had not been provided.

Teachers’ beliefs related to developmentally appropriate practices and the frequency with which they reported practices consistent with developmentally appropriate practices emerged as important teacher-level variables within our investigation of quality in South Carolina schools. In the ECERS-R schools, teachers’ scores on the Teacher Belief Scale and on the Instructional Activities Scale were related to their actual ECERS-R scores. Teachers who reported beliefs more consistent with developmentally appropriate practices and teachers who reported using developmentally appropriate practices more frequently received higher scores during the ECERS-R visits. This suggests that these measures are tapping into belief structures and reported practices associated with differences in the overall quality of classrooms. Teachers’ education and major in early childhood education were, as expected, related to their reported beliefs and practices. Teachers with specialized degrees in early childhood education scored higher on the TBS and the IAS, even within the subgroup of teachers who participated in the ECERS-R process. As mentioned earlier, differences in the actual ECERS-R scores were not related to education or specialized training in early childhood education. This suggests that the ECERS-R training may have been more successful in changing practices associated with ECERS-R scores (i.e., to “even out” differences associated with education/specialized training) than teachers’ overall outlook toward developmentally appropriate practices.

Classroom and school characteristics related to program quality. The data collected across the various studies suggest that several classroom and school-level variables are associated with the quality of care and education provided in 4-K and 5-K classrooms in South Carolina. At the classroom level, the age and number of children enrolled were related to various aspects of program

quality. ECERS-R scores were higher for 4-K classrooms, although there was evidence that 5-K classrooms made substantial and meaningful quality improvements during the ECERS-R process. Furthermore, teachers working in 4-K classrooms and teachers with more experience in 4-K/5-K classrooms reported beliefs that were more consistent with developmentally appropriate practices and that their classrooms included activities associated with developmentally appropriate practices more often. It seems that the norms associated with higher ECERS-R scores and more developmentally appropriate practices may be more closely associated with—or more commonly accepted for—4-K classrooms than later grades.

Class size was also an important factor related to quality of the classrooms and to teachers' beliefs and reported practices. Classrooms with larger enrollments received lower ECERS-R scores during spring 2004 (Time 1), and teachers working in larger classrooms reported less developmentally appropriate beliefs and less frequent incidence of developmentally appropriate practices in their classrooms. Due to the correlational nature of the data, it is impossible to speculate on a causal relationship between class size and other indicators of quality. However, it seems reasonable to assume that teachers working with larger groups of children may find it more difficult to implement developmentally appropriate practices and that class size may play an important role in the extent to which a classroom can meet the requirements for higher scores on the ECERS-R.

While many school characteristics such as the location and size of the school were not related to various indicators of quality, two school-level variables emerged as important factors in the quality of early childhood classrooms: the location of the school and the educational background of the principal supervising the program. Teachers working in small-town and rural schools appeared to have received more support during the ECERS-R observation process, to make more changes to improve the quality of their classrooms, and to have beliefs and reported practices more consistent with developmentally appropriate practices. Although the actual observed ECERS-R scores did not differ by characteristics of the school, the results from the survey certainly suggest that the ECERS-R process had a greater effect on teachers' practices in rural and small-town schools, indicating that perhaps the ECERS-R process may have “evened out” quality across different types of schools. Teachers working in schools where the principal was certified in early childhood education (i.e., had completed formal education requirements related to early childhood education) also reported more training and support in preparation for the ECERS-R observation process, indicated their classrooms improved more during the ECERS-R process, reported beliefs and attitudes that were more consistent with developmentally appropriate practices, and indicated

that practices associated with high-quality early childhood education were more common in their classrooms. Within the ECERS-R schools, significantly more principals in rural schools had certification in early childhood education (n = 5 out of 8 principals or 63%) compared with the principals in small-town (n = 2 out of 9 or 22%) or urban schools (n = 2 out of 9 or 22%). It appears that teachers in rural and small-town schools received more support and were more receptive to the ECERS-R process and that principals with specialized professional development in early childhood education may promote high-quality classrooms in a variety of ways.

Finally, the grade-level configuration of the schools was related to teachers' reported beliefs and practices. Teachers working in the primary schools (i.e., ECERS-R schools) that serve only children from 4-K through second grade reported more developmentally appropriate beliefs and practices. Perhaps, working within the context of a school that focuses exclusively on serving very young children offers a supportive environment for teachers who espouse to implement developmentally appropriate practices. We do not have ECERS-R observation scores from the traditional schools (typically serving pre-K through fifth grade) so it is impossible to know whether the observed quality of classrooms in the two types of schools differs. We do know, however, that higher scores on the survey measure of teachers' beliefs and teachers' practices were significantly related to their ECERS-R observation scores in the primary schools so it is possible that the actual quality of classrooms in these two types of settings are different.

Parent involvement. One of the most consistent findings in educational research is the relationship between family involvement and children's achievement at school. Not only can families help to improve children's academic achievement, but they also can have an impact on other key elements that affect achievement such as attendance and behavior (Henderson & Mapp, 2002). A recent synthesis conducted by the Southwest Educational Development Laboratory (Henderson & Mapp, 2002) suggests that there are many ways to engage parents so that they are more effectively involved in reform efforts. Included in that list are suggestions to engage parents so that they are aware of what children are learning; however, it is also important that educators help provide parents with an understanding of the education system itself. Looking at the results of the current study, it was clear that further efforts were needed to communicate with parents and inform them of the upcoming process. While some teachers/schools made an attempt to inform parents, many also reported that parents had not been notified and were unaware that the observations were being conducted. Even among those parents who had been notified, it was clear

that they often did not understand the purpose of the assessment or its implications for children's learning and development.

Student Outcomes

One goal of this research study was to document whether students who attended classrooms with higher ECERS-R scores are rated as more competent in subsequent grades. Previous research has shown that students who participate in the 4-K program benefit. Compared with students who did not participate in the 4-K program, participants in the program had significantly higher scores on measures of vocabulary and understanding of print concepts at kindergarten entry (Lamy, Barnett, & Jung, 2005). Longitudinal analyses comparing 4-K participants with non-participants has suggested that participants in the program outperform students who did not participate on various measures of English/Language Arts and Mathematics proficiency, and that the differences are present through the time that the students are enrolled in fifth grade (South Carolina Department of Education, 2004). These research studies do, however, find some inconsistencies in that differences between participants and non-participants are not statistically significant across all outcomes measured and not across all grade levels compared.

Given the results from these previous studies, it is reasonable to conclude that students benefit from participating in the 4-K program. The question addressed in this research study was slightly different: When examining data from a sample of students who all participated in the 4-K or 5-K program, is the quality of the classroom in which the student was enrolled associated with differences in how teachers rate the student's proficiency the following year. The answer to this question was a modest "yes." Students enrolled in classrooms that received a score of 5 or greater on the ECERS-R were rated higher on the School Readiness Rating Scale in the year following their 4-K/5-K experience. Our conclusions based on this data are, however, limited by a number of factors. First, the research design is a post-test only design, and we had no control over which students were in high-quality versus low-quality classrooms. Teachers provided us with data on the students "after the fact" or after they have completed the 4-K/5-K program. Second, limited data were available on student demographics and therefore we were unable to examine whether the relationship between the quality of the program and students' subsequent SRRS rating was different for different types of students. Previous research suggests that students deemed particularly "at risk" for poor adjustment in school may benefit the most from high-quality early education experiences. Additional analyses controlling for student demographics may have revealed stronger

effects for students from limited income backgrounds or for students who demonstrate other characteristics associated with difficulties later in school. Finally, the measure itself (i.e., the School Readiness Rating Scale) may have contributed to the modest relationship observed between the quality of the 4-K/5-K classroom and later student performance. Scores on the SRRS demonstrated relatively limited variability—most teachers rated most of the children relatively high (a 3 or 4 on the 4 point scale). This meant that scores on the individual items and on the total scale were not normally distributed. Furthermore, while much of the previous research completed on students participating in the 4-K program has focused primarily on specific academic skills and content—vocabulary, phonological awareness, etc.—the SRRS focuses on more global attributes such as problem solving, interest in school work, and cooperation. The limited variability, coupled with the more global nature of the measure itself, may at least in part explain why the relationship between the quality of the 4-K/5-K program and student outcomes was not stronger.

Overall, it appears that 4-K and 5-K classrooms in primary schools in South Carolina made significant quality improvements during the ECERS-R process. The training and support provided as part of the process, as well as teacher-, classroom-, and school-level factors, seems to have played an important role in supporting the quality improvements. Initiatives such as the ECERS-R observation are important steps toward improving student outcomes. Preliminary data from these analyses suggest that it is possible that classrooms must reach the level of quality generally accepted in the field as “high quality” to maximize their impact on students’ subsequent performance in school.

Recommendations

Based on the results from the ECERS-R process and our survey of teachers, we recommend the following:

- 1) **Accountability systems instituted in 4-K and 5-K classrooms in South Carolina should focus on the quality of early childhood classrooms.** The ECERS-R system appears to have been effective in improving the quality of early childhood classrooms, and research clearly suggests that high-quality early childhood education services are linked with improved student outcomes. At the same time, experts in the field recommend that wide-scale standardized testing to provide school accountability data not be conducted with children before grade three. The ECERS-R system appears to be an effective means for implementing an accountability system, adhering to best practices in early childhood education and child assessment and ultimately in improving student outcomes. Given the

important role the ECERS-R system seems to have played in improving the quality of classrooms, the Department should reinstate the system or something similar within the primary schools and consider the feasibility of extending a quality rating system to 4-K and 5-K classrooms in non-primary schools.

- 2) **In efforts to improve the quality of early childhood classrooms, additional training and support should be provided to classroom teachers to ensure that all teachers in all schools receive adequate training and support to prepare for a quality rating process.** The amount of training and support teachers reported receiving as part of the ECERS-R process was uneven across schools. Some received extensive training and support while other teachers reported receiving virtually no support in preparing for the ECERS-R observation process. Those who received more training and support were more positive about the process, reported making more changes in their classrooms, and demonstrated greater improvements in the quality of their classrooms. Training and support should be provided to all teachers and should focus on helping teachers recognize the importance of developmentally appropriate practices, as well as changes to their actual practices. This type of training and support is more likely to result in changes to teachers' beliefs and, ultimately, to long-term improvements in the quality of classrooms. Such training and support seems to be particularly important for teachers in 5-K or later grades.
- 3) **The Department should strive to provide specialized early childhood education professional development for principals in primary and elementary schools.** Principals certified in early childhood education seem to have been particularly effective in supporting quality improvements in 4-K and 5-K classrooms during the ECERS-R process. Although it may not be feasible to require that all primary and elementary school principals complete an early childhood certification process, it is particularly important that principals who are not certified in early childhood education receive training or professional development that focuses on the education of very young children and the support teachers need to implement quality improvements in 4-K and 5-K classrooms.
- 4) **Within the 4-K and 5-K program, preference should be given to hiring teachers with early childhood education background and experience teaching in 4-K and 5-K classrooms.** Teachers with specialized training in early childhood education and experience working with very young children reported beliefs and practices more consistent with developmentally appropriate practices/higher-quality ratings on the

ECERS-R measure of quality. It appears that teachers with specialized training and experience working with 4-K and 5-K are better positioned to teach in a manner consistent with the Department's vision for quality early childhood classrooms.

- 5) **Schools should give careful consideration to efforts to reduce the size of 4-K and 5-K classrooms.** Teachers working in classrooms with smaller numbers of students appear to have been more effective in improving the quality of their classrooms during the ECERS-R process. Efforts to reduce class size are particularly important in the 4-K and 5-K program in order to support teachers in their efforts to implement developmentally appropriate practices.
- 6) **The Department and schools should strive to include parents in school improvement efforts.** Teachers' responses to the survey indicate that parent involvement in implementing the ECERS-R process was minimal. Previous research suggests that parents can be potent allies in efforts to improve the quality of schools and students' performance in school. Parent partnerships should be an integral part of the ECERS-R Observation System and other school improvement or accountability efforts. Teachers and principals should receive training on how to involve parents in the process, and support should be provided for such efforts.
- 7) **The Department should continue to conduct research to examine the relationship between participation in the 4-K/5-K program, the quality of the program, and student outcomes.** The current study provided some evidence that students who participate in higher-quality 4-K and 5-K programs may be more successful in later grades, but the research design was extremely limited. Additional studies using stronger research designs will be necessary to document whether there is a relationship between students' experiences in higher-quality 4-K and 5-K classrooms and their success in later grades.

Conclusion

The South Carolina Department of Education implemented the ECERS-R Observation System in order to provide accountability data for 4-K and 5-K classrooms in primary schools. Data from this research indicate that the system was successful in providing much more than accountability data—the quality of the classrooms improved, teachers responded positively to the changes, and the Department and schools gained objective information on the quality of classrooms

that could be used for program improvement as well as accountability purposes. Data from this project provide strong support for continuing and improving a system like the ECERS-R Observation System.

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