DOCUMENT RESUME

ED 423 974 PS 026 890

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TITLE The Effects of Smart Start on the Quality of Preschool Child Care. Report to the Department of Human Resources.
INSTITUTION North Carolina Univ., Chapel Hill. Frank Porter Graham Center.
PUB DATE 1997-04-22
NOTE 29p.
AVAILABLE FROM Frank Porter Graham Child Development Center, 105 Smith Level Road, CB #8180, Chapel Hill, NC 27599-8180; phone: 919-966-3871.
PUB TYPE Reports - Evaluative (142)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *At Risk Persons; *Day Care; Economically Disadvantaged; Educational Improvement; Partnerships in Education; Poverty Programs; *Preschool Children; Preschool Education; *Program Effectiveness; Program Evaluation; School Readiness; State Programs; Welfare Recipients; *Welfare Services
IDENTIFIERS North Carolina; *Smart Start NC

ABSTRACT

Smart Start is a broad-based community initiative to ensure that all of North Carolina's children arrive at school healthy and ready to learn. This study examined the effect of Smart Start on the quality of child care from 1994-1996. Data were collected from child care centers in 12 counties implementing the initiative. Data collectors visited 180 child care centers in 1994 and 187 in 1996. The quality of child care was measured using the Early Childhood Environment Rating Scale. Findings indicated that the quality of child care was significantly higher in 1996 than 1994, across both the entire sample and the subset of 91 centers observed both years. The quality of child care in 1996 was significantly related to the level of participation in local quality improvement activities by the child care centers, and to the percent of full-funding counties received and the proportion of this funding that the county chose to spend on child care. These latter two variables interacted such that the proportion spent on child care was significantly more related to ECERS quality in the counties that received a higher percentage of their full-funding amount. The data indicate that child care was significantly improved after 2 years of Smart Start implementation and that factors associated with program participation were significantly related to the change. (JPB)

THE EFFECTS OF SMART START ON THE QUALITY OF PRESCHOOL CHILD CARE

Report to the Department of Human Resources

by the Smart Start Evaluation Team
Frank Porter Graham Child Development Center
University of North Carolina at Chapel Hill

April 22, 1997

This report was written by Donna Bryant, Kelly Maxwell, Peg Burchinal, and Betsy Lowman, with sincere thanks to the many child care center directors and teachers who allowed us to visit their classes, the field data coordinators around the state who worked so diligently to collect the data, and our team who entered and analyzed the data.

For further information about this report or other Smart Start evaluation reports, please contact Dr. Donna Bryant at 919/966-4295.

200 copies of this public document were printed at a cost of $246.50 or $1.23 per copy.

Abstract

This study examined the effect of a broad-based community initiative (Smart Start) to improve the quality of child care between 1994 and 1996. Data were collected from child care centers in 12 counties implementing the community initiative. Data collectors visited 180 child care centers in 1994 and 187 in 1996. The quality of child care was measured by the Early Childhood Environment Rating Scale (ECERS, Harms & Clifford, 1980).

The quality of child care was significantly higher in 1996 than 1994, both across the entire sample and the subset of 91 centers observed in both years. The quality of child care in 1996 was significantly related to the level of participation in local quality improvement activities by the child care centers, and to the percent of full-funding counties received and the proportion of this funding that the county chose to spend on child care. These latter two variables interacted such that the proportion spent on child care was significantly more related to ECERS quality in the counties that received a higher percentage of their full-funding amount.

These data indicate that child care quality was significantly better in the 12 counties after 2 years of Smart Start implementation and that factors associated with Smart Start participation were significantly related to the change. This broad-based community initiative is accomplishing one of its major goals -- improving the quality of center-based child care.

Introduction

The North Carolina Early Childhood Initiative, known as Smart Start, was established by Governor Jim Hunt in 1993 as a partnership between state government and local leaders, service providers, and families to better serve children under six and their families. The primary goal of Smart Start is to ensure that all children enter school healthy and prepared to succeed. Research in early childhood education has demonstrated the importance of high quality child care in preparing preschoolers for school success. Specifically, young children who receive high quality child care demonstrate

better cognitive and social skills than children who receive lower quality child care (Bryant, Burchinal, Lau, & Sparling, 1994; Cost, Quality, & Outcomes Study, 1995; Howes, Phillips, & Whitebook, 1992; NICHD Early Child Care Research Network, 1997). Unfortunately, many children in North Carolina--and across the country--do not receive high quality care.

Smart Start's innovative approach requires local community partnerships to plan how best to meet their own community's needs, improve and expand previous programs for children and families, and design and implement new programs. Twelve county partnerships were competitively selected in 1993 for a year of planning. (One partnership was actually comprised of a 7-county confederation, but we considered this partnership's data as if it were from one county.) Between 1994 and 1996 these 12 partnerships received over $60 million from the NC legislature to deliver new or improved services. (Each year since, 12 new partnerships have been funded, but this report covers only the first partnerships.)

As an important step in preparing children for school success, all local Smart Start partnerships funded projects in their communities to improve the quality of early childhood education, including center-based care. Examples of local projects include increased, improved, or specialized training for child care providers; quality improvement grants for centers to purchase educational curricula, equipment, and materials; and financial incentives for centers to demonstrate their provision of higher quality care by becoming licensed at the AA level (instead of A) or by achieving accreditation from the National Association for the Education of Young Children (NAEYC). The number of different quality improvement activities in which a child care center participated might be related to the quality of child care that the center provides.

Two additional factors may affect the potential influence of these improvement efforts within counties: (a) the percentage of full-funding received by the county, and (b) the proportion of funding allocated to child care quality enhancement. These county-level variables are described more fully below.

(a) Percentage of Full Funding Received

The full-funding allocation for each partnership was estimated in 1993 to be the amount of funds needed to improve the quality of care for children already in subsidized care and to enroll the rest of the county's poor children (birth to five) in a child care program for a half-day. The amount allocated each year by the legislature has fallen short of the full-funding amount. The percent of full-funding received may affect the level of implementation and success of the initiative in different counties.

(b) Proportion spent on child care

The local partnerships determined their own county's needs for services for young children and made funding decisions accordingly. Some partnerships allocated more of their funds to child care because they perceived a high need for more and better child care in their community; other partnerships chose instead to spend relatively more on improving health care services or establishing family resource or parenting education programs. The proportion spent on child care quality improvement activities might be related to the number or type of opportunities provided for child care centers and thus to quality enhancement.

Smart Start has generated increased attention to early childhood education and child care in North Carolina, a state that has among the least stringent child care licensing standards. The question investigated in this paper is whether this type of broad-based community initiative will affect the quality of preschool child care. Researchers at the Frank Porter Graham Child Development Center collected data in 1994 and 1996 to begin answering this question. The main hypotheses were:

- Overall quality of child care for preschoolers will be better in 1996 than in 1994.

- Preschool child care quality will be higher in counties that received more of their full-funding allocation.

- Preschool child care quality will be higher in counties that spent a higher proportion of their funds to improve child care.

- Child care centers that participated in more Smart Start quality improvement efforts will be rated better in 1996 than those who participated in fewer.

Method

Sample

In 1994, researchers visited 180 child care centers in the first 12 partnerships. In 1996, 187 child care centers from the same counties were visited. Ninety-one (91) centers were visited in both 1994 and 1996. Of the centers invited to participate in the study, 75% agreed to do so in 1994; 64% in 1996.

In each year of data collection, data were obtained from two samples of child care centers: a partnership-nominated sample and a random sample. The nominated sample consisted of child care centers that the 12 partnerships noted were involved in local Smart Start child care quality improvement efforts. These centers were visited in 1994 and again in 1996. The nominated sample was included to study directly the effect of Smart Start on child care in centers that were confirmed to be participating. The second sample of centers was randomly selected from the 1994 and 1996 lists of licensed child care centers in the counties (regardless of a center's participation in Smart Start). The random sample was included to measure the overall quality of care and to provide a comparison with the nominated sample. This process resulted in the selection of some centers both randomly and by nomination, a more frequent occurrence in small counties with fewer child care centers. In analyses, the data from such centers were included in both the nominated and random group. These two samples were not significantly different on any child care variable in 1994 or 1996, so they are combined in all further analyses presented here.

Table 1 describes characteristics of the 1994 and 1996 samples, which were very similar on several structural characteristics of child care.

Table 1. Center Characteristics in the 1994 and 1996 Child Care Samples

	1994 (N=180)	1996 (N=187)
Sample Type		
Randomly Selected Only	83	107
Nominated Only	52	49
Randomly Selected & Nominated	45	28
Type of Center		
Not for Profit	57%	58%
Church-Sponsored	21%	21%
Head Start	11%	15%
Independent	48%	44%
Public Preschool	4%	2%
Franchise	2%	4%
Median % of Subsidized Children per Center	38%	41%
Center Director with a BA Degree or Higher	39%	41%
Lead Teachers with a BA Degree or Higher	17%	21%
Participation in at Least 1 Smart Start Activity	95%	94%
Mean Number of Activities	5.3	5.9

Procedures

At each center visited, data collectors completed the Early Childhood Environment Rating Scale (ECERS, Harms & Clifford, 1980) in one randomly selected preschool classroom. The ECERS is a well-established measure of child care quality that assesses seven general areas: personal care routines, furnishings and display for children, language-reasoning experiences, fine and gross motor activities, creative activities, social development, and adult needs. Scores on each of 37 items can range from 1 to 7 with the overall mean score obtained by averaging all items typically used as a global measure of the developmental appropriateness or quality of the classroom. An overall score from 1 to 3 is considered poor; scores from 3 to 5 are considered mediocre; and scores of 5 or greater are considered good.

Data collectors were trained on the ECERS to an agreement criterion of 85%, counting two ratings that were identical or within one point as agreements. In 1994, field reliability data were obtained during one visit for observers who rated more than 10 classrooms. These reliabilities averaged 86% (ranging from 75% to 92%). In 1996, field reliability data were gathered on each observer after every 5-8 child care visits. These reliabilities averaged 85% (ranging from 72% to 94%).

Data collectors also interviewed center directors to obtain information about center characteristics and services, including a checklist of 14 different Smart Start improvement activities the center or center staff might have participated in during the past year. The data collector was unaware of the number of such activities in which the center had participated because the interview was typically conducted after the observation. In addition, only 2% of centers were visited by the same data collector in 1994 and 1996. About half of the 1996 visits were made by new observers who had not collected any 1994 data and the observers who gathered data both years were shifted to different counties in 1996. These procedures greatly reduced the possibility that any data collector bias influenced the results.

Results

Figures 1 and 2 present the distributions of the county-level predictor variables used in the first analyses. Figure 1 arrays the partnership counties by the percentage of full-funding they received. Nine counties received above 70% of full funding, but three others (among the most populated counties) received 20%, 26%, and 53% of their estimated full funding. Figure 2 arrays the counties by the proportion of their funding spent on child care quality enhancement activities. The proportion of funding devoted to child care quality enhancement ranged from 18% to 73%.

These two variables and time (1994-1996) were included in a Hierarchical Linear Model analyses (HLM) to test the first three hypotheses. Results are presented in Table 2. The quality of child care as measured by the ECERS was significantly higher in 1996 than in 1994, $F(1, 351) = 22.4$, $p < .0001$. The mean ECERS score in 1994 was 4.25 ($SD = .64$); in 1996, 4.51 ($SD = .68$). Figure 3 presents the distribution of the quality of center-based care in 1994 and 1996, illustrating a shift to the higher scores. Overall, only 14% of the preschool classes in 1994 were providing good quality care. In 1996, 25% of the preschool classes were providing good quality care.

Other evidence for increases in quality care came from the 91 centers that were observed in both 1994 and 1996. Among these centers quality of care improved significantly over the two years, $F(1, 176) = 12.05$, $p = .0007$, and the percentage licensed at the higher AA level increased from 38% to 52%, a statistically significant increase (χ^2 adjusted for repeated measures = 12.53, $p < .001$).

Table 2 also shows that the percentage of full funding received by a county and the proportion spent on child care activities were each significantly related to quality, although these main effects should not be interpreted because a significant interaction was found between these variables. This interaction indicates that proportion of funding spent on child care accounted for much more of the variance in ECERS quality scores in counties that received a high percentage of funding compared to those that received a low percentage of the full-funding allocation, $F(1, 353) = 4.81$, $p = .029$. The effect on quality of proportion spent on child care in the low-funded counties

Figure 1. Distribution of Full Funding Received by Partnerships

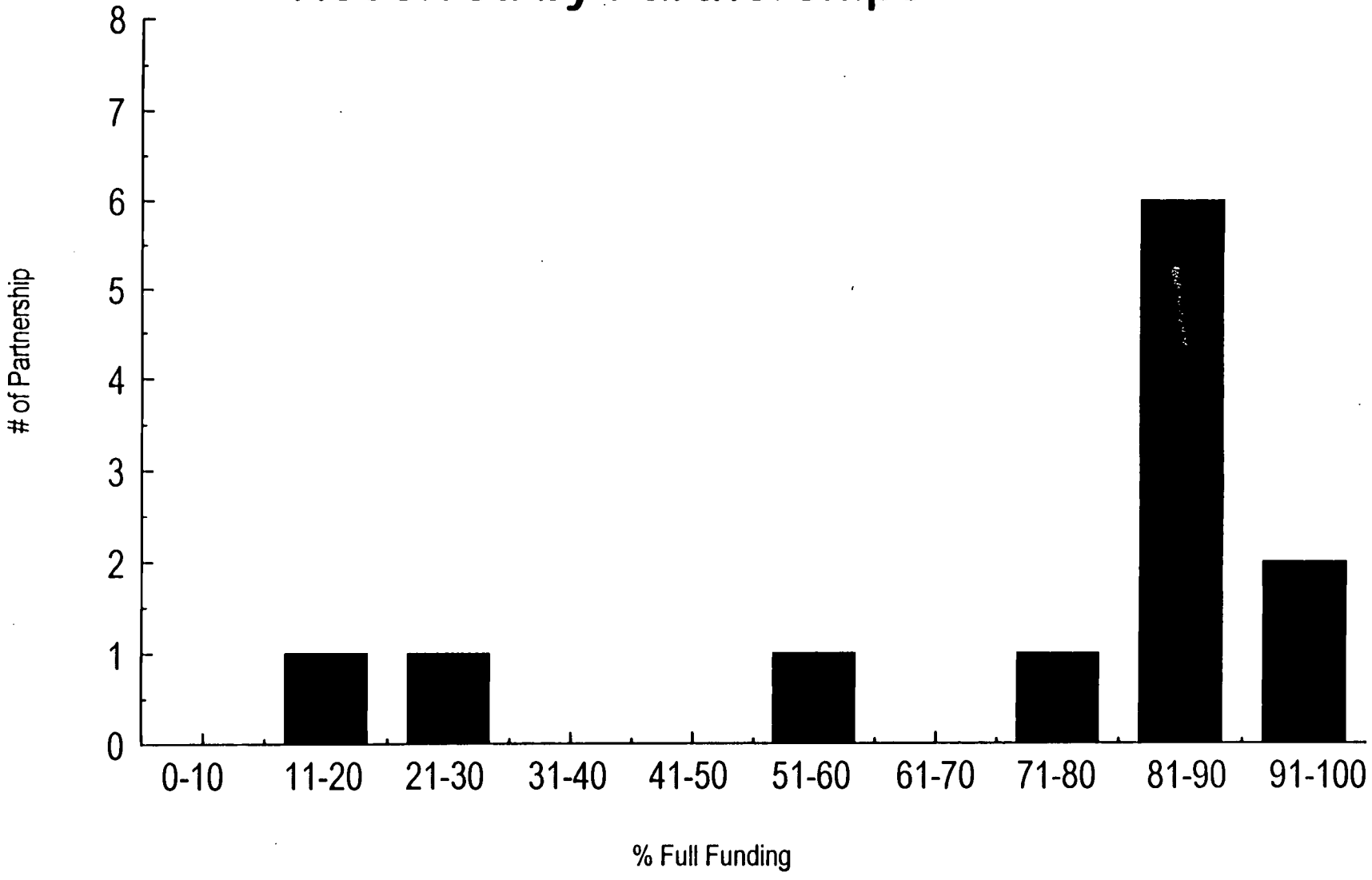


Figure 2. Distribution of Funds Spent by Partnerships on Child Care

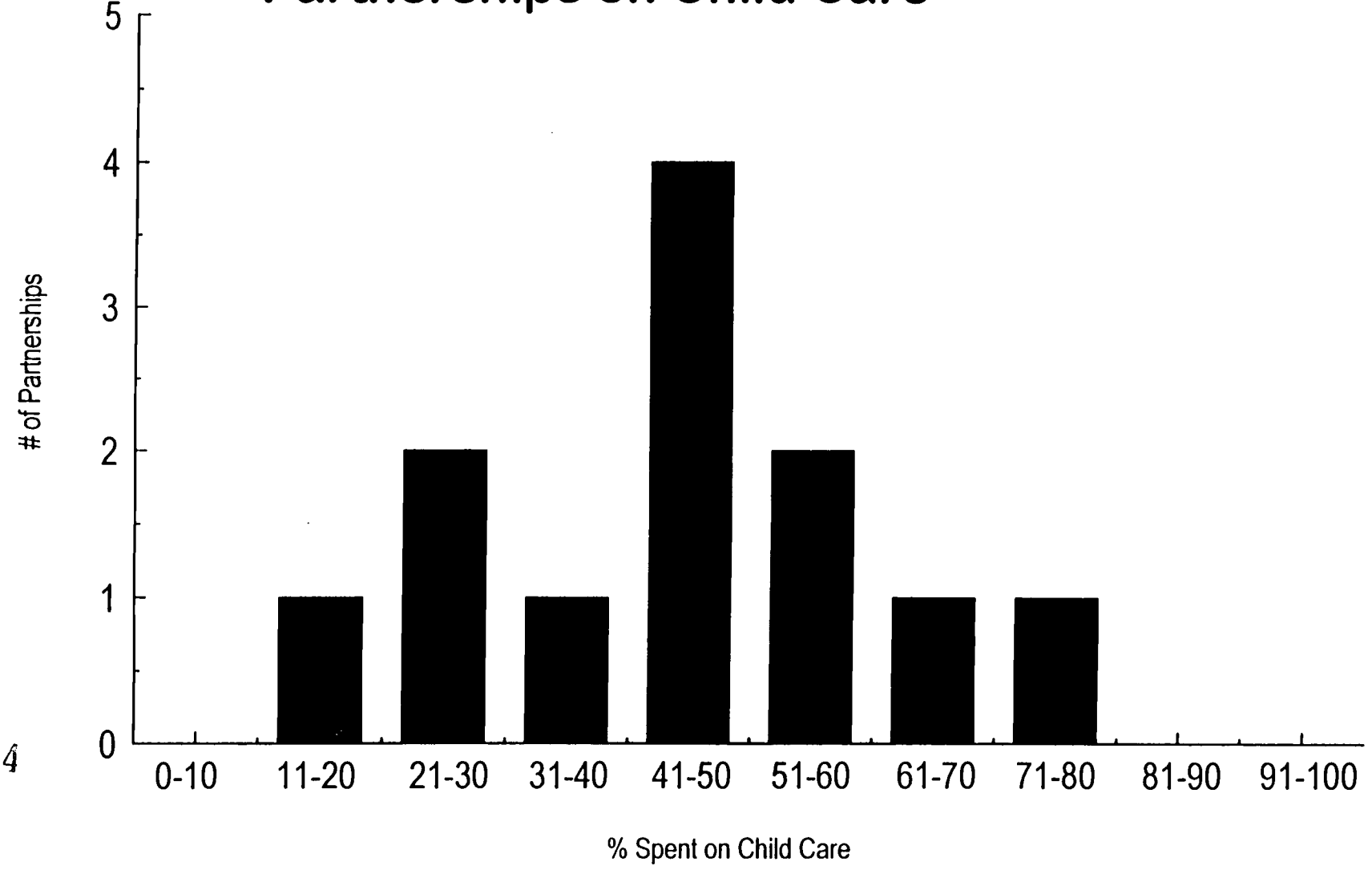


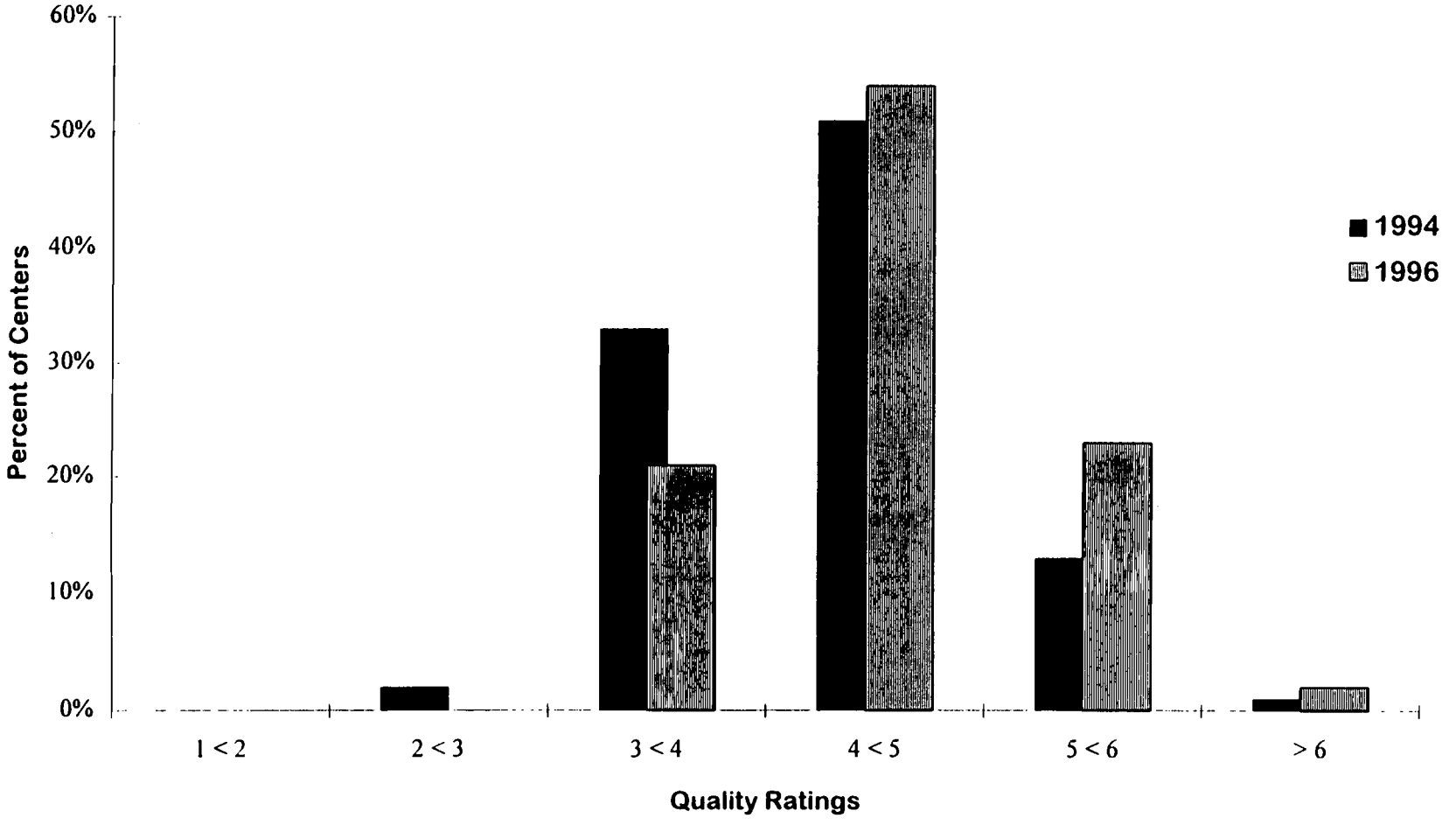
Table 2. HLM Analyses: Child Care Quality (ECERS total score) as a Function of Year, Funding Level, and Proportion of Funds Spent on Child Care[a]

	B	se	F	p
Intercept	4.26	.06		
Method[b]			1.44	.24
Both	.16	.10		
Nominated	.04	.08		
Random	-	-		
Year			21.4	<.0001
1994	-	-		
1996	.23	.05		
Funding Level			3.73	.054
Low Funding	-.16	.08		
High Funding	-	-		
Prop. Spent			8.33	.004
Low Prop.	-	-		
High Prop.	1.61	.52		
Funding Level x Proportion Spent			4.81	.03
Low Funding: Prop. Spent	.23	.37		
High Funding: Prop. Spent	1.61	.52		

[a]Partnership and child care center were entered as random variables to adjust for their effects as repeated measures.

[b]Selection method was used as a control variable.

Figure 3: Quality of Preschool Classrooms in 1994 and 1996



is much lower than in the higher-funded counties (B= .23 vs. 1.61). This interaction is illustrated in Figure 4 which shows that proportion of funds spent on child care quality improvement efforts was more strongly related to ECERS quality for the counties that received greater than 70% of their full-funding allocation.

Figures 5 and 6 present the distribution of centers based on their level of participation in Smart Start child care quality improvement activities in 1994 and 1996. In 1994 the number of activities averaged 5.3 (SD = 3.2) with a range of 0-13; in 1996, the mean was 5.9 (SD = 3.4) with a range of 0-14. Using these variables, an HLM analysis was used to test the fourth hypothesis. Results are presented in Table 3. This analysis looked at the effect of an individual center's participation in Smart Start funded child care efforts on the preschool quality in that center. Again there was a significant effect of year, indicating that 1996 quality was higher than 1994 quality. Participation in Smart Start quality improvement activities was also statistically significantly related to quality, $F(1, 335) = 9.84$, $p = .0019$, with centers participating in more activities likely to score higher on the ECERS.

Simple correlations also add support to the fourth hypothesis. In the 91 child care centers that were observed in both 1994 and 1996, participation in early Smart Start activities was significantly related to quality of care provided in 1996 ($r = .24$, $p = .019$). In the 1996 total sample of 187 centers, reported participation was also significantly positively related to the quality of care ($r = .24$, $p = .001$).

Figure 4: Child Care Quality by Partnership's Proportion of Funds Spent on Child Care and Percent of Full Funding

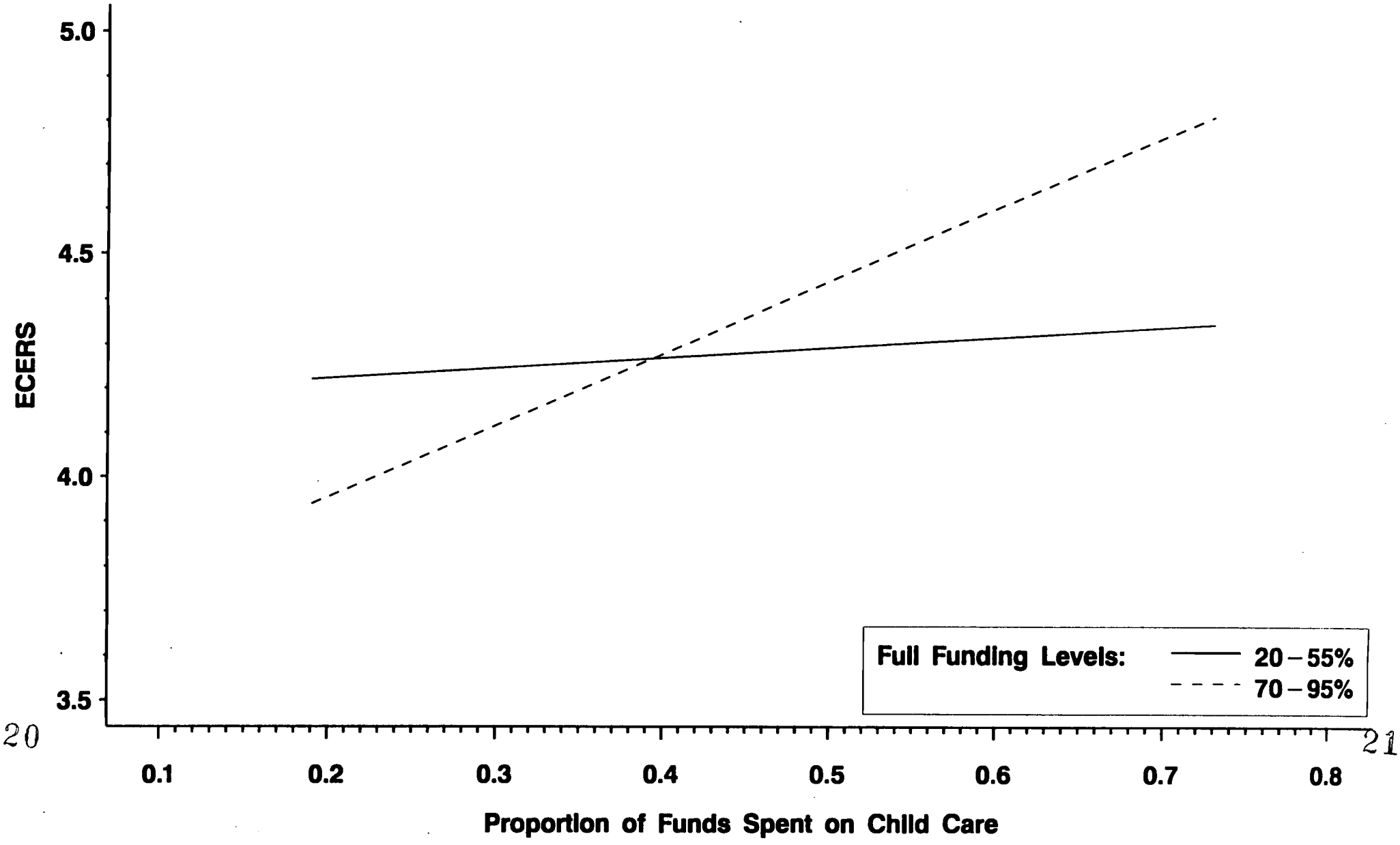


Figure 5: 1994 Smart Start Activity Participation

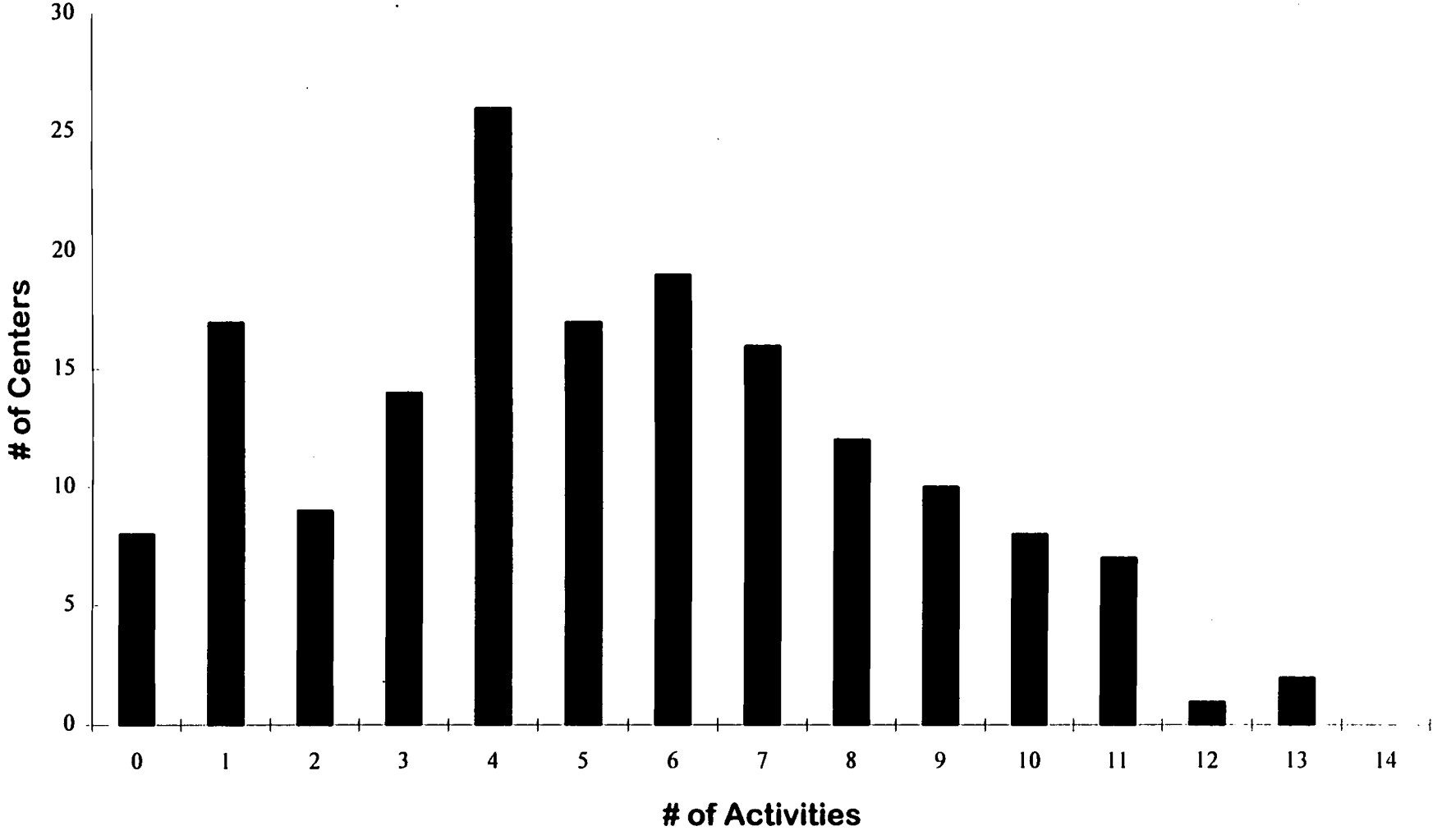


Figure 6: 1996 Smart Start Activity Participation

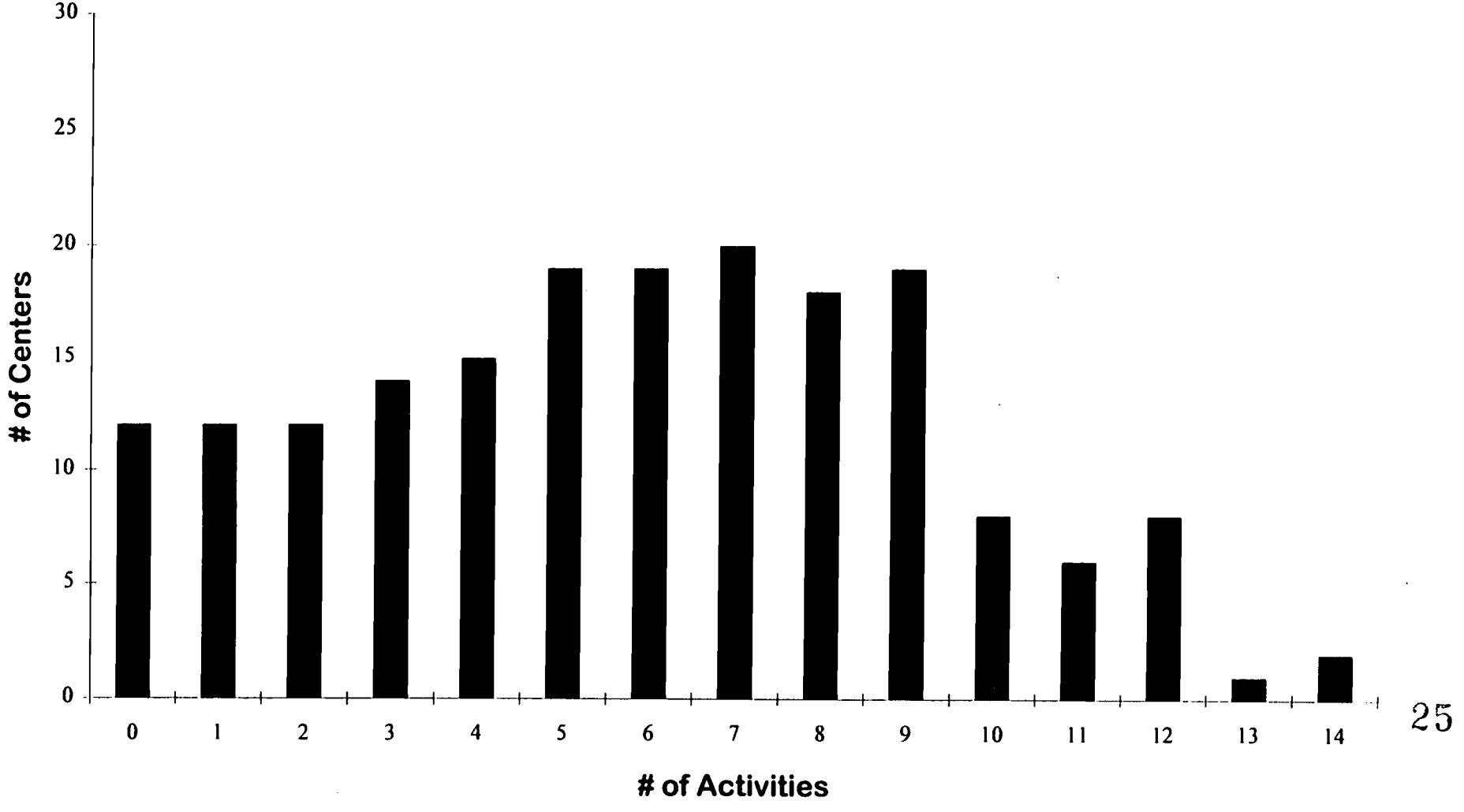


Table 3: HLM Analyses: Child Care Quality (ECERS total score) as a Function of Year and Participation in Smart Start Activities

	B	se	F	p
Intercept	4.04	.07		
Method[a]			.10	.91
Both	-.02	.10		
Nominated	-.04	.08		
Random	-	-		
Year			15.58	.0001
1994	-	-		
1996	.21	.05		
Participation	.03	.01	9.84	.0019

[a]Selection method was used as a control variable.

Discussion

The significant change over time in the observed child care quality ratings is a positive sign that the variety of different child care quality improvement efforts being implemented by Smart Start seem to be improving quality, as intended. The effect size (.58) is considered to be in the moderate range. Finding a difference of this magnitude is particularly notable since, in Smart Start's first years, it has been a diverse set of "treatments" implemented in a wide variety of settings with a varying degree of intensity. Support for the conclusion that the changes seen from 1994 to 1996 were related to Smart Start and not just general improvement in the state is that the 1996 quality ratings were significantly related to three factors that theoretically should affect quality--the number of activities in which a center participated, the percent of full-funding allocation received by the county, and the proportion of funds allocated to child care. Further, the rate of increase in the proportion of centers licensed at the AA level has been higher in Smart Start counties than in other North Carolina counties.

The finding that the proportion of funding spent on child care was significantly related to improvements in quality indicates that focusing fiscal resources in a targeted area (i.e., child care quality improvement) while allowing counties to decide how resources are spent is a viable strategy to improve overall quality of care. It is not surprising that this influence was much stronger in counties that received a high proportion of their full-funding allocation compared to low-funded counties. For example, the county that spent the highest proportion of its allocation on child care was also the county that received the lowest percentage of its full-funding allocation. Under these conditions, the effect of a high proportion of child care spending is less.

A higher percentage of centers refused to participate in the study in 1996, which the directors sometimes attributed to having participated in too much research recently (indeed true in some Smart Start counties) and sometimes to a dissatisfaction with the local Smart Start decision-making. Although it is possible that more centers of lower quality refused participation in 1996 than in 1994, significant improvements in quality occurred in the sample of 91

centers seen in both years. In addition, the significant relationships between predictors (level of funding, proportion spent on child care, participation in improvement activities) and outcome (improved ECERS) existed regardless of selective refusal, adding to our confidence in these findings.

We should note that these findings pertain to the quality of preschool classes for children in North Carolina's first 12 Smart Start counties, not to the quality of infant and toddler care. Other studies have shown that infants generally receive less safe and developmentally appropriate care in group settings than do preschoolers (Cost, Quality, and Outcomes Study, 1995). When we began this study we intended to include a sample of infant care, but found that very few centers provided care for infants and few Smart Start activities were directed specifically to improving the quality of infant care. As more Smart Start activities become directed at infant care, a more focused study of infant care might be desirable.

One of the most interesting findings was the large number of centers that were indeed participating in Smart Start-funded quality improvement efforts. Many centers took advantage of multiple opportunities. We expected this in the nominated sample, but it was also true in the random sample, which is probably why we found no difference in samples recruited in these two different ways. Smart Start is reaching a large number of centers in counties large and small, urban and rural. Its effect can be most noted to date in the increase in child care quality from 1994 to 1996 and in the significant relationship between participation in Smart Start and observed quality of care.

A second finding of note was the relatively large number of children from poor families being served by the centers. About 40% of the children in the hundreds of centers observed were receiving a child care subsidy. (Full subsidies are usually given to the children of unemployed poor families with smaller subsidies provided for children as parents move up the income scale.) It appears that centers benefiting from the Smart Start quality improvement efforts serve families in a range of incomes, thus benefiting a wide range of children, not just those from a single income group.

This study does not answer questions about child care quality improvement activities that many will want to know. Which types of activities are most effective in improving preschool classroom quality? Are in-service workshops more effective than sending teachers to community colleges for further training? Are enhancement funds better spent on literacy materials than on playgrounds? The Smart Start evaluation is not a randomized study that can address these questions. Some counties did not offer all 14 different types of quality enhancement activities, and child care centers within a county chose to participate in as many or as few activities as they desired or were allowed. Because centers vary in their own starting points and needs, it is likely that the best and most effective improvement activities for one center would be somewhat different than those that would benefit another center. Our data do show, however, that more participation is related to increased preschool classroom quality.

In conclusion, the effect of North Carolina's commitment to young children and their families as evidenced by legislative and community support and funding for the Smart Start program is now being seen in improved quality of child care for preschoolers. The evaluation of this initiative will continue to include monitoring of child care quality as well as changes in child health and readiness, family services, and collaboration among agencies serving children and families.

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