Special Report 78 - Executive Summary

This report aims to provide an answer to an important policy question: Is there an economic justification for public intervention to improve the quality of nonparental child care, especially for children from lower-income families? The bulk of the evidence argues that the answer is yes. In this report we adduce evidence from large- and small-scale studies of the effects of child care on children's development, and set out the economic rationale that emerges from that evidence.

Nonparental child care is now the norm for young children in the United States. Nearly 60 percent of children 5 years old or younger are in child care on a regular basis, and 44 percent of infants are in child care for more than 30 hours a week (1). With the implementation of welfare-to-work programs in nearly all states, use of nonparental care is extending ever more widely among low-income families. To assess the effects of this sea change in child-rearing upon children, upon families, and upon society as a whole, we must begin with some quite specific questions: Does the quality of child care have meaningful effects on children's developmental outcomes and on the employment of mothers, traditionally the primary caretakers? What is the quality of child care in the United States? How could it be improved, and what might be the cost of doing so?

DOES THE QUALITY OF CHILD CARE HAVE MEANINGFUL EFFECTS ON CHILDREN'S DEVELOPMENTAL OUTCOMES?

An established view among child care researchers is that higher-quality care is associated with better developmental outcomes, and lower-quality care with poorer developmental outcomes (2,3). Some researchers, however, have recently argued that widely varying qualities of care have little or no meaningful effects on children's development (4,5). A major goal of the current report is to critically evaluate the research evidence from which these divergent conclusions have been drawn.

The quality of child care has been measured in two main ways. The first is by observing what actually occurs in child care settings—children's interactions with caregivers and other children,

particular activities such as language stimulation, and health and safety measures. These features are described as indicators of *process quality*, which is scored by widely accepted rating scales. The second set of indicators includes the *structural characteristics* of the child care setting and the quality of the caregivers. These include, for example, the child:adult ratio, the size of each group of children, and the formal education and training of the caregivers.

These two sets of indicators are consistently related. When child:adult ratios are lower, children generally appear less apathetic and distressed; caregivers spend less time in managing their classrooms and offer more stimulating, supportive care. When staff is more highly trained and better compensated, children's activities are of higher quality, and caregivers are more responsive and less restrictive. Higher-quality settings are likely to have better health and safety practices, resulting in fewer respiratory and other infections among the children, and to have fewer playground injuries (7–17).

Concurrent Associations

Research yields firsthand evidence about children's responses to child care of varying quality, at the time they are in care. In the short term, process and structural quality are both important. Taking into account both the gender of the child and family factors, researchers find that children appear happier, have closer and more secure attachments to caregivers, and perform better on standardized cognitive and language tests in settings with higher process quality, that is, settings with developmentally appropriate activities and caregivers who are emotionally supportive and responsive to their needs (13,18–27). In contrast, poor process quality appears to predict heightened behavior problems (26,28).

Both correlational and quasi-experimental research has found relations between structural quality and child performance. For example, children in classrooms with lower child:adult ratios were better able to understand, initiate, and participate in conversations, had better general knowledge, were more cooperative, and in their interactions with each other showed much less hostility and conflict than in settings where there were more children to each adult. On average, preschoolers perform better on

standardized cognitive tests when their caregivers are better educated and trained—for example, if they have at least an associate arts degree in a child-related field. The children also have better language skills, are more persistent in completing tasks, and in general are more ready for school (29–32).

Longer-Term Associations

Longer-run associations between process quality and children's developmental outcomes also have been studied. Several of these studies are methodologically strong, in that they included controls for family selection differences and they assessed child care quality over time rather than relying on a single, possibly nonrepresentative assessment (9,33,34). The National Institute of Child Health and Human Development (NICHD) Study of Early Child Care has found that process quality during the first three years is related to children's preacademic skills of expressive language and receptive language at age 3, even after controlling for particular child and family characteristics. The Cost, Quality, and Outcomes Study reports that children enrolled in higher-quality child care classrooms as preschoolers display better math skills through second grade, and the effect is greater for the children of less-educated mothers (the differential effects on language skills are less persistent). Children whose caregivers are more involved and invested in them during the preschool years have fewer behavior problems, according to their kindergarten teachers (35).

The NICHD study also has asked whether the measured associations are large enough to be meaningful. To address this issue, researchers conducted a parallel analysis of the relations between the quality of the home environment and children's developmental outcomes. Their results—showing that effects associated with the quality of the home are roughly twice the size of those associated with the quality of the child care—suggest that the effects of child care process quality for 3-year-olds are both statistically significant and meaningful, but by no means as important as the family for young children (36,37,38).

Other dissenting studies have found little or no relation between child care quality and children's development over the longer term (4,40,41). These studies, however, tended to use less reliable indicators, such as maternal reports of caregiver training or single observations of child care quality obtained at one point in time. But child care arrangements are typically not stable, and over half of the children in these studies had experienced more than three changes in their child care during the intervening period. Stronger, more valid tests of the effects of child care quality require reliable and valid measures over time.

An Economist's Interpretation of the Link between Child Care Quality and Child Outcomes

The studies discussed above used the hierarchical regression models traditionally employed by developmental psychologists. These findings were converted into statistical terms more familiar to economists, thus allowing us to estimate how great a change we might expect in children's developmental outcomes if the quality of child care were to be systematically improved. These analyses applied standard ordinary least squares (OLS) regressions to data regarding children's cognitive and language development that were reported by the NICHD study (25).

Controlling for a variety of parental and other influences, we estimated how much improvement we might expect in children aged 15, 24, and 36 months if measures of caregivers' quality and language stimulation improved from one standard deviation *below* the mean level of quality to one standard deviation *above*. We find statistically significant improvements (see Tables 7 and 8 in the full study). For example, we estimate that a shift from the lowest rating to the highest rating for the caregiver would result in an improvement (relative to the mean) of about 50 percent in measures of children's school readiness, expressive language skill, and verbal comprehension. We also find that the cumulative impact of child care quality for 3-year-olds is significant and is rather greater than the concurrent impact, particularly for measures of language and vocabulary.

The Very Long-Term Effects of Some Early Childhood Interventions

A small cluster of early childhood interventions offer evidence of potentially powerful and long-lasting effects of enriched and intensive child care programs for low-income, "high-risk" preschool children, though they were not strictly "child care" per se. The best-known studies are the Carolina Abecedarian Project (42,43,44), the Perry Preschool Project (45), and the Chicago Child-Parent Centers (46). All have involved random-assignment, intensive evaluations, have followed participating children into early adulthood, and have examined such outcomes as educational achievement, earnings, criminal activity, and the use of cash welfare assistance.

Children in the Carolina Abecedarian Project evinced long-term gains in IQ scores, reading, and math. Follow-up reports at age 21 showed that they were on average older at the time their first child was born and were more likely to have attended a four-year college than peers not in the program. By age 27, children in the Perry Preschool Project were less likely to have ever been arrested, had mean monthly earnings almost double those of control-group members—$1,219 versus $766—and were much less likely to be receiving public assistance—15 versus 32 percent. Children in the Chicago Child-Parent Centers study had significantly higher math and reading scores, and by age 20 were more likely to have completed high school and to have lower rates of juvenile criminal activity than children not in the program.

Child Care and Parental Employment

Clearly, higher-quality care is likely to be more expensive, and a parent facing that prospect may elect to forgo or limit employment (47,48). That is no longer an option for women in welfare-to-work programs.

Evidence on the relationship between child care quality and employment is limited, but it suggests that among low-income women, higher-quality child care may increase the likelihood and stability of employment and hours or work (49) and improve mothers' later educational achievement

(50,51). Mothers in an intervention program providing center-based care for low-birthweight infants, the Infant Health and Development Program, were significantly more likely to be working than women in the control group, and the effect was greater for less-educated than for better-educated women (52).

There is complementary evidence of the negative effects of poor quality care on labor force participation. Nearly a third of teenage mothers participating in one experiment, the Teenage Parent Demonstration, reported that unsatisfactory quality of child care led them to stop working or to change hours or activities (53).

WHAT IS THE QUALITY OF CARE IN THE UNITED STATES?

Is high-quality care the norm or the exception? Unfortunately, there are no nationally representative studies to help us answer this question, and we must rely upon suggestive data from multisite studies.

Process Quality

In the Cost, Quality, and Outcome Study (54), 398 centers in four states that varied in child care regulations were identified. Of the sites studied, 12 percent were rated "less than minimal" in quality and 15 percent "good." The remaining sites were rather evenly distributed between those two end points. This may represent a rather optimistic picture, for the sites that did not consent to the study seem likely to have offered lower-quality care. Only 52 percent of the sites consented to the observational studies.

Perhaps the best available estimate for children 3 years old or younger is provided by the NICHD Study of Early Child Care, which conducted observations of over 600 nonmaternal child care settings of all kinds (grandparents, in-home care, child care homes, and centers) in nine states (9). In this study care was most often judged to be only fair in quality; over all, only 11 percent of the settings were considered excellent. Poor-quality care was most likely in centers serving infants and toddlers (10 percent) than in centers serving older children (4 percent).

The NICHD investigators extrapolated their findings to the distribution of American families in the National Household Education Survey of 1995. Their estimate—8 percent of settings for children under 3 poor, 53 percent fair, 30 percent good, and 9 percent excellent in process quality—led them to conclude that care is neither outstanding nor terrible, but that plenty of room remains for improvement.

Structural and Caregiver Characteristics

Quality of child care in the United States can also be estimated by the degree of adherence to recommended guidelines in areas such as child:adult ratio and caregiver training. Very few states currently have child care regulations that meet the age-based guidelines established by such professional organizations as the American Academy of Pediatrics and the American Public Health Association (55). For example, only three states have standards as strict as the recommended 3:1 ratio for infants. Some states are at substantial odds with recommended standards. Eight states, for example, permit ratios of 6:1 for infants (see Table 10 of the report).

Nationally representative surveys also indicate that recommended standards for structural characteristics are often not met. The Profile of Child Care Settings (56) found that the average center and child care home had child:adult ratios that did not meet standards that are linked to positive developmental outcomes. In 1990, caregivers in centers, but not child care homes, did tend to be well-educated and trained. Nearly half had completed college, and 90 percent had received at least 10 hours of in-service training. Regulated home child care providers had less education and training: 34 percent had no schooling beyond high school and only about two-thirds had received any in-service training.

More recent data from the NICHD study suggests there has been some decline in the educational background and training of child care staff over the decade (Table 12 of the report). Just over half of infant and toddler caregivers had received specialized training during the preceding year and about two-thirds had more than a high school degree. The decline may well be related to the generally low wages in the child care field, which did not improve during the 1990s. Teachers averaged between $13,125 and

$18,988 for full-week, full-year employment, assistant teachers only $6–$7 an hour. It is not surprising that turnover has been high, with 20 percent of centers losing half or more of their staff in the course of a year (57).

IS THERE A CASE FOR PUBLIC INVESTMENT IN QUALITY CHILD CARE?

Economists define market failure as "a situation in which a market left on its own fails to allocate resources efficiently." In the child care sector, there are two primary reasons for market failure. The first is lack of information. In part because the market is made up of small providers, it is difficult for parents to acquire information about the comparative quality, cost, and availability of care, and they are unsure how to evaluate the information they do acquire. Considerations of convenience, time, and access mean that parents may limit their search to small geographic areas; these problems may be particularly acute for low-income families and for those who need care for odd-hours employment (58).

A second cause of market failure in the child care sector is what economists call "externalities" (effects beyond the primary consumers). The benefits of high-quality care accrue not just to the parent and the child but to society generally. They include lower costs for later schooling, as children enter school better prepared to achieve; future reductions in crime as juvenile delinquency diminishes; and increased productivity and lower need for social services as working parents face fewer child-related absences or terminations and remain more securely attached to the labor market. The family and social costs of poor-quality, unsafe, and unhealthy child care are equally apparent.

To these major causes of market failure, we may add a third—an "imperfect capital market." Parents of young children tend to have low incomes relative to their permanent incomes, and may face borrowing constraints that reduce their ability to pay for high-quality care.

When markets fail, public-sector intervention may improve the performance of that sector of the economy. Such intervention may also be justified by the goal of equality of opportunity. If high-quality

child care improves cognitive ability, school readiness, and social behavior, children in low-income families should be given the same opportunity to benefit as children in high-income families. To accomplish this, government subsidies or direct provision of care are necessary.

Research tells us that difficulty in obtaining high-quality care above all affects low-income families, especially those with intermittent work or nontraditional work hours. One-third of working-poor mothers (incomes below poverty) and more than a quarter of working-class mothers (incomes below $25,000) work weekends, and half of working-poor parents work on a rotating schedule, yet only 10 percent of centers and 6 percent of family day care homes provide weekend care. As a result, such parents are more likely to rely on a patchwork of providers, including flexible and often unstable arrangements with relatives, friends, and neighbors (59,60). Lack of stability is itself a measure of poor-quality care.

Thus market failure perpetuates itself. Because the demand for high-quality care is too low, compensation is too low, and the more highly trained seek employment in other spheres. As a result, quality declines, *unless intervention occurs*. We believe that the compelling social arguments that justify the role of government in providing or subsidizing schooling from the elementary grades through college are equally applicable to the first five years. Many of the benefits of child care are like those of primary schooling—child care is, at its best, early childhood education. Just as primary schooling prepares children for secondary schooling, so good child care readies children for primary schooling. The community at large benefits from the cognitive, linguistic, and behavioral competencies that are associated with higher-quality child care.

A variety of public-sector interventions may be used to improve child care. They include the provision of information, licensing requirements, placement activities, financial incentives, and training programs for child care workers, tuition subsidies and tax credits for parents, incentives for employer-provided care, and direct provision of care. At a minimum, the public sector should provide information on available child care slots, hours of operation, structural quality, costs, and staff training. It might also establish training programs and mandate certain minimum requirements to improve quality—for example,

reducing child:adult ratios and group sizes and establishing and enforcing safety regulations and certification requirements.

More ambitiously, the public sector might seek to increase the pool of well-qualified individuals who enter and remain in the field of early childhood education through the kinds of tuition subsidies and incentives traditionally used for training nurses, physicians, and teachers when shortages appear. It seems especially important to raise salaries for child care providers, given how low they are relative to other occupations. Government might play a role by providing increased information or tax credits to parents, by expanding subsidy programs, or by directly paying providers.

A universal, coordinated, high-quality child care system for preschool children of working parents might combine direct provision of services as part of local school district and community-based programs with vouchers that would be accepted by certified providers. Part of the costs could be offset by eliminating current tax credits and subsidies for 3- and 4-year-olds.

Incentive and subsidy programs of many kinds exist, but they are not sufficiently widespread. Although federal funds are available to improve the access of lower-income families to child care, in October 1999 only about 1.5 million of the 14.7 million low-income children estimated to be eligible for subsidies were receiving them. States have been slow in making these funds available or have set up programs that have low take-up rates. If states were to expand eligibility criteria to the federal maximum and establish better outreach programs, the demand for high-quality care would clearly increase. Given the opportunity, parents receiving federal subsidies most frequently chose center-based care (61,62). Nor do subsidies appear to result in a "two-track" system. A study of six community programs by the Urban Institute (60) suggests that subsidy programs enabled parents to access care that was as high in quality as that chosen by better-off, unsubsidized parents.

The Cost of Improving Child Care Quality

What level of investment is necessary to improve the quality of nonparental child care in the United States? This topic has received less attention than the relationship between quality of care and child outcomes. Several existing studies do, however, provide some useful information on the relationship between quality of care and cost, although they are limited in scope and somewhat out of date.

Two studies using data from a 1989 General Accounting Office survey of 265 accredited early childhood education centers that included measures of structural quality were able to estimate the costs associated with changing the child:adult ratio, the size of the group, and staff characteristics (average education, average experience, and turnover rate) (63,64). In each case they found statistically significant relationships. For example, decreasing the average child:adult ratio by one is associated with increased costs of roughly 4.5 percent. Thus if the average center, with 50 children and an average annual per-child cost of $6,500, were to reduce the child:staff ratio from 11:1 to 10:1, the annual cost per child would increase by about $306. A one-year increase in the average educational level of the staff is associated with a 3.4 percent increase in total costs, including a 5.8 percent increase in wages. A one-year increase in average staff experience is associated with a reduction in costs of 0.6 percent—including a 2.3 percent increase in the wage bill. Finally, the impact of high turnover rates is clear: the departure of an additional 20 percent of a center's teaching staff increases costs by 6.8 percent.

These data include only accredited centers in the Midwest and South, accepting children aged 4 and 5. Moreover, neither study included a short-term, readily available approach to improving the quality of child care: better training of caregivers, including in-service training. We must, therefore, be cautious in applying these findings elsewhere and should bear in mind that the relationship between improving quality and cost for centers that provide care for other age groups may vary. Future work that incorporates current and nationally representative data will be crucial in evaluating public policy strategies designed to improve the quality of child care. Researchers Richard Brandon of the University of Washington and Sharon Lynn Kagan of Yale University are now conducting research that will make it possible to estimate

the costs of improving child care using varied measures of quality; their results are expected by the end of 2000.

CONCLUSIONS

Child care quality matters, in terms of children's everyday experiences, of their cognitive and linguistic competencies and school readiness, and of their later school achievement and social interactions.

Studies of child care quality in the United States suggest room for improvement. Process quality on average is only "fair" or "minimal." For structural quality, the evidence indicates that average group sizes and child:adult ratios exceed recommended standards, and that the educational background of child care workers has declined over the last decade. Both aspects can be improved, through additional public-sector resources and the application of federal standards or higher state standards.

From an economist's perspective, the clear evidence of market failure in the child care sector indicates a need for public-sector intervention. The benefits of high-quality child care accrue not only to the family and the child, but also to other members of society, including all children in schools with children who attended child care; taxpayers who are likely to save in the costs of future schooling, especially through reductions in special education and grade retention; and potentially citizens who gain through reduced crime and public assistance costs. Subsidizing child care for low-income families is consistent with the goals of the 1996 welfare reforms and with an ideology that seeks to encourage and reward work. And in the interest of equality of opportunity, a strong argument can be made for extending the benefits of high-quality child care to children in low-income families.

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