

EFFECTS OF CHILD CARE ON CHILD DEVELOPMENT IN THE USA

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Published in 2006 in J.J. van Kuyk (Ed.), The Quality of Early Childhood Education (pp. 23-32). Arnheim, The Netherlands: Cito.

Preparation of this chapter was supported by a cooperative agreement with the U.S. National Institute of Child Health and Human Development (U10-HD25420). The author wishes to express his appreciation to all collaborating investigators of the NICHD Study of Early Child Care.

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Early interventions, virtually by definition, target select populations of children at very high risk for failing in school, leaving school early, developing behaviour problems, becoming a teenage parent, engaging in delinquency and/or becoming unemployed, underemployed or even unemployable (Shonkoff & Phillips, 2000). What is all-too-often forgotten in many discussions of the topic of this chapter, namely, routine, nonmaternal child care on children cognitive-linguistic and socioemotional development (in the USA), is that such services—and their developmental effects—are often distinctly different from those of early intervention programmes. Thus, whatever formal evaluations of early interventions reveal about what occurs developmentally when economically-disadvantaged children are provided with *very special experimental* programmes, often *established for research purposes*, should not automatically be equated with what transpires when far different populations of children experience community-based day care.

With this understanding in mind, I review in this chapter the results of the largest and most comprehensive study ever conducted in the USA of the effects of routine, nonmaternal child-care of the kind typically available in communities (i.e., not exclusively high-quality programmes established for research purposes). It is called the NICHD Study of Early Child Care (SECC). (NICHD stands for the U.S. government agency that funded the research project: The National Institute of Child Health and Human Development.) This collaborative research project involving more than 20 investigators, known as the NICHD Early Child Care Research Network (ECCRN), follows more than 1000 children from 10 communities in the USA from birth through the start of regular schooling (around the age of 5) and beyond. Its primary goal has been to highlight the conditions under which early child care

experiences enhance and/or undermine children's cognitive-linguistic and socioemotional development (NICHD ECCRN, 2005).

A Brief History of the NICHD Study of Early Child Care

Two “germinal seeds” led to the launching of the NICHD SECC, one having to do with the changing ecology of child development in America and another with a contentious scientific debate about the effects on children that this changing ecology might occasion.

The Changing Ecology of Child Development

One of the most noteworthy changes that took place in the USA in the last quarter of the 20st century involved maternal employment and especially the timing of mothers return to the workforce following childbirth. Whereas 34% of mothers with children under six years of age were in the workforce in 1975, by 1999 the corresponding figure was 61% (Shonkoff & Phillips, 2000). Moreover, whereas the maternal employment rate for women with children under a year of age was 27% in 1970, by 1985 it had risen to 46% (Kamerman, 2000) and by 1998-1999 to 58% (Bureau of Labor Statistics, 2000). Thus, because more and more children were experiencing more and more child care—of a variety of sorts—at younger and younger ages, with mothers returning to the labour force ever sooner after giving birth, long-standing questions about the effects of day care on young children became ever more pressing.

A Scientific Debate About the Effects of Very Early Child Care

This proved to be even more so the case as a result of papers I published in the late 1980s calling attention to what appeared to be “developmental risks” associated with beginning child care in the first years of life (see Belsky, 2001 for review), including insecure infant-parent attachment relations and elevated levels of aggression

and disobedience among children 3-8 years of age, especially when nonmaternal care was experienced on a full- or near-full-time basis which continued to entry into school. Important to note is that there was never any claim by me nor any other scientifically credible source that child-care experience was related to diagnosable conduct disorder or any other psychiatric disturbance, despite some writings implying this to be the case (e.g., Bacharach & Burmeister, 2003).

My empirically-derived observations about potentially adverse effects of early child care were widely criticised. Some claimed that I was ideologically opposed to maternal employment, conveniently ignoring a widely-cited 1978 review of the relevant literature concluding that there were virtually no grounds for claiming adverse effects of child care, as well as a 1984 paper highlighting the beneficial effects of high-quality child care (see Belsky, 2001). Others argued, not entirely unreasonably, that the data were rather limited (see Fox & Fein, 1990), something I myself acknowledged by describing my original risk-factor conclusion as “inferential,” based on “circumstantial” evidence, and noting that others “could, would and should read the very same data differently” (Belsky, 1986).

The NICHD Study of Early Child Care

It was in the context, then, of both dramatic change in maternal employment and scientific controversy about how early child care might affect children’s development that the NICHD SECC was born. Three important issues figured centrally in designing this massive research project, each of which is discussed before outlining the general design of this unique collaborative enterprise.

Assessing Parent-Child Relations.

One criticism wielded again my risk-factor conclusion was that the standard research methodology for measuring the parent-child relationship in studies of day

care was problematic. Clarke-Stewart (1989) contended that some studies linking infant day care with insecure attachment may have inadvertently confused insecurity, especially of the avoidant variety, with independence, by using the Strange Situation (Ainsworth & Wittig, 1969). Because day-care children routinely experience separation from a parent, children who keep a distance from mother in the Strange Situation may do so not because they are insecure-avoidant but because they are less stressed in the Strange Situation and more independent than other children. In consequence, the NICHD SECC was designed to determine whether children with varying day care experience were differentially stressed by the Strange Situation, finding this not to be the case (NICHD ECCRN, 2005) and, as will be reported below, whether they were differentially likely to be classified as insecure. Because of the concerns raised about the Strange Situation, the NICHD SECC also included alternative methodologies to measure parent-child relations, ones that simply allowed mothers to interact with their children outside the context of stressful separations.

Nonrandom Assignment to Child Care

Another problem with studies on which I based my inferential conclusion about risks associated with early and extensive nonmaternal care (as routinely experienced in the USA) was that they often failed to (statistically) account for the fact that families using early child care probably differed in many ways from those which did not, with the same being true of families which used child care for varying amounts of time or which began using child care earlier and later in the child's life. This raised the not ignorable possibility that putatively adverse effects of child care could be an artefact of these pre-existing background differences between families. Therefore, when it came to designing the NICHD SECC, extensive controls for child and family background factors figured importantly, including family socioeconomic

status, maternal psychological well being, and even the quality of parenting provided by the mother.

The Centrality of Child-Care Quality

The final and probably most significant limitation of so much of the child-care evidence that preceded the launching of the NICHD SECC was that many studies did not take into account the quality of child care. Many claimed that the only reason lots of time spent in nonmaternal child care beginning in the first year even appeared to be associated with increased rates of insecure attachment and/or higher levels of aggression and disobedience was because the children in the relevant studies experienced low quality child care which went unmeasured (see Fox & Fein, 1990). Thus, immense effort was put into measuring quality of care when it came to designing the NICHD SECC, including the development of a brand new observational assessment device. Just as significantly, measurements of the time spent in child care and the age at which child care began were made, and information on type of care was collected, all to insure that distinctive effects of quality, quantity and type of care could be evaluated.

Research Design Overview

The NICHD SECC began following some 1364 children and their families from the time the child was one month of age and children are being followed into their adolescence. Only data collected through age 8 (i.e., third grade) are discussed in this chapter. More than 1,000 children have been followed through school entry, though a study sample that did not have large numbers of truly poor and/or minority children has even fewer as time goes on. But this does not mean that the NICHD SECC is an investigation of middle-class families only. That would be as inaccurate as claiming it to be nationally representative. It remains diverse, with a sizeable

number of near poor, single parent, and minority families, but very few very poor families (of the kind enrolled in “early intervention” programmes).

The overall study design involved the *repeated* measurement of (a) the quality of the child’s family rearing environment, (b) the quality of whatever nonmaternal care was provided to the child, and (c) the child’s cognitive-linguistic and socioemotional development. Multiple measurements of (a) and (b) were obtained when children were 6, 15, 24, 36 and 54 months of age, with child assessments made, typically during laboratory visits, when children’s development was evaluated repeatedly over time. More specifically, children’s cognitive-linguistic development and academic achievement were assessed using age-appropriate and well-standardised assessments administered at ages 15, 24, 36, and 54 months and at the end of 1st and 3rd grade. Mothers, caregivers and teachers reported on children’s social competence and behaviour problems using well-standardized questionnaires at these same measurement occasions (and during kindergarten).

When it came to measuring the quality of the child’s family rearing environment, basic demographic information on the family was obtained (e.g., family composition, marital status), as was that on socioeconomic status (e.g., income, benefits), family functioning (e.g., marital quality, stress), maternal well being (e.g., depression), and the quality of mothering (e.g., cognitive stimulation, warmth, discipline), the latter using observational and self-report methodologies. When it came to measuring the quality of child care, children were observed in whatever was their primary child care setting at each of the above-listed ages on two separate occasions for four hours on each occasion. An overall index of quality of child care was generated at each age reflecting the extent to which the child was attended to, warmly and sensitively interacted with, and stimulated cognitively. Other information

on the total amount of time children spent in child care and on the type of child care arrangement(s) the child experienced was obtained from phone calls with mother over the course of the study.

Major Findings

For purposes of reporting, findings pertaining to the developmental effects of child-care experience are presented in terms of distinctive dimensions of child care. This strategy highlights one of the unique strengths of the NICHD SECC, the quest to move beyond the simple question of whether child care is beneficial or detrimental to children's well being, broadly conceived, and illuminate the diverse child-care conditions that may enhance and/or undermine children's functioning. The summarized findings on the effects of child care reflect statistically significant associations that emerged after controlling for an extensive set of family background factors (see above), as well as each of the other parameters of child care under consideration. Unless otherwise indicated, all findings to be reported can be found in a recently published compilation volume of the published scientific papers of the NICHD ECCRN (2005).

Child-Care Quality

It is somewhat surprising that the foremost criticism of my original risk-factor conclusion focused upon child-care quality, because it was never claimed that quality of care was unimportant, only that it could not fully explain some of the seemingly adverse consequences of lots of time spent in routine, nonmaternal care, beginning in the first year of life, that emerged repeatedly in the literature. Nevertheless, turning to study findings pertaining to quality of care, consider first findings related to the parent-child relationship: Infants were more likely to develop insecure attachment to their mothers when low quality child care *coincided* with low levels of maternal

sensitivity, with the latter being the primary predictor of insecure attachment; this “dual-risk” result linking the combination of low quality care and low levels of maternal sensitivity in the prediction of insecure attachment did not replicate, however, when children were re-evaluated in the Strange Situation at 36 months of age.

Recall that in response to concerns about the validity of the Strange Situation (which were found, empirically, to lack merit in the NICHD SECC), mother-child relations were also measured by videotaping and coding mother-child interaction patterns. Using these data, it was found that higher quality of care predicted more harmonious patterns of interaction across the first three years of the child’s life, but that beyond this period (i.e., 54 months to first grade) this only proved to be the case when children experienced limited amounts of child care across their first 4.5 years of life. Thus, while there was some evidence that higher quality of care was related to enhanced mother-child relations, the evidence was not particularly strong and, for the most part, the effects detected did not seem to endure.

The story of quality-of-care effects was entirely different and just as anticipated on the basis of more than 25 years of research in the case of children’s cognitive-linguistic functioning, almost irrespective of when the latter was assessed. The more attentive, responsive, and stimulating was the care provided to the child, the better the child’s cognitive-linguistic performance at 15, 24, and 36 months of age; and the same was true with respect to children’s tested math and reading achievement and memory (for sentences) from 54 months of age through third grade (NICHD ECCRN, in press a). Evidence also emerged, consistent with theoretical expectations, that distal or structural markers of child-care quality—specifically, caregiver-child

ratio and caregiver training—exerted their (indirect) influence on children’s development by affecting more proximate processes of caregiver-child interaction.

When it came to predicting mother- and caregiver-reported problem behaviour and social competence at ages 24 and 36 months, there was clear and consistent evidence of the benefits of better quality child care, too, but the positive effects of higher quality care for social development declined over time before disappearing entirely. More specifically, only very weak evidence of beneficial effects of high quality care on social development emerged when the quality of child care experienced through the first 4.5 years of life was used to predict socioemotional adjustment at 54 months of age and in the first year of school (i.e., kindergarten); and by the time children were in first and third grade, no detectable effect of child-care quality on social functioning was evident (NICHD ECCRN, in press a). These latter null findings were somewhat surprising in light of expectations that high quality care would exert broad-based beneficial effects on children’s development. Moreover, they contradict the aforementioned claims that the reason lots of time in care beginning at a very early age proved to be associated in prior work with aggressive and disobedient behaviour among 3-8 year olds was because children were manifesting adverse effects of (unmeasured) low quality care.

Several other empirical surprises emerged from the NICHD SECC with respect to quality-of-child-care effects. First, effect sizes in the case of child care quality, as with virtually *all* child-care effects summarized herein, were rather modest, if not small in magnitude (NICHD ECCRN, in press b). Second, there was virtually no evidence that the benefits of good quality child care, or the detrimental effects of poor quality child care, were greater for children growing up in the most risky contextual circumstance (i.e., poor, depressed mother) (NICHD ECCRN, in press a,

b). It should not be forgotten, however, that the sample did not include a large number of extremely poor families of the kind typically enrolled in early intervention studies; moreover, observers were disproportionately denied access to the poorest quality child-care settings.

A third surprising finding—or better yet, nonfinding—concerns dose-response effects of quality of care. Specifically, it proved not to be the case that more time spent in high quality care carried greater developmental benefit than less time spent in high quality care (or vice versa). Why this should be remains completely unclear, though it suggests that limited doses of good quality care may carry the same developmental benefits of far larger doses.

Quantity of Child Care

In the same way that some children experience higher and others lower quality of care, some children experience much more time in child care than do others, often resulting from the fact that they are enrolled at an earlier age for more hours per day and/or more days per week. Consistent with my original risk-factor conclusion, evidence from the NICHD SECC revealed amount of time spent in child care to be systematically related to indices of the parent-child relationship and socioemotional adjustment and that such effects were not an artefact of low quality care.

Turning first to the assessment of the mother-child relationship, the NICHD SECC found that *in interaction with* other sources of risk—specifically low levels of maternal sensitivity—that time spent in care was related to attachment insecurity: When mothers evinced low levels of sensitivity in interacting with their infants (at 6 and 15 months) *and* averaged more than (just) 10 hours per week of care during the period 3-15 months (i.e., dual-risk), infants were more likely to develop insecure

attachments to their mothers than would otherwise have been expected, a finding that re-emerged when the Strange Situation was readministered at 36 months of age.

When the focus of investigation turned to observed patterns of mother-child interaction, more time in care across the period 6-36 months predicted less harmonious behaviour, with the same being true when dyads were followed up at age 54 months and in first grade (even if to a lesser extent), but only in the case of Caucasian children. Intriguingly, in the case of African- and Hispanic-American children, the latter findings were reversed, with more time in care predicting more harmonious patterns of mother-child interaction at 54 months and in first grade.

Turning to consider social development and especially problem behaviour, more time spent in nonmaternal care predicted (somewhat) elevated levels of externalizing problem behaviour as reported by caregivers at 24 months and 54 months and by mothers and teachers at kindergarten age. And it proved not to be the case, as Clarke-Stewart (1989) had proposed, that such a finding reflected assertive independence (e.g., talks too much, argues a lot) rather than aggression (e.g., gets into many fights, cruelty-bullying-meanness) and disobedience (e.g., defiant-talks back to staff, disrupts school discipline). Just as important as the detected relation between quantity of child care and problem behaviour was the fact that across all raters, more time in care predicted high externalising scores at 54 months and in kindergarten, that is, scores one or more standard deviations above the mean.

When children were studied again in third grade, however, the association between lots of time spent in child care (irrespective of quality) and more externalizing problem behavior was no longer evident. But it was not the case at this later age that a legacy of early and extensive child-care experience was no longer apparent. Now the findings were that more time in child care in the first 4.5 years of

age predicted, at age 8, (somewhat) lower levels of social competence and poorer academic work habits. There was even suggestive evidence that the previously-detected adverse effect of time in care on externalizing problems had disappeared because children with more limited child-care histories had come to behave more like those with more extensive histories, suggesting some kind of process of contagion or social learning (NICHD ECCRN, in press a).

One of the enduring “mysteries” of the findings highlighting adverse effects of lots of time spent in child care concerns that actual influence process. This is because it did not turn out to be the case, as hypothesized, that the effect of lots of time in care could be explained by less sensitive parenting, attachment security, poor quality of care or even by multiple changes in care arrangements. Thus, even though many investigations have now found that cumulative time spent in nonmaternal child care, seeming to reflect early, extensive, and continuous day-care experience, is predictive of indicators of poor adjustment (for review, see Belsky, 2001), the reason why this is the case remains empirically uncertain.

Type of Care

One of the challenges the NICHD SECC faced in assessing the effects of early child care was that, in the USA, children often change child-care arrangements. As result, the study operationalized type of care in terms of the proportion of measurement occasions (i.e., 3-5 month periods between regular phone contacts with mother) that a child’s primary child-care arrangement was a center, a child-care home (defined as care provided by a non-relative in a home other than the study child’s home, with at least one other child present), and a home-based arrangement provided by a relative (father, grandparent, or other adult relative) in the child’s or someone else’s home.

When children were in child-care homes on more occasions through two years of age, they scored higher on the Bayley Scales of Development at 24 months; and when they were in such arrangements on more occasions through 36 months, they evinced greater verbal comprehension. Thereafter, however, significant effects of exposure to child-care homes were no longer evident (NICHD ECCRN, 2004).

Center experience, in contrast, had far reaching developmental consequences. Evidence of the benefits of exposure to center-based care emerged as early as 15 months of age, with more such experience predicting greater (mother-reported) language development, and remained evident just prior to school entry and thereafter: More exposure to center-based care forecasted (somewhat) enhanced cognitive-linguistic functioning at 24, 36, and 54 months of age (NICHD ECCRN, 2004) and memory functioning in third grade (but not math and reading achievement) (NICHD ECCRN, in press a).

The effects of center-based experience did not seem entirely beneficial or even benign, however. The more ages of measurement that children were in centers, the more externalizing problems and conflict with adults they manifest in child care at 54 months and in kindergarten according to caregivers and teachers, respectively (NICHD ECCRN, 2004). More time in centers also predicted more conflict with teachers in first (but not third) grade and higher levels of teacher-rated externalizing problems in first and third grade (NICHD ECCRN, in press a). In other words, the more time children spent in centers from 3-54 months of age, net of effects of other child-care and family-background factors, the more cognitively and linguistically advanced they were *and* the more they manifest aggressive and disobedient behaviour.

Conclusion

In a recent report, the NICHD ECCRN (2002, p. 1621) concluded that early child care across the period from birth to 4.5 years is “associated with both developmental risks and developmental benefits for children’s functioning prior to school entry, even after controlling for a host of factors including gender, ethnicity, family socioeconomic status, maternal psychological adjustment, and parenting quality.” As summarised in this chapter, the risks are (a) that more hours in (any kind of) child care across the first 4 ½ years of life are related to more problem behaviour from 54 months through first grade and less social competence and poorer academic work habits in third grade; and, independently, (b) that more time in child-care centers is related to higher the levels of problem behaviour from 54 months through third grade. The benefit is that higher quality child care and more experience in centers predicts better cognitive, linguistic and academic-achievement functioning across the same lengthy developmental period. Critically, these effects of child care obtain when other aspects of child care are themselves taken into account (i.e., statistically controlled). Clearly, it is simplistic to speak in terms of child-care effects in general, as different features of child care appear to differentially impact different aspects of development.

It is difficult not to be intrigued by the fact that a large scale study of more than 3,000 children in England, known as the EPPE Study (Effective Provision of Preschool Education), has yielded remarkably similar results to those reported in this chapter (Sammons et al., 2003). This seems especially noteworthy given the contrasts between the two investigations, one that picked up children at birth and followed them over time in whatever child-care arrangement they were placed (i.e., NICHD SECC) and another that recruited them at age three from a variety of distinctively different

child-care arrangements (EPPE). Detailed child-care histories were obtained and careful observational assessments of child care quality were conducted repeatedly over time in EPPE. As in the NICHD SECC, higher quality child care predicted enhanced cognitive-linguistic functioning. In addition, moderate to high levels of center-based care and very high levels of care by childminders (but not by relatives) in the first two years were associated with increased anti-social behaviour (at age 3 and the start of school). Similar results also emerged in a parallel study of over 800 children in Northern Ireland (Melhuish and associates, 2002). As in the case of the NICHD SECC, these British findings emerged after stringent statistical control for a wide range of child, family and demographic factors. This should not be read to mean that the same findings would emerge were large-scale studies conducted in other Western nations. Nevertheless, the similarity of results across major studies does suggest that it would be a mistake to conclude that the NICHD-SECC findings are narrowly restricted to the American scene.

The fact that all the child-care effects discussed in this report proved to be small to modest in magnitude should not be read to suggest that child-care does not matter to children's psychological and behavioral development. Even though there remains healthy debate about the size and meaningfulness of virtually all child-care effects, it must be remembered that more and more children seem to be spending more and more time at younger and younger ages in nonmaternal care arrangements in the English-speaking, if not Western, world. This means that even small effects, when experienced by many children, may have broad-scale consequences.

Ironically, this state of affairs leads to virtually the very same policy-related conclusions which I drew more than 15 years ago on the basis of much less evidence, after first choosing not to draw any in order to keep separate scientific analysis and

policy inference (see Belsky, 2001). First, it seems that the data considered should encourage the expansion of parental leave, preferably paid, ideally as lengthy as it is in some Scandinavian countries, or other strategies to give parents freedom to rely less than they might otherwise, should they choose to, on non-maternal care across the infant, toddler, and preschool years (e.g., part-time employment). Relatedly, tax policies should support families rearing infants and young children in ways that afford parents the freedom to make child-rearing arrangements that they deem best for their child, thereby reducing the economic coercion that necessitates many, at least in the USA and in the UK, to leave the care of their children to others when they would rather not. Finally, given the clear benefits of high-quality child care, its expansion seems called for as well. Of significance is that all of these conclusions could be justified on humanitarian grounds alone.

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