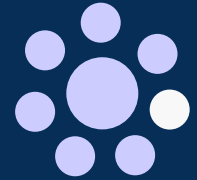


Age of Entry into Child Care

Scorecard



Characteristics of the Reports

Assessments of development were obtained for *more than 14,000* children to determine relationships of age of entry into centre care.

Country of Origin	
	# of Reports
Canada	1
Bermuda	1
Sweden	4
UK	0
USA	11

Research Designs	
Retrospective	Prospective
6	11
No Follow-up	Follow-up
9	8
Observational	Experimental
17	0

Summary of Results

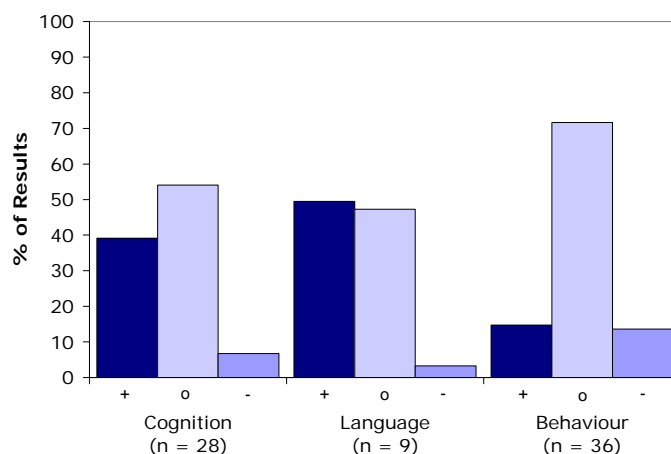
17 Reports			
Associated with Better Development	Cognition	Language	Behaviour
Earlier entry into centre care	5	4	3
Later entry into centre care	2	0	2
Mixed results	0	1	5
No relationship	7	0	3

The 17 reports contained 73 tests of children's development. Each result in each report was given a value of 1 and a sign (+, 0, or -) based on whether the result was statistically significant.

If a test contained subtests (subscales), the result of each subscale was assigned a fractional value. Fractional values could be positive, zero, or negative within the same test. For that reason, percentages of results were not always whole numbers.

A positive sign means that earlier age of entry into non-parental care was related to higher scores on tests of children's development. A negative sign means that later time of entry in centre care was related to higher scores on the test. Zero means that age of entry into care was unrelated to the test results.

Other Considerations



Relationships of Entry into Child Care to Children's Development

Good research methods remove (through selection or statistical control) characteristics of children and families that might masquerade as outcomes of the child care factor in question. For example, if families of children who spent more time in child care were financially poorer than those of children who spent less time in care, any differences in their development said to be due to time in care could be challenged as differences due to the impact of poverty. Removing confounding variables adds credibility to conclusions.

In the 17 reports, researchers controlled for the following variables.

Variables Most Frequently Removed from Outcomes			
Variable	# of Reports	Variable	# of Reports
Child's gender	11	Number of child care arrangements	4
Family structure (parents, guardians)	8	Time spent in care	4
Ethnicity	5	Family income	3
Maternal education	5	Home Environment	3
Socio-economic status	5	Number of siblings	3
Other Variables Removed			
<p>Child: Amount of infancy day care, Birth order, Child IQ, Child outcomes at first testing, Child social skills at school entry, Preschool experiences, Preschool risk status, Prior cognitive performance, Psychological adjustment.</p> <p>Child Care/School: Adult-child ratio, Age span in class, Current after-school care, Instructional style, Quality of care, School enrolment status, Social support system, Stability of care, Teacher education, Type of care.</p>			

**Citations,
Summaries, and
Abstracts**

Other Variables Removed (cont'd)

Family: Family size, Family stress, Husband supportiveness, Marital conflict, Maternal behaviour, Maternal employment status, Maternal IQ, Maternal satisfaction, Number of family moves, Occupational prestige of the head of household, Parental education, Parental involvement, Parental occupation, Parental practices, Parental stress level, Parental values, Paternal occupation, Rating of benefits/risks of work, Work-family interference.

Andersson, B. (1989). Effects of public day-care: A longitudinal study. *Child Development*, 60, 857-866. [Full Text](#)

119 Swedish children were followed from their first year of life up to the age of 8. Most could be classified according to (a) type of day-care they had experienced during their first 7 years of life and (b) time of first entrance into day-care. At 8 years, the children were tested with aptitude tests and rated by their teachers on school

Country	Sweden
Sample Size	119
Age	School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry Type of Care

performance and social and personal development. Hierarchical regression analyses and MANCOVAs were used in the statistical treatment. Time of entrance into day-care predicted children's cognitive and socioemotional development, controlling for sex and home background. Children with early day-care (entrance before the age of 1) were generally rated more favorably and performed better than children with late entrance or home care. There was a tendency for early center care to predict a more favorable outcome than other care. (Author's Abstract)

Andersson, B. (1992). Effects of day-care on cognitive and socioemotional competence of thirteen-year-old Swedish school children. *Child Development*, 63, 20-36. [Full Text](#)

This is a follow-up study of an earlier one in which positive effects of early day-care experience were found on children's cognitive and socioemotional competence at age 8. 128 children were followed from their first year of life. At 8 and 13 years of age, 92% and 89% of the children, respectively, remained in the study. Most children could be classified according to age at first entry into day-care. Cognitive and socioemotional competence was rated by the children's classroom teachers. Hierarchical regression and path analyses were used in the statistical treatment of the data. It was possible to trace independent positive effects of age of entry into day-care as far as age 13. Children entering center care or family day-care before age 1 generally performed better in school when 8 and 13 years old and

Country	Sweden
Sample Size	128
Age	School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry

received more positive ratings from their teachers on several socioemotional variables. The path analyses indicated the following causal model: family characteristics, such as type of family, family's socioemotional status, and mother's educational level, influence the time of first entry into day-care. This variable, in turn, has consequences for children's competence at 8 and/or 13 years of age even after controlling for home background, child gender, and intelligence, which, of course, have their own effects. The effect of socioeconomic status was often mediated through age of entry into day-care. (Author's Abstract)

Bates, J. E., Marvinney, D., Kelly, T., Dodge, K. A., Bennett, D. S., & Pettit, G. S. (1994). Child-care history and kindergarten adjustment. *Developmental Psychology, 30*, 690-700. [Full Text](#)

Parents gave histories of 589 children just before kindergarten. Children were later assessed with teacher, peer, and observer measures of social adjustment in school. Children with higher day-care amounts in each of 3 eras (0-1, 1-4, and 4-5 years) scored higher on the composite negative adjustment and lower on positive adjustment (however, they also scored lower on teacher-rated internalizing problems). Day care predicted even after statistical control for measures representing alternative explanations, such as family stress and socioeconomic status, accounting for 2.7% of variance in negative adjustment and 2.9% of positive adjustment. Interactions between day care and other variables did not add to predictions of the molar adjustment composites. Extensive infancy care did not in itself predict adjustment, according to planned contrasts that controlled for total amount of day care received across the 3 eras of the child's life. (Authors' Abstract)

Country	USA
Sample Size	589
Age	School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry Time Spent

Broberg, A. G., Wessels, H., Lamb, M. E., & Hwang, C. P. (1997). Effects of day care on the development of cognitive abilities in 8-year olds: A longitudinal study. *Developmental Psychology, 33*, 62-69. [Full Text](#)

In Göteborg, Sweden, 146 children (72 girls) were enrolled in a longitudinal study when they averaged 16 months of age. None of the children had experienced regular out-of-home care yet, but within 3 months, 54 entered center care and 33 entered family day care. Quality of home and out-of-home care environments, child temperament, and the development of verbal abilities were assessed regularly during preschool years. When they were 8 years old (2nd grade), cognitive ability tests were administered to the 123 children (65 girls) still in the study. Tested ability was related to the

Country	Sweden
Sample Size	146
Age	Preschool & School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Adult-Child Ratio Age of Entry Quality

number of months children had spent in center-based day care before 3.5 years of age. Child care quality predicted cognitive abilities among children who had spent at least 36 months in out-of-home care during their preschool years. Both tested and rated cognitive abilities in 2nd grade were related to earlier measures of verbal ability and to paternal involvement during preschool years. (Authors' Abstract)

Burchinal, M. R., Ramey, S. L., Reid, M. K., & Jaccard, J. (1995). Early child care experiences and their association with family and child characteristics during middle childhood. *Early Childhood Research Quarterly, 10*, 33-61. [Full Text](#)

Long-term correlates of early child care and maternal employment were examined in a representative sample of 333 6- to 12-year-old middle-class children. Intellectual, social, and behavioral development and parent-child relationships were related to nonparental infant care, center or preschool experiences, and maternal employment. Contextual analyses included child,

Country	USA
Sample Size	333
Age	School Age
Database	Washington Family Behavior Survey
Design	Retrospective No Follow-up Observational
Factors	Age of Entry Time Spent

parent, and family covariates related to choice of child care and children's development. Preschool and center day care was associated with slightly higher Wechsler Intelligence Scale for Children-Revised (WISC-R) Vocabulary scores and externalizing *t* scores on the Child Behavior Checklist. In addition, for African American children, center preschool experience was associated with 10-point-higher verbal intelligence scores and better ratings of positive behavioral attributes by parent and observers. Nonparental care during infancy and maternal employment patterns during the preschool years were not consistently related to the outcomes. The results of this study further support the growing consensus that the effects of early child care experiences must be considered in the context of parent, family, and child characteristics. (Authors' Abstract)

Burchinal, M. R., Roberts, J. E., Nabors, L. A., & Bryant, D. M. (1996). Quality of center child care and infant cognitive and language development. *Child Development, 67*, 606-620. [Full Text](#)

The relations between quality of center-based child care and infant cognitive and language development were examined in a sample of 79 African-American 12-month-old infants. Both structural and process measures of quality of child care were collected through interviews with the center director and observation of the infant classroom. Results indicated that quality of infant care positively correlated with scores on standardized assessments of cognitive development (Bayley Scales of Infant Development), language development (Sequenced Inventory of Communication Development), and

Country	USA
Sample Size	79
Age	Infant
Database	---
Design	Prospective No Follow-up Observational
Factors	Adult-Child Ratio Age of Entry Quality Teacher Education

communication skills (Communication and Symbolic Behavior Scales). In addition, quality of care in child care centers and at home was positively related. Analyses that adjusted for this association between quality of care at home and in child care suggested that the process measure of quality of child care independently related to the infant's cognitive development, and one structural measure, the infant-adult ratio, independently related to the infant's overall communication skills. Neither child nor family factors was found to moderate the association between child care quality and infant development. These findings, in conjunction with the growing child care literature, suggest that researchers and policymakers should focus on how quality of child care can be improved to enhance, not impair, infant development. (Authors' Abstract)

Caughy, M., DiPietro, J. A., & Strobino, D. M. (1994). Day-care participation as a protective factor in the cognitive development of low-income children. *Child Development*, 65, 457-471. [Full Text](#)

The impact of day-care participation during the first 3 years of life on the cognitive functioning of school age children was examined. 867 5- and 6-year-old children from the National Longitudinal Survey of Youth who completed the 1986 assessment were included in the sample. The dependent measures were scores on the Peabody Individual Achievement Test (PIAT) subtests

Country	USA
Sample Size	867
Age	Preschool & School Age
Database	NLSY
Design	Prospective Follow-up Observational
Factors	Age of Entry Time Spent Type of Care

of mathematics and reading recognition. In addition to day-care participation, the impact of the pattern of day-care was examined by analyzing the effect of the number of years in day-care, the timing of initiation of day-care, and type of day-care arrangement. After controlling for confounding factors, there were significant interactions between all 3 measures of day-care patterning and family income for reading recognition performance. This association was further examined by exploring the interaction between the pattern of day-care participation and the quality of the home environment. Initiation of day-care attendance before the first birthday was associated with higher reading recognition scores for children from impoverished home environments and with lower scores for children from more optimal environments. In addition, a significant interaction between the type of day-care arrangement and the quality of the home environment emerged for mathematics performance. Center-based care in particular was associated with higher mathematics scores for impoverished children and with lower mathematics scores for children from more stimulating home environments. These findings are discussed in the context of developmental risk. (Authors' Abstract)

Chin-Quee, D. S., & Scarr, S. (1994). Lack of early child care effects on school-age children's social competence and academic achievement. *Early Development and Parenting, 3*, 103-112.

[Full Text](#)

Teacher ratings of social competence and academic achievement were obtained from a sample of 127 Bermudian children at ages 5, 6, 7 and 8 years. The children were studied first during their pre-school years, when they had been exposed to various amounts and qualities of day care. Quality of care was found to be important to the children's intellectual and social development while they were in the day care settings but not after 1-4 years of primary schooling. In hierarchical and simultaneous regressions, family background characteristics, not child care amounts or qualities, were found to be predictive of social competence and academic achievement in the primary grades. By school age, the effects of infant and preschool child care experiences were no longer influential in children's development, but family background continued to be important. These findings and their implications for child care are discussed. (Authors' Abstract)

Country	Bermuda
Sample Size	127
Age	School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry Quality Time Spent

Gullo, D. F., & Burton, C. B. (1992). Age of entry, preschool experience, and sex as antecedents of academic readiness in kindergarten. *Early Childhood Research Quarterly, 7*, 175-186.

[Full Text](#)

Readiness, or preparing young children for the formal curriculum, is garnering much attention and controversy in the field of early childhood education. Many factors have been examined in efforts to determine what affects academic readiness. The purpose of this study was to examine the effects of children's age of entry, number of years of preschool, and sex on academic readiness at the end of kindergarten. A total of 4, 539 children participated in the study. Of these, 104 children started public school at age 3 (K3), 1, 234 started school at age 4 (K4), and 3, 201 started at age 5 (K5). At-risk status was determined using the Cooperative Preschool Inventory (Caldwell, 1974), and first-grade readiness was determined using the Metropolitan Readiness Test (MRT; Nurss & McGauvran, 1974). Controlling for risk status, regression analysis revealed that age of entry and number of years of preschool accounted for a significant amount of the variance, while sex did not. Analyses of covariance indicated that children who entered the public school preschool program at K3 or K4 scored significantly higher on the MRT than children who entered at K5. The findings also indicated that if children were the youngest in their class they did not score as high as their older counterparts in the K4 and K5

Country	USA
Sample Size	4539
Age	School Age
Database	---
Design	Retrospective No Follow-up Observational
Factors	Age of Entry Time Spent

cohorts. However, no difference was found on achievement scores between the oldest and the youngest for the K3 cohort. (Authors' Abstract)

Hausfather, A., Toharia, A., LaRoche, C., & Engelsmann, F. (1997). Effects of age of entry, day-care quality, and family characteristics on preschool behavior. *Journal of Child Psychology and Psychiatry*, 38, 441-448. [Full Text](#)

Teachers evaluated 155 4-5-year-old children attending Montreal day-care centers of excellent (N = 51), average (N = 60), or low (N = 44) quality using behavioral scales. Age of entry to day-care was also considered. Center quality was assessed by two observers using the Early Childhood Environment Rating Scale. Results point to the positive effects of longer exposure to high-quality group day-care (increased interest-participation), and the negative effects of longer exposure to low-quality centers (increased anger-defiance). Positive or negative family characteristics contributed further to these effects. (Authors' Abstract)

Country	Canada
Sample Size	155
Age	Preschool
Database	---
Design	Prospective No Follow-up Observational
Factors	Age of Entry Quality

Howes, C. (1988). Relations between early child care and schooling. *Developmental Psychology*, 24, 53-57. [Full Text](#)

The purpose of this article is to examine relations between aspects of early child care (age entered, full- or part-time structure, and number of child-care arrangements and their quality) and school adjustment. The early child-care experiences of 87 children who entered a laboratory elementary school at 3 years, 9 months of age were documented, and their first-grade adjustment was assessed 3 years after school entrance. Although single-parent families and families in which the mother was employed used more child care and enrolled their children at earlier ages, maternal education was more closely associated with children's school adjustment than was maternal employment or marital status. After family characteristics were accounted for, academic progress, school skills, and few behavioral problems were predicted by high-quality, stable child care. The structure of the early child care (full- or part-time) was not associated with school adjustment. (Author's Abstract)

Country	USA
Sample Size	87
Age	School Age
Database	---
Design	Prospective No Follow-up Observational
Factors	Age of Entry Quality Stability

Howes, C. (1990). Can the age of entry into child care and the quality of child care predict adjustment in kindergarten? *Developmental Psychology, 26*, 292-303. [Full Text](#)

Influences of age of child-care entry, quality of care, and family characteristics on social adjustment were contrasted in a longitudinal study of 80 children. Children at the toddler, preschool, and kindergarten periods and adult socialization in toddler period were assessed. Early-entry children in low quality care had the most difficulty with peers in preschool and were distractible, low in task orientation, and less considerate of others in kindergarten. In 29 families observed prior to child-care entry, parents who would subsequently enrol children in low vs. high quality care had more complex lives and used less appropriate socialization practices. Family socialization best predicted outcomes in children enrolled after infancy, and teacher socialization best predicted outcomes in children enrolled prior to 12 months. (Author's Abstract)

Country	USA
Sample Size	80
Age	Infant, Preschool, & School Age
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry Quality

McCartney, K., Scarr, S., Rocheleau, A., Phillips, D., Abbott-Shim, M., Eisenberg, M., et al. (1997). Teacher-child interaction and child-care auspices as predictors of social outcomes in infants, toddlers, and preschoolers. *Merrill-Palmer Quarterly, 43*, 426-450. [Full Text](#)

Infants, toddlers, and preschoolers (N = 718), who were enrolled in 120 child-care centers from Massachusetts, Virginia, and Georgia, were assessed for social outcomes. Four auspices of child-care centers were sample: nonprofit, local for-profit, national chains for-profit, and church-sponsored. There were few associations between teacher-child interaction and children's social outcomes, with the exception that teacher-child interaction was associated with social bids by toddlers and preschoolers in the centers. Higher work-family interference was associated with poorer social outcomes generally. Children in nonprofit centers had better social outcomes on some measures, although effects were small. Policy and research implications are discussed. (Authors' Abstract)

Country	USA
Sample Size	718
Age	Preschool
Database	---
Design	Retrospective No Follow-up Observational
Factors	Age of Entry Quality Stability Time Spent

NICHD Early Child Care Research Network (1998). Early child care and self-control, compliance, and problem behavior at twenty-four and thirty-six months. *Child Development*, 69, 1145-1170. [Full Text](#)

To evaluate child-care effects on young children's self-control, compliance, and problem behavior, children enrolled in the NICHD Study of Early Child Care were tested and observed in the laboratory and in child care at 24 and 36 months, and mothers and caregivers completed questionnaires. Indicators of child-care quantity, quality, stability, type, and age of entry, along with measures of family background, mothering, and child characteristics obtained through the first 3 years of life were used to predict 2 and 3 year child functioning. Results revealed (1) mothering to be a stronger and more consistent predictor of child outcomes than child care; (2) little evidence that early, extensive, and continuous care was related to problematic child behavior, in contrast to results from earlier work; (3) that among the child-care predictors, child-care quality was the most consistent predictor of child functioning, although limited variance could be explained by any (or all) child-care variables; and (4) that virtually none of the anticipated interactions among child-care factors or between them and family or child measures proved significant. (Author's Abstract)

Country	USA
Sample Size	1085
Age	Preschool
Database	NICHD
Design	Prospective Follow-up Observational
Factors	Age of Entry Quality Stability Time Spent Type of Care

Park, K., & Honig, A. (1991). Infant child care patterns and later teacher ratings of preschool behaviors. *Early Child Development and Care*, 68, 89-96. [Full Text](#)

Preschool teachers (blind to infancy care experiences) rated 105 middle-class children (mean age 53 months) on the 30-item Preschool Behavior Questionnaire (PBQ) and the Preschool Behavior Rating (PBR) instrument. Preschoolers who had been in full-time non-parental care from early infancy onward were rated on PBR items as more competent intellectually. But they were also rated on PBQ as more hostile-aggressive than were children who had never had full time non-maternal care as infants or toddlers. (Authors' Abstract)

Country	Not Reported
Sample Size	105
Age	Preschool
Database	---
Design	Prospective Follow-up Observational
Factors	Age of Entry

Sundell, K. (2000). Examining Swedish profit and nonprofit child care: The relationships between adult-to-child ratio, age composition in child care classes, teaching and children's social and cognitive achievements. *Early Childhood Research Quarterly, 15, 91-114.*

[Full Text](#)

This study investigated the effects of program auspice (non profit vs. profit child care), adult-to-child ratios (1:4.6 –1:8.7), and age span of the child care class on teaching and children's social and cognitive achievement. The sample included 394 3- to 5-year-old children from 32 child care centers. Results show that the profit child care centers had larger child groups than non profit child care centers, a lower adult:child ratio, and a positive staff attitude toward teaching goals. Age, gender, social background, and age span of the child care class were significant predictors of children's social and cognitive achievements. Adult-to-child ratio and teaching style did not prove to be good predictors of children's social or cognitive achievements. (*PsycINFO Abstract*)

Country	Sweden
Sample Size	394
Age	Preschool
Database	---
Design	Prospective No Follow-up Observational
Factors	Adult-Child Ratio Age of Entry Time Spent

Vandell, D. L., & Corasaniti, M. A. (1990). Variations in child care: Do they predict subsequent social, emotional and cognitive differences? *Early Childhood Research Quarterly, 5, 555-572.*

[Full Text](#)

A sample of 236 predominantly middle class 8-year-olds from a state with minimal child care standards were examined for possible differences associated with earlier child care histories. In comparison to children in part-time child care (less than 30 hours a week) or exclusive maternal care, children with more extensive child care experiences since infancy were rated by teachers and parents as having more poor peer relationships, work habits, and emotional health, and as being more difficult to discipline. In this minimal standard environment, extensive infant care was also associated with more negative nominations from classmates, poorer academic and conduct report card grades, and lower standardized test scores. In stepwise regressions that included family social class, parents' marital status, family size, number of family moves, child gender, childbirth order, and current after school care, children's extensive experience in infant care was the single best predictor (in a negative direction) of ratings by parents, teachers, and peers, and of report card grades and standardized test scores. Child care history continued to be a significant negative predictor of child outcomes in full regression models that incorporated child and family variables. These results are in marked contrast with findings of positive social and cognitive development associated with early, extensive child care in Sweden (a country characterized by high

Country	USA
Sample Size	236
Age	School Age
Database	---
Design	Prospective No Follow-up Observational
Factors	Age of Entry Time Spent

child care standards and opportunities for paid parental leave during early infancy). (Authors' Abstract)