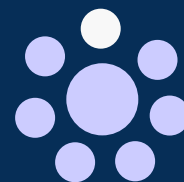


# Adult – Child Ratio in Child Care

## Scorecard



### Characteristics of the Reports

Assessments of development were obtained for *more than 10,000* children to determine the relationships to adult-child ratios and class sizes in centre care.

Country of Origin	
	# of Reports
Canada	0
Bermuda	1
Sweden	2
UK	0
USA	13

Research Designs	
Retrospective	Prospective
0	16
No Follow-up	Follow-up
9	7
Observational	Experimental
16	0

### Summary of Results

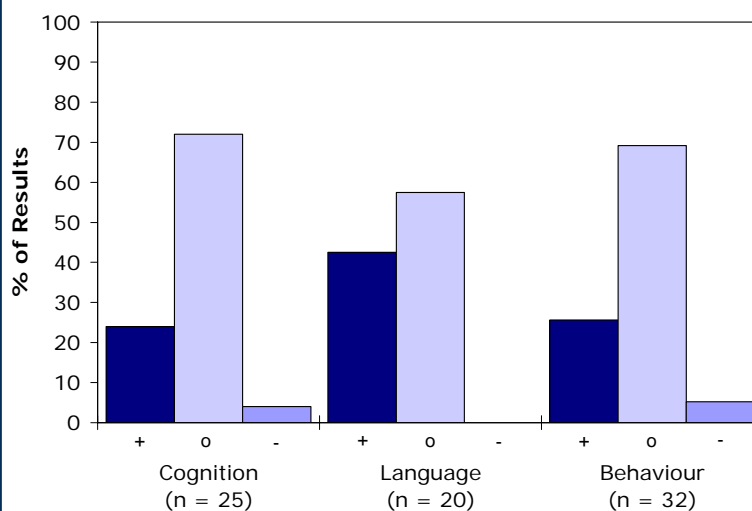
Relationship of Adult-Child Ratio and Class Size to Cognition, Language, or Behaviour			
	Cognition	Language	Behaviour
% of Positive Reports	50%	80%	80%
# of Reports	10	10	10

The 16 reports contained 77 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 higher adult to child ratios or smaller class sizes were related to higher scores on tests of children's development. A negative sign means that higher adult to child ratios or smaller class sized were related to lower scores on the tests. Zero means that higher adult to child ratios were unrelated to the test results.

## Other Considerations



*Relationships of Adult-Child Ratio and Class Size in 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 16 reports, researchers controlled for the following variables.

Variables Most Frequently Removed from Outcomes			
Variable	# of Reports	Variable	# of Reports
Child's gender	9	Family structure (parents, guardians)	4
Maternal education	7	Home environment	4
Family income	7	Time spent in care	4
Child's age	7	Age of child care entry	3
Ethnicity	5	Socio-economic status	3
Teacher sensitivity	5		
Other Variables Removed			
<p><b>Child:</b> Amount of infancy day care, Birth order, Child IQ, Child outcomes at first testing, Child temperament, Prior cognitive performance.</p> <p><b>Child Care/School:</b> Geographic region, Instructional style, Proportion of peer-group exposure, Quality of care, School enrolment status, Social support system, Stability of care, Type of care.</p>			

**Citations,  
Summaries, and  
Abstracts**

**Other Variables Removed (cont'd)**

**Family:** Amount of maternal work, Emotional support in home, Family stress, Marital conflict, Maternal age, Maternal behaviour, Maternal depression, Maternal sensitivity, Maternal separation anxiety, Maternal/paternal child-rearing attitudes, Number of siblings, Parental attitudes, Parental education, Parental occupation, Parental practices, Parental stress level, Parental values, Rating of benefits/risks of work.

**Blau, D. M. (1999). The effect of child care characteristics on child development. *The Journal of Human Resources*, 34, 786-822.**

[Full Text](#)

The effect of group size, staff-child ratio, training, and other characteristics of child care on child development is estimated using data from the National Longitudinal Survey of Youth. In contrast to most previous research, the sample is large and nationally representative, the data contain good measures of the home environment, and there are repeated measures of child development. Child care characteristics have little association with child development on average. Associations are found for some groups of children, but they are as likely to be of the "wrong" sign as they are to be of the sign predicted by developmental psychologists. (Author's Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	5226
<b>Age</b>	Infant & Preschool
<b>Database</b>	NLSY
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Teacher Education

**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 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

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

grade were related to earlier measures of verbal ability and to paternal involvement during preschool years. (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 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)

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

How quality of center-based child care relates to early cognitive and language development was examined longitudinally from 6 to 36 months of age in a sample of 89 African American children. Both structural and process measures of quality of child care were collected through observation of the infant classroom. Results indicated that higher quality child care was related to higher measures of cognitive development (Bayley Scales of Infant Development), language development (Sequenced Inventory of Communication Development), and communication skills (Communication and Symbolic Behavior Scales) across time, even after adjusting for

**Burchinal, M. R., Roberts, J. E., Riggins, R., Zeisel, S., Neebe, E., & Bryant, M. (2000). Relating quality of center-based child care to early cognitive and language development longitudinally. *Child Development*, 71, 339-357. [Full Text](#)**

How quality of center-based child care relates to early cognitive and language development was examined longitudinally from 6 to 36 months of age in a sample of 89 African American children. Both structural and process measures of quality of child care were collected through observation of the infant classroom. Results indicated that higher quality child care was related to higher measures of cognitive development (Bayley Scales of Infant Development), language development (Sequenced Inventory of Communication Development), and communication skills (Communication and Symbolic Behavior Scales) across time, even after adjusting for

<b>Country</b>	USA
<b>Sample Size</b>	89
<b>Age</b>	Infant & Preschool
<b>Database</b>	---
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education

selected child and family characteristics. In addition, classrooms that met professional recommendations regarding child:adult ratios tended to have children with better language skills. Classrooms that met recommendations regarding teacher education tended to have girls with better cognitive and receptive language skills. These findings, in conjunction with the growing child-care literature, provide further evidence that researchers and policymakers should strive to improve the quality of child care to enhance early development of such vulnerable children. (Authors' Abstract)

**Clarke-Stewart, K. A., Vandell, D. L., Burchinal, M., O'Brien, M., & McCartney, K. (2002). Do regulable features of child-care homes affect children's development? *Early Childhood Research Quarterly, 17*, 52-86. [Full Text](#)**

Data from the NICHD Study of Early Child Care were used to assess whether regulable features of child-care homes affect children's development. Child-care homes selected were those in which there were at least two children and the care provider received payment for child care (*ns*=164 when the study children were 15 months old, 172 at 24

<b>Country</b>	USA
<b>Sample Size</b>	172
<b>Age</b>	Infant & Preschool
<b>Database</b>	NICHD
<b>Design</b>	Prospective No Follow-up Quasi-Experimental
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education

months, and 146 at 36 months). Caregivers who were better educated and had received more recent and higher levels of training provided richer learning environments and warmer and more sensitive caregiving. Caregivers who had more child-centered beliefs about how to handle children also provided higher quality caregiving and more stimulating homes. In addition, when settings were in compliance with recommended age-weighted group size cut-offs, caregivers provided more positive caregiving. Quality of care was not related to caregivers' age, experience, professionalism, or mental health, or to the number of children enrolled in the child-care home or whether the caregivers' children were present. Children with more educated and trained caregivers performed better on tests of cognitive and language development. Children who received higher quality care, in homes that were more stimulating, with caregivers who were more attentive, responsive, and emotionally supportive, did better on tests of language and cognitive development and also were rated as being more cooperative. These findings make a case for regulating caregivers' education and training and for requiring that child-care homes not exceed the recommended age-weighted group size. (Authors' Abstract)

**Deater-Deckard, K., Pinkerton, R., & Scarr, S. (1996). Child care quality and children's behavioral adjustment: A four-year longitudinal study. *Journal of Child Psychology and Psychiatry*, 37, 937-948.** [Full Text](#)

Studies of extensive, full-time child care in infancy and early childhood have shown negative, positive, and no effects on children's social-emotional development. The current study explored the prediction of children's behavioral adjustment 4 years after assessments of daycare center quality (e.g. caregiver-child interactions, caregiver-to-child ratios) and of the home and family environment (e.g. parental stress, discipline). Participants included 141 school-age children (73 girls) and their employed mothers (91% Euro-American) who had made use of full-time child care when the children were toddlers or preschoolers. Home environment factors and earlier behaviors were predictive of individual differences in adjustment 4 years later, particularly for maternal ratings of child behaviors. By contrast, indicators of center quality were generally unrelated to mother and teacher ratings of behavioral adjustment. (Authors' Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	141
<b>Age</b>	Preschool & School Age
<b>Database</b>	---
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality

**Howes, C. (1997). Children's experiences in center-based child care as a function of teacher background and adult:child ratio. *Merrill-Palmer Quarterly*, 43, 404-425.** [Full Text](#)

The relation between teacher background and adult:child ratio in center-based child care was examined in two representative samples: the Cost, Quality, and Outcome Study (N = 655 classrooms and 760 children) and the Florida Quality Improvement Study (N = 410 classrooms and 820 children). Classrooms were classified according to whether the observed adult:child ratio met professional standards and by the background (formal education and early childhood education training) of the lead teacher. We compared children and teacher behaviours based on these classifications. In both samples, teacher background made an independent contribution, distinguishing between teaching behaviours, children's activities, and outcomes. Teachers with the most advanced education were most effective. Teachers with associate of arts degrees and CDA certificated were more effective than teachers with some college or just high school plus workshops. In the Cost, Quality, and Outcome study, but not the Florida Quality Improvement Study, classrooms that complied with professional standards also had teachers with more effective teaching and more positive child outcomes. There were no interactive effects of ratio and teacher background. (Author's Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	1580
<b>Age</b>	Infant & Preschool
<b>Database</b>	CQO & Florida Quality Improvement Study
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Teacher Education

**Howes, C., Phillips, D. A., & Whitebook, M. (1992). Thresholds of quality: Implications for the social development of children in center-based child care. *Child Development*, 63, 449-460. [Full Text](#)**

We assessed the quality of center child care relationships with adults and peers for 414 children (ages 14 to 54 months). Classrooms were classified by ratio and group size provisions of the Federal Interagency Day Care Requirements (FIDCR) and by the Early Childhood and Infant and Toddler Environmental Rating Scales. Children cared for in classrooms meeting FIDCR ratios were more likely to be in classrooms rated as good or very good in caregiving and activities. Children in classrooms rated as good or very good in caregiving were more likely to be securely attached to teachers. Securely attached children were more competent with peers. Children cared for in classrooms meeting FIDCR group size were more likely to be in classrooms rated higher in activities. Children in classrooms rated high in activities were likely to orient to both adults and peers. Children with social orientations to adults and peers were more competent with peers. (Authors' Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	414
<b>Age</b>	Infant & Preschool
<b>Database</b>	---
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio

**Kontos, S., Hsu H., & Dunn, L. (1994). Children's cognitive and social competence in child care centers and family day-care homes. *Journal of Applied Developmental Psychology*, 15, 387-411. [Full Text](#)**

The purpose of this study was to determine whether children in child-care centers are at an advantage developmentally over their peers in family day care because of the more structured educational programs in centers, or if there were other important determinants of children's development in centers and family day-care homes. One hundred seventeen children (60 in centers and 57 in family day-care homes) between 30 and 60 months of age participated in the study. Comparable measures were obtained of the structure (ratio, caregiver training), process (caregiver nurturing attitudes and intense involvement with children), and global quality in 30 centers and 30 family day-care homes. Four measures of children's cognitive and social competence were also obtained (intellectual development, complex cognitive and social play, sociability). Results comparing characteristics of centers and family day-care homes and the development of children in those settings were consistent with Clarke-Stewart's (1987a, 1987b, 1991) findings of more structured educational programs and more complex cognitive and social play among children in centers. The results of the path analysis suggested that variations in caregivers' training and the nature of their interactions with children within and between centers and family day-care homes

<b>Country</b>	USA
<b>Sample Size</b>	117
<b>Age</b>	Preschool
<b>Database</b>	---
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education

made a difference to children's cognitive and social competence. (Authors' Abstract)

**NICHD Early Child Care Research Network (1999). Child outcomes when child care center classes meet recommended standards for quality. *American Journal of Public Health, 89, 1072-1077. Full Text***

OBJECTIVES: This study assessed outcomes for children when child care centers meet recommended care standards. METHODS: Data from the NICHD Study of Early Child Care were used to examine the association between meeting standards for child-staff ratios, group sizes, caregiver training, and caregiver education and children's development at 24 and 36 months of age. RESULTS: There were 5 major findings: (1) most classes observed did not meet all 4 recommended standards (compliance ranged from 10% at 6 months of age to 34% at 36 months of age); (2) linear associations were found between number of standards met and child outcomes, and this was more the case at 36 months than at 24 months of age; (3) there was no evidence of threshold effects; (4) children in classes that met more standards had better school readiness and language comprehension scores as well as fewer behavior problems at 36 months of age; and (5) child outcomes were predicted by child-staff ratio at 24 months and caregiver training and education at 36 months of age. CONCLUSIONS: Outcomes were better when children attended classes that met recommended child-staff ratios and recommended levels of caregiver training and education. (Author's Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	1364
<b>Age</b>	Preschool
<b>Database</b>	NICHD
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education

**NICHD Early Child Care Research Network (2002). Child-care structure --> process --> outcome: Direct and indirect effects of child care quality on young children's development. *Psychological Science, 13, 199-206. Full Text***

With data from the NICHD Study of Early Child Care, we used structural equation modeling to test paths from structural indicators of child-care quality, specifically caregiver training and child-staff ratio, through a process indicator to child outcomes. There were three main findings: (a) Quality of maternal caregiving was the strongest predictor of cognitive competence, as well as caregivers' ratings of social competence; (b) quality of nonmaternal caregiving was associated with cognitive competence and caregivers' ratings of social competence; and (c) there was a mediated path from both caregiver training and child-staff ratio through quality of nonmaternal caregiving to cognitive competence, as well as to caregivers' ratings of social competence, that was not accounted for entirely by family variables. These findings provide empirical support for policies that

<b>Country</b>	USA
<b>Sample Size</b>	1083
<b>Age</b>	Preschool
<b>Database</b>	NICHD
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education

improve state regulations for caregiver training and child-staff ratios. (Author's Abstract)

**NICHD Early Child Care Research Network, & Duncan, G. J. (2003). Modeling the impacts of child care quality on children's preschool cognitive development. *Child Development*, 74, 1454-1475. [Full Text](#)**

The National Institute of Child Health and Human Development (NICHD) Study of Early Child Care compared 3 statistical methods that adjust for family selection bias to test whether child care type and quality relate to cognitive and academic skills. The methods included: multiple regression models of 54-month outcomes, change models of differences in 24- and 54-month outcomes, and residualized change models of 54-month outcomes adjusting for the 24-month outcome. The study was unable to establish empirically which model best adjusted for selection and omitted-variable bias. Nevertheless, results suggested that child care quality predicted cognitive outcomes at 54 months, with effect sizes of .04 to .08 for both infant and preschool ages. Center care during preschool years also predicted outcomes across all models. (Authors' Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	1364
<b>Age</b>	Infant & Preschool
<b>Database</b>	NICHD
<b>Design</b>	Prospective Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality Teacher Education Time Spent

**Phillips, D., McCartney, K., & Scarr, S. (1987). Child-care quality and children's social development. *Developmental Psychology*, 23, 537-543. [Full Text](#)**

This study examined the influence on children's social development of variation in the quality of their child-care environments. The sample consisted of 166 children attending representative child-care centers that varied widely in quality. Possible relations associated with age, child-care experience, and family background were controlled using hierarchical multiple regression. Both global estimates of child-care quality and specific program features, such as director experience, ratios, and verbal interactions, were obtained from observational measures and staff questionnaires. Measures of social development were derived from parent and caregiver ratings of the children. Of greatest importance is the finding that overall quality, caregiver-child verbal interactions, and director experience were each highly predictive of the children's social development in child care. Family background measures were also significantly predictive of several of the social outcomes, whereas child-care experience showed few significant effects. The implications for social policies and future research in child care are discussed. (Authors' Abstract)

<b>Country</b>	Bermuda
<b>Sample Size</b>	166
<b>Age</b>	Preschool
<b>Database</b>	---
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Quality

**Ruopp, R. (1979). *Executive summary: Final report of the national day care study. Children at the center.* MA: U.S. Department of Health, Education, and Welfare.** [Full Text](#)

This executive summary of the final report of the National Day Care Study (NDCS) of March 1979 summarizes findings and policy recommendations, gives the background to the study and presents findings on quality and costs of center-based day care. Recommendations for federal regulations for preschool children, infants and toddlers, center characteristics, regulatory language and monitoring guidelines are indicated. The major cost/effects study of center-based day care for preschool children was conducted between 1974 and 1978 in 67 day care centers in Atlanta, Detroit and Seattle. Data from the major study and two supporting studies, a smaller research effort focusing on center day care for infants and toddlers and a national telephone survey of 3100 randomly selected centers, were analyzed. The NDCS found that higher quality care is associated with two low-cost ingredients (smaller groups of children and caregivers with child-specific education/training). The number of classroom staff per group (caregiver/child ratio) was not an important contributor to quality within the policy-relevant range of 1:5 to 1:10. Ratio was strongly related to differences in cost. Regulatory language and rules used to monitor compliance were found to influence center practices as much as the content of the regulations. The study concluded that revision of current federal day care regulations could allow the government to buy better care at slightly lower cost. More children could be better served within current budgets. (ERIC Abstract)

<b>Country</b>	USA
<b>Sample Size</b>	1800
<b>Age</b>	Preschool
<b>Database</b>	NDCS
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Teacher Education

**Studer, M. (1992). *Quality of center care and preschool cognitive outcomes: Differences by family income.* *Sociological Studies of Child Development*, 5, 49-72.** [Full Text](#)

Quality of care in child care centers & its relationship to receptive language skills are examined using data from the National Longitudinal Survey of Youth on a sample of 95 preschoolers. As hypothesized, quality of care (measured by group size & provider-child ratio), was not found to account for significant differences in preschoolers' cognitive abilities. However, a significant interaction was found to exist between quality of care, family income, & cognitive skills. In particular, preschoolers from low-income families were likely to have more favorable receptive language skills when placed in higher as compared to lower quality care, while no consistent relationship was found for children from other income groups. Family income & moderate hours of maternal work (1-39 as compared to no work or 40+ hours/week) were positively

<b>Country</b>	USA
<b>Sample Size</b>	95
<b>Age</b>	Preschool
<b>Database</b>	NLSY
<b>Design</b>	Prospective No Follow-up Observational
<b>Factors</b>	Adult-Child Ratio Teacher Education

associated with preschoolers' language skills. (*Sociological Abstracts Abstract*)

**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*)

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