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Appendices

Outcomes of Early Childhood Education: Literature Review

Report to the Ministry of Education

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Appendices

Outcomes of Early Childhood Education: Literature review

NEW ZEALAND COUNCIL FOR EDUCATIONAL RESEARCH

TE RŪNANGA O AOTEAROA MŌ TE RANGAHAU I TE MĀTAURANGA

WELLINGTON

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Appendix A: Summary of studies

Study, aim, country	Sample and analysis	Findings	Commentary
(Aboud, 2006) Evaluated preschool programme in rural Bangladesh in terms of cognitive and social outcomes. Bangladesh	400 randomly selected boys and girls between 4.5 and 6.5 years, half in villages with no preschools and half in preschools. Outcome measures: cognitive development, school readiness, social development, nutritional status. Mother reported measures: family socio-demographic status, child's health status, mother's evaluation of preschool. Early Childhood Environment Rating Scale—Revised, and Tamil Nada version of ECERS and observations of materials (presence, repair, and use). Teacher and supervisor interviews to help interpret data. Cross sectional comparison of outcomes for children in villages with preschool with outcomes for children in villages with no preschool.	After controlling for differences in child's age, nutritional status, mother's education, and assets, preschool children did better on vocabulary (effect size f = 0.20–0.23 for verbal reasoning, nonverbal reasoning, and f = 1.00 for school readiness). Preschool children showed more of the highest level of play, i.e. interactive play (effect size d = 0.58), had more conversations (effect size f = 0.54), showed significantly less onlooker behaviour (effect size f = 0.58), and a little more aggression (f = 0.32). Comparison children spent more time exploring the toys and looking at the books. All children benefited equally.	School starts at 6.5 years. Sample size selected such that there is sufficient power to detect a mean difference of ½ standard deviation. Preschools provided half-day programme, 6 days a week, with free play, stories, and instruction in literacy and maths. Mothers tended to play protective role, rather than encourage play and conversation. Little opportunity to engage with complex materials and reading and writing activities. Preschools had been in operation 5 years, enrolment averaged 25 children, attendance was 75%. One teacher and one volunteer mother in each. Teachers had grade 10 education, 26 days training, 16 days refresher course over mean 2 years. Supervisors had grade 12 education, 45 days training. Pay from parents and organisation (Plan Bangladesh).

Study, aim, country	Sample and analysis	Findings	Commentary
(Ahnert, Pinquart, & Lamb, 2006) Meta-analysis aggregating results of 40 investigations involving 2867 children who average 29.6 months when their attachments to nonparental care providers were assessed using the Strange Situation or the Attachment Q-Set. Sought to determine whether differences in conceptual foci and methodological approaches were associated with systematic variations in results.	24 reports describing 40 investigations conducted between 1977 and 2003. Samples: 2867 children, average age 29.6 months. Diverse in respect to ethnicity, SES, educational level, and family structure. Quality and type of care varied. **Measures** Strange Situation Procedure (reliability with which adults provide security when child distressed) –11 studies in centre-based services. Attachment Q-Set (supportive adult–child interactions in everyday situations)—27 investigations (home- and centre-based). Care provider behaviours. Almost 50% included such measures—of group sensitivity or dyadic level sensitivity. Child characteristics and context: ages (5 studies), gender (5 studies), SES (6 studies), time (10 studies). Majority summary info about childcare history, child:adult ratios, group size. Prepared data. Used three different analyses depending on reporting—Mantel-Haenszel chi square, correlational statistics, and multiple linear regression analysis. Calculated product-moment correlations and Binomial Effect Size Display.	Secure child–provider interactions less common than secure child-parent interactions. Modest significant inter-correlation between security of attachments to care providers and parent (r = 0.14 for child–mother and r = 0.35 for child–father). In group with above average security to mothers 57% of children would have above average attachment security to care providers, compared with 43% of children in group with below average attachment. The numbers for fathers were 67.5% and 32.5% respectively. Children were more likely to be securely attached to mothers than care providers when SS used but not when AQS used. AQS may specify value of care provider's sensitivity better. Secure attachments more likely in home-based than centre-based settings. Children's associations with care providers, especially in centres, were predominantly associated with measures of care providers' behaviour towards the group as a whole. Only in small groups was security of relationships with care providers predicted by measures of dyadic responsiveness. Characteristics of care setting such as group size and child–adult ratio appeared to moderate association between care providers' behaviour and security of child's relationship with them. Childcare provider attachment security varied depending on child gender—girls developed more secure attachments. Does not support conclusion that secure attachments are more common when children are younger. Only when children had discontinuous histories of childcare were older children less likely to form secure attachments. Time post entry positively associated with secure attachment to care providers. No effect—age at enrolment. On basis of SES backgrounds, security of attachment varied but only when child in home care. Secure attachments to care provider more common in earlier studies and concordance between child–mother and childcare providers' attachments also higher. May reflect changes in measures and in settings.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Andersson, 1989) Longitudinal study examining effects of daycare on cognitive, social, and personal competence at ages 8 and 13. This article reports age-8 findings. Stockholm and Goteborg	128 children followed from first year to ages 8 and 13 years. From eight low and middle resource areas. Families contacted in random order. First 128 who accepted were included. One-parent families over-sampled. 119 remained in study at age 8 years. **Measures** **Age at first entry to daycare** (0–1, 1–2, 3–6, no daycare) **Care type** Background: mother's education, occupational status, family type, changes in family type, child characteristics **Outcome measures** 8 years: Teacher rated socio-emotional competence (nine socio-emotional factors: persistence and independence; social confidence; short temper and impulsivity; peer contacts; verbal facility; attentiveness vs distractibility; anxiety; assertiveness; transition from school to preschool). Cognitive measures: verbal (vocabulary and understanding of concepts and situations), nonverbal (perceptual cognition, cognitive reasoning). Teacher ratings of school achievement (reading, writing, arithmetic, general subjects, music, and physical education). Hierarchical regression and path analysis. Background data entered first.	**Cognitive: age 8** Except for nonverbal tests, home variables accounted for 10–14% of variance of cognitive measures. Age of entry accounted for additional (after home variables) substantial proportion of variance—children who entered early performed better especially on verbal tests and school subjects than children with later entry and home-reared children. Approximate effect sizes for entry 0–1 years versus home care: verbal d = 0.68, test total d = 0.56, school achievement d = 0.70. Centre care tended to have more positive effects than other types. **Socio-emotional: age 8** Children who entered daycare in first year were rated as more persistent and independent, more verbally facile (easy to understand), less anxious, and their transition from preschool to school was less problematic than children who entered later. Age of entry accounted for 22 to 221% of variability in socio-emotional scores as did background variables. Especially high for verbal facility (221%) and less anxiety (159%). Approximate effect sizes for entry 0–1 years versus home care: persistence, dependence d = 0.58, social confidence d = 0.43, verbal facility d = 1.04, anxiety d = -0.85, transition to preschool d = 0.63. Girls got significantly better ratings on persistence and independence and social confidence; boys were rated better on attentiveness vs distractibility. Home-reared and family daycare boys less willing to stick to their own opinion and hold their own than girls from those settings. Boys in centre care more assertive than girls in centre care, but not significantly so.	NZCER statistician calculated effect sizes (d). Sweden very different cultural context from America where negative effects on social competence found. Parents and children given ample time to be together during infant's first year—90% of salary paid to parent on leave for first 6–7 months (this time now extended to 12 months). Daycare attendance of at least 5–6 hours per day (don't take children half-day). These children would be most at risk according to Belsky. Parent has right to shorten working hours to 6 per day at own expense when child young. Daycare in Sweden public. Family can choose from only some possibilities. Poor and rich families usually have the same standard of care. School begins at age 7. Children have same teacher from 4th to 6th grade for most subjects.

Study, aim, country	Sample and analysis	Findings	Commentary
Andersson, 1992) Longitudinal study (above) examining effects of daycare on cognitive, social, and personal competence at ages 8 and 13. Stockholm and Goteborg	128 children followed from first year to ages 8 and 13 years. From eight low and middle resource areas. Families contacted in random order. First 128 who accepted were included. One-parent families over-sampled. 119 remained in study at age 8 years, 114 at 13 years. **Measures** **Age at first entry to daycare** (0–1, 1–2, 3–6, no daycare) **Care type:** daycare, centre care, family daycare, mixed care **Background**: mother's education, occupational status, family type, changes in family type. **Child gender and intelligence:** two verbal subtests from Swedish version of WISC, two nonverbal subtests measuring perceptual cognition and cognitive reasoning at age 8. **Outcome measures** 8 years: Above 13 years: Cognitive competence (Swedish, mathematics, English, and general subjects) and socio-emotional competence (85-item questionnaire with behaviour descriptions) rated by classroom teachers. Hierarchical regression and path analysis. Background data, intelligence at 8 then age of entry entered.	School performance: Age of entry had significant direct effects on school performance at 8 and 13 after controlling for children's intelligence and earlier school performance, with early entry children performing best. Approximate effect sizes for age of entry 0–1 years versus home care (after adjusting for background variables) on school performance d = 0.49 (age 8) and 0.74 (age 13). Socio-emotional: Age of entry significantly predicted social competence at age 13 but not age 8. Approximate effect sizes for age of entry 0–1 years versus home care (after adjusting for background variables) on school adjustment d = 0.67 (age 8) and 0.976 (age 13) Approximate effect sizes for age of entry 0–1 years versus home care (after adjusting for background variables) on social competence d = 0.32 (age 8) and 0.66 (age 13). Effect size age 8 relatively large but not significant because sample is small. Indicates difference. "The results indicate that early entry into daycare tends to predict a creative, socially confident, popular, open, and independent adolescent." (p. 33). Path analyses suggested: family characteristics influence time of first entry into care. This has consequences for children's competence at age 8 and/or 13, after controlling for home background, child gender, and intelligence.	About a third of children in daycare in first year, rising to 70% in fourth year. Centre care most common and most stable of out-of-home care. Teachers in good position to rate children—same teacher from 4th to 6th grade. Sample is small. Effect sizes social competence not statistically significant—but they are indicative.

Study, aim, country	Sample and analysis	Findings	Commentary
(Aos, Lieb, Mayfield, Miller, Pennucci, 2004) Took a wide literature review of all interventions mentioning effects on reducing juvenile delinquency, teen substance abuse, pregnancy, and juvenile criminal offences. From the literature selected those with a comparison or control group (random or quasi-random design), and conducted a cost-benefit analysis.	Used the costs given in the literature, the rates of reduction in the outcomes of interests, and developed their own costs of the outcomes. Made all the results from all the programmes as comparable as possible. For ECE interventions for low income 3- and 4-year-olds used a combined estimate of costs and benefits. - The benefits included:crime reduction - improved education - reduced substance abuse - reduced childe abuse and neglect - reduced teen pregnancy - reduced public assistance	ECE for at-risk 3- and 4-year-olds provides “very attractive returns on investment” (pg 4), with a benefit-cost ratio of 2.36.	Much lower benefit returns for home-based programmes (HIPPY, Parents as Teachers, Parent–child Home Program) and, even more marked, for Even Start and Early Head Start.

Study, aim, country	Sample and analysis	Findings	Commentary
(Aughinbaugh, 2001) Used data from the National Survey of Youth 1997 to examine relationships between Head Start attendance and school suspensions, grade retentions, and scores on maths achievement tests. United States (US)	7787 youth, about 14% of whom attended Head Start. Age 12 to 17. Outcome measures: whether youth suspended from school, repeated a grade, and standard score on PIAT-math.	After controls, Head Start had no effect on probability that the youth repeated a grade or on PIAT-math scores. Remained positively associated with having been suspended.	Did not examine school quality—see Currie and Thomas (2000).

Study, aim, country	Sample and analysis	Findings	Commentary
(Aviezer, Sagi-Schwartz, & Koren-Karie, 2003) Uses data from Haifa Study of Early Child Care to examine whether low-quality nonmaternal care imposes ecological restraints on infant-mother attachment formation by moderating the relations between maternal sensitivity and infant attachment security. Haifa, Israel	704 infants and mothers, full SES range. At 12 months 283 (38%) infants in maternal care, 101 (13%) individual nonmaternal care by relative, 169 (22%) individual nonmaternal care by paid provider, 54 (7%) family daycare and 151 (20%) centre care. **Measures** SES Maternal sensitivity: Emotional Availability Scales. Type of care (analysed data of centre care and individual care for this report). Infant attachment: Strange Situation procedure.	Maternal sensitivity did not distinguish between type of care used. Connection between maternal sensitivity and infant attachment security only found for infants in individual care, but not infants in centre care. Lack of associations between maternal sensitivity and infant attachment security seemed to contribute to lower security rates for centre children. Proportion of centre children who were securely attached to more sensitive mothers (0.47) was similar to proportion of centre children who were insecurely attached to less sensitive mothers (0.49), whereas proportion of individual care children who were securely attached to more sensitive mothers (0.21) was significantly lower than proportion of individual care children who were insecurely attached to less sensitive mothers (0.41).	Centres very poor quality—lower than NICHD network. Authors suggest "that in environments in which care is characterized by poor quality children's difficulties extend to their relationships with their mothers and complicate them, thereby interfering in natural processes of secure attachment formation" (p. 294). Measures used differed from NICHD study—avoidance in NICHD study, ambivalence in Haifa study.

Study, aim, country	Sample and analysis	Findings	Commentary
(Bagnato, Suen, Brickley, Smith-Jones, & Dettore, 2002) First phase results of evaluation of Pittsbugh's early childhood initiative (ECI), a privately funded effort by business, corporate, foundation, and community sectors to implement high-quality ECE for children in high-risk neighbourhoods. Examined whether child's developmental progress and enhanced developmental trajectories are associated with participation in high-quality (NAEYC standards) ECE; and whether the ECIM collaborative consultation and mentoring approach focusing on NAEYC standards is associated with child outcomes. Pittsburgh, US	155 children in high-risk urban communities participating in the ECI; average age 3.01 years. Average length of participation 12.3 months. Approximately 86% classified as at-risk. Low median income African American 73.4%, Caucasian 23.4%, Asian and Hispanic 2.3%. ECIM used ECERS, ITERS, and FDRS to guide consultation with staff and providers in provision of quality. **Measures** Collection of repeated formative and summative authentic data in home, preschool, and community contexts. Collected every September, January, and May. Observations of programme quality using PQP and data from use of ECERS. Calculated gap between observed and expected scores. Outcomes: teacher and parent assessments of developmental and behavioural outcomes using the Developmental Observation Checklist System (DOCS). Analysis: generated for each child an expected DOCS score due to maturation alone. Children compared against expected score.	Over a year ECI programmes on average reached and exceeded NAEYC quality standards. **Early school** Average child who attended ECI in May preceding kindergarten entry demonstrated cognitive, language, social, behavioural, and motor skills within average to high average range of national norms (98–107 standard score). Independent and blind teacher assessments of ECI children revealed average to high average skills (101–109) based on national norms in reading, writing, math, classroom behaviour, and daily living skills. Average grade retentions and special education placements less than 2% and less than 1% respectively. Comparison of observed and expected scores on DOCS for sample of 126 children: Time 1 (no intervention) effect size = -0.0008 (50^{th} percentile); time 2 (after 6 months) effect = 0.0875 (53^{rd} percentile); time 3 (after 1 year) effect = 0.0143 (56^{th} percentile). Comparison of observed and expected scores on DOCS for sample of 29 children who enrolled in the programme earlier and data was gathered every 4 months: Time 1 (no intervention) effect = -0.0084 (50^{th} percentile); time 2 (after 4 months) effect = 0.3997 (66^{rd} percentile); time 3 (after 8 months) effect = 0.4868 (69^{th} percentile), time 4 (after 12 months) effect = 0.8489 (80^{th} percentile). Greater degree of impact for early enrolees. Children with mild developmental delays showed progress in magnitude of 1.6 months of gain for each month of programme participation. Approximately 18% at start demonstrated delays that would have categorised them with a mental health diagnosis. At end of 2 years of ECI participation, only one showed significant needs.	Each community leadership council made independent decisions about type of programme option using existing and new providers. Small sample for second analysis—may not be generalisable. Authors conclude: Participation in high-quality programmes implementing NAEYC standards-based practices for care, education, and assessment is associated with developmental progress that exceeds maturational expectations. Longer high-risk children participated in high-quality ECI, the more dramatic their patterns of developmental progress. Enhanced progress is associated with participation in ECI programmes that received ongoing ECIM collaborative consultation and mentoring.

Study, aim, country	Sample and analysis	Findings	Commentary
Baker, Gruber & Milligan, 2005) Quebec, Canada—effect of introduction of near-free ECE provision ($5 day) starting in 1997 for 4-year-olds, progressively including younger ages—in 2000, included children aged under 2, for: - childcare use - maternal employment in two-parent families - child and parent outcomes in two-parent families. Policy also expanded supply of subsidised places, by creation of new subsidised places through networks of in-home childcare providers, affiliated with a CPE (centres for young children, created from existing non-profit ECE centres), subject to some regulations; and "leasing" of places in for-profit sector. Also half-day kindergarten and free care for 4-year-olds in disadvantaged areas (up to 23 hours a week). By 2001, subsidy rate around 80% for two-parent families.	Uses partnered mothers and children data from waves 1–5 of NLSCY (around 2000 children at each age included in each wave), data on age-4 PPVT, parent ratings of child's attitudes and behaviour, child health, parent–child relationship, parental health, quality of parents' relationship. Compares "pre reform" (1994–95 and 1996–97 NLSCY waves) with "post" (2000–01 and 2002–03); and within this, Quebec cf. the rest of Canada. Difference-in-differences regression analysis, comparing children in Quebec and children in other Canadian provinces pre and post the introduction of the new policy, controlling for differences between provinces and parents' education, age, immigrant status, size of urban area, child's age, gender, and number of siblings. No analysis by ECE length, intensity, or quality—i.e. not a direct study of ECE experience and outcomes.	ECE participation rose by around 1/3—includes a shift from informal childcare; maternal employment rose by 14.5%, hours of work by 3.5%; no increase in maternal participation in education. NB—maternal employment in two-parent families increased more (21%); most full-time. - Childcare use rose 4.6% for each 10% increase in childcare subsidy. - Employment of married mothers rose 2.4% for each 10% subsidy increase. (Decreases in wave 5 with unemployment.) Average hours per week parental employment increased from 13.7 to 20.1. Comparing pre reform and post reform within Quebec for whole NLSCY sample: Increases in anxiety scores 2–4-year-olds (from around 1 to 1.6), in aggression scores (from around 1 to around 1.2), and decreases in those who never had nose or throat infection (from around 50% to around 30%); yet a decrease in hyperactivity (from around 4.2 to around 3.8). Modelling using difference-in-differences regression analysis (comparing changes in Quebec with changes in other provinces by comparing parent reports for 6–11-ear-olds with preschoolers shows higher impacts on social-emotional aspects: estimates of percent differences of 0.14 for hyperactivity on mean of 4.16 (giving a higher mean of 4.74), 0.23 for mean of 1.09 for anxiety, 0.38 on mean of 4.38 for physical aggression, 019 on mean of 0.98 for aggression, -1.63 on mean of 99.3 on motor and social development scale. No effect on separation anxiety. -0.05 on mean of 0.64 on whether child in excellent health, -0.13 on mean of 0.44 on whether child never has nose/throat infections, -0.05 on whether child never had ear infection. No effect on injury or asthma. No effect on cognitive (PPVT score).	Authors note that if employed mothers were previously using informal childcare, public subsidies allowing affordable formal ECE will not see same rise in maternal employment as in formal ECE enrolments. This has implications for tax revenue. Nonetheless, they estimate that the increase in tax from maternal employment offset about 40% of the programme cost. Study reports of negative effects for preschoolers much higher than other studies. Not possible to separate ECE and maternal employment effects. Three possible reasons for this outlier among the studies: the use of a database which does not allow analysis of effect of actual ECE experience on outcomes; possibly the specifications used for Quebec/other Canadian provinces in the difference-in-differences modelling; and low quality of ECE in Quebec. Rapid expansion of places to meet demand; Tougas (2002) suggests that this priority overshadowed improvement of quality. Japel, Tremblay and Côté's (2005) study of quality in 1500 daycare settings 2000–2003, for

Study, aim, country	Sample and analysis	Findings	Commentary
Regulations include increase in proportion of staff who must have an ECE qualification (from 1/3 to 2/3, increased training for family childcare providers (24 to 45 hours, and 6 hours annual professional development); however centre size maximum raised from 60 to 80; staff:child ratio for 4- and 5-year-olds increased from 1/8 to 1/10. Wage increases from 1999 for ECE staff of around 40% over 4-year period.		Authors weight these effect sizes by percentage in sample who would have experienced maternal employment or ECE use or both as a result of the policy (i.e. those who would not have had these experiences otherwise) to estimate effect sizes for this group: this gives much higher sizes, e.g. for the motor/social skills, -8.4 to -21.2, decreasing the score from the mean of 99.3 to a mean of 90 to 79. Increase in hostile parenting (from just under 8.5 to just over 8.5), slight increase in consistency, and decrease in aversive parenting (from around 8.5 to around 8).	children in the Quebec Longitudinal Study of Child Development (n=2223) showed only 27% of these provided good or better quality; most provided adequately for health and safety, but not education. Unregulated care and for-profit care offered lower quality. For-profit centres have lower requirements to employ qualified staff (1/3, 50% of time, cf 2/3 for centre-based settings where quality was higher, and similar for children from poor and privileged homes; this was not the case with other types of care, where children from poor homes were likely to be attending lower quality. Albanese (2006) provides a qualitative account of the economic and social impact of the policy in a small town hit by job losses in the timber industry, using interviews with mothers and ECE providers. She found that mothers reported the policy had had positive impacts allowing maternal employment, improved family income, better relations between parents, and improved experiences for children, particularly social skills and some cognitive areas. The policy also allowed some families to stay in Quebec; and created some employment in the town.

Study, aim, country	Sample and analysis	Findings	Commentary
(Barnett & Ackerman, 2006) Review the basis for claims related to costs, benefits, and long-term effects of ECE programs. Use data from Perry Preschool, Abedecarian, and Chicago CPC studies.	Costs include: - ECE - Longer time in education Benefits include: - Reduced special education - Reduced retention in grade - Reduced youth and criminal justice system costs	The derived benefit:cost ratios are in the 3.78–17.07 range. The most disadvantaged children benefit the most, but all children make some gains. High quality ECE is essential: low teacher:child ratios, highly qualified and well-paid staff. There can be a benefit post-preschool, if the children are better-behaved and more engaged in education (the peer group benefits). There is a need for good quality school systems to maintain the gains in ECE. Parental earnings (increased) are also a potential benefit.	Relatively narrow range of benefits defined.

Study, aim, country	Sample and analysis	Findings	Commentary
(Barnett & Lamy, 2006) Effects of attending preschool for 1 or 2 years on measures of early vocabulary development, literacy, and math skills shortly after children attended kindergarten. New Jersey, US	1372 kindergarteners from 21 of New Jersey's "Abbott" school districts assessed at beginning of school year. High levels of poverty, many children from immigrant and language minority families. School records used to determine whether child participated in state-funded preschool programme, and if so whether for 1 or 2 years. Measures of receptive vocabulary, early mathematical skills, phonological skills, and print awareness. Tested in English or Spanish. ANCOVA that controlled for child age, gender, ethnicity, primary language, district size, and poverty level.	For vocabulary growth, 2 years of preschool significantly increased children's scores over scores for children who did not attend (average 2.5 standard scores), but effects of 1 year not statistically significant. For print awareness and math skills, statistically significant increases for children who attend 1 or 2 years over children who did not attend. Children who attended for 2 years had slightly higher scores but not statistically significant. No statistically significant findings for phonological awareness.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Barnett, Lamy, & Jung, 2005) Examined effects of Pre-kindergarten on early language, literacy, and mathematical development outcomes in five states. US: Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia	5071 children from Michigan, New Jersey, Oklahoma, South Carolina, West Virginia who took part in Pre-kindergarten aged 3 and/or 4. Michigan, New Jersey, and Oklahoma target at-risk children, other two are universal. Measures of receptive vocabulary, early mathematical skills, phonological skills, blending phonemes test, print awareness test. Tested in English or Spanish. Compared children with and without Pre-kindergarten as in above (using birthday cut-offs). Regression discontinuity design.	Statistically significant and meaningful impacts on children's early language, literacy, and mathematical development, with some evidence of enhanced programme effect for print awareness skills for children in low-income families. **Effect sizes of pre-kindergarten** Receptive vocabulary: about 26% of normed standard deviation. Math scores in four states (not measured in South Carolina) improved by about 28% of normed standard deviation. Print awareness: about 64% of a normed standard deviation—equates to about 3 months of vocabulary development. Phonological awareness: no statistically significant effects. Some evidence for stronger effect on print awareness for children from lower income. Overall gains for those who qualify for free/partially subsidised school lunch about three more items correct than those who don't. In Oklahoma and South Carolina statistically significant gains—extra gains for low income about 8% more items correct.	Children who did not participate in pre-kindergarten could have had other programmes or no programme. All or nearly all teachers have 4-year college degree with ECE specialisation. Ratios range from 1:7.5 to 1:10. Some half some full day, some vary. Children were doing well on print awareness test with or without preschool programme.

Study, aim, country	Sample and analysis	Findings	Commentary
(Baum, 2002) Analysis of NLSY data for women giving birth 1988–1994. Modelling the effect of childcare costs on work decisions and hours of work. US	2081 mothers, with subsample of 694 low-income mothers, using data on patterns of employment and childcare use for first 3 years of child's life. NLSY data includes mothers' reports of starting and stopping employment, use of childcare, amount spent on childcare. Probabilistic analysis, including maternal education, marital status, age, ethnicity, number of children, area of country, local unemployment rate, and childcare cost per hour employed; childcare cost per hour used by child.	Childcare costs have larger impact on probability that low-income mothers will work; author estimates that a 30% childcare subsidy for low-income mothers would increase the proportion of those who work one year after giving birth by 15%+ (from 41% to 48.5%). There was no relationship for non–low income mothers. Increasing childcare costs by $1 (on base of $1.20, thus doubling cost) would decrease hours worked by about 1.2 hours for low-income mothers, and 0.6 for non low-income mothers.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Belsky, 1999) Study to examine effects of quantity of nonmaternal care across 3–5 years on problem behaviour and affective-cognitive indices of adjustment, and to test whether parenting mediates the effects of nonmaternal care. US	120 working and middle-class, two-parent Caucasian families rearing first-born sons. Recruited when infants 10 months. Controlled for income, years of schooling, occupations. Data collected until children 5 years: Amount of nonmaternal care. Home observations of mothering and fathering. Age 3 and 5 assessments child functioning: Parent and father completed child behaviour checklist, e.g. age 5—somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, aggressive behaviour. Externalising—aggressive, delinquent; and internalising—withdrawn, somatic, anxious/depressed. Measure of child conscience. Social skills and problem behaviour questionnaire. Child's views of self, child social dilemma problem solving test, complete the story test (preference for negative plots), attributional biases.	More time in nonmaternal care across 3–5 years predicted more mother reported externalising problems when children aged 3–5 years, and somewhat more father—reported problems at 5. Also more negative mothering and less positive fathering during toddler years. Effects non significant when observed parenting controlled for. More time in care predicted more negative adjustment on lab-based measure of affective cognitive functioning at age 5 (e.g. attributional bias, social problem solving, preference for negative story plots), and this was only slightly attenuated on controlling for parenting. Suggests time in care may influence family processes.	Data on quality of care not available. Sampling limits generalisability.

Study, aim, country	Sample and analysis	Findings	Commentary
(Berlinski & Galiani, 2005) Evaluation of effects on maternal employment and ECE participation from government policy expanding free pre-primary places for 3–5-year-olds by 18% between 1994–2000 (3551 rooms in pre-primary annexes of public primary schools, average of 25 children per room, and two daily sessions). Argentina	Argentine household survey (National Statistics Agency), households with mothers aged 18–49, 1+ child 3–5 years old. Unit of analysis is mother (n= 29,817). More maternal employment and longer hours for mothers in households where 50% or more of children aged 3–5 attend pre-primary school; these are also likely to be older, more skilled, have fewer children, so difference in difference analysis took account of these potential selection factors.	Expansion of places accounted for about half the increase in gross preschool enrolment 1991–2001, with no differences related to maternal age, skill level. Estimate of increase in maternal employment of around 7–14%, and an increase in the average number of hours worked (32) from 2.2–4.5 hours a week. No differences related to whether two-parent family, and presence of children under age 3 in household.	No information on provision of teachers (did regional governments pay?) or quality of ECE; given other studies, one wonders whether there was a shift from informal to formal ECE, which could affect estimates of effect on employment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Berlinski, Galiani, & Gertler, 2006) Investigated effect of large-scale expansion of universal pre-primary education on subsequent primary school performance (average grade test scores, student self-control). Argentina	Standardised tests collected nationally and teacher ratings of student behaviour administered to randomly selected schools. Data from Argentine National Education Ministry. Gender and poverty. Exploited variation in expansion over time that generated differences in exposure by cohort and municipality. “Intention to treat” and “Treatment on the treated” effects.	Positive effect on 3rd grade standardised Spanish and mathematics tests. Estimated one year of schooling increased average 3rd grade scores by 8% of a mean (n=62.79 and 61.14 respectively) or 23% of the standard deviation of test scores. Positively affected students’ behavioural skills such as effort, class participation, and discipline. Preschool education facilitated socialisation and self-control. Gains bigger for students living in disadvantaged areas. For example, impact for municipalities where 26.2% live in poverty is 3.2 points higher in Spanish and 1.6 points in mathematics.	Pre-primary (ages 3–5 years) compulsory in 1993. Between 1993 and 1999, Argentina constructed classrooms for approx. 175,000 children to attend preschool. Poor areas first. Substantial growth enrolment—by 10 percentage points 1991 to 2001. Typically located in primary school, operate two shifts, each 3½ hours per day, 5 days a week over 9 months school year. Curriculum to develop personal autonomy and behavioural skills, social skills, logical and mathematical skills, emotional skills. Average class size 25 with two shifts (50).

Study, aim, country	Sample and analysis	Findings	Commentary
(Bertram & Pascal, 2001) Evaluation of Early Excellence Centres Centres emphasise delivering high-quality educational opportunities for children and families. Offer ECE, family support, adult education, and dissemination of good practice. Teams with ECE teachers and other professionals such as health and social services. Catchments in areas of greatest need. UK	Local evaluations of 24 of 29 centres—synthesis of findings.	**Children:** wide range of services offered Positive attitudes and dispositions to learning, enhanced social skills and wellbeing, reducing number of children at risk. Facilitating mainstreaming of children with special needs. Working with health professionals. **Families**: accessing increasing range of support services. Improving parenting skills and confidence. **Communities**: improved employment opportunities. Awareness of value of ECE. Providing community services. Also outcomes for staff and managers.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Booth, Clarke-Stewart, Vandell, McCartney, & Owen, 2002) Quality and quantity of interactions of “at-home” mothers and mothers using childcare and of fathers with their infants during week and weekend. NICHD data	Sample from NICHD study—326 mothers partnered and living in same house; completed interview on weekday and work day; infants spending 0–6 hours in childcare from 0–6 months (n=183), and average of 30 hours or more in childcare from this time (n=143). 126 fathers. Demographic info mother, separation anxiety rating, attitudes about maternal employment, father involvement in caregiving, quantity of mother-infant interaction, quality of interaction, child outcomes.	At-home mothers spent more time in instrumental care and social interactions with infants during week; at weekends mothers of in-care infants spent more time than at home in social interactions. No difference instrumental care. Quality of interactions not different. In-care mothers with greater separation anxiety and greater perceived costs of employment—spent more time in instrumental care. Fathers’ in-care group significantly more involved. At-home group mothers decreased involvement as fathers increased theirs—not true of in-care group. Neither quality nor quantity of interaction and father involvement predicted child outcomes.	Important to consider roles of both parents. Caveats—premature to consider link to outcomes.

Study, aim, country	Sample and analysis	Findings	Commentary
(Booth & Kelly, 2002) Examined (a) whether children with special needs experiencing childcare, compared with those staying at home, differed in child outcomes at 30 months in the areas of mental and motor development, organisation of behaviour, adaptive behaviour, behaviour problems and attachment security; (b) for children with special needs using childcare, evaluated extent to which age of entry, amount, and quality of childcare predicted these outcomes at 30 months. US	166 mothers and their families recruited at infant-age 12 months, who had a diagnosed disability (n-89) or who were at biomedical risk for developing a disability (n=77), primarily due to peri- or postnatal biomedical factors. At 30 months sample 156 (attrition). Data collected at 12, 15, and 30 months. Demographic variables Mother's attitudes: attitudes to employment, about childrearing, separation anxiety. Child characteristics: developmental quotients and temperament, mental, motor development and behavioural organisation, adaptive behaviour, maternal rating of temperament (at 12 months controls). Home environment: quality of caregiving through observations, positive caregiving ratings. Childcare: age of entry, average weekly hours, quality (rating scale), positive caregiving ratings. Child outcomes: Bayley mental, motor development and behavioural organisation, adaptive behaviour, behaviour problems, attachment security (Strange Situations) at 30 months. Analyses of covariance (childcare and at-home groups). Hierarchical multiple regression analysis for childcare characteristics and children's development.	**Comparison of childcare groups:** At-home and childcare group did not differ significantly from each other on any of the outcome measures after adjusting for covariates. **Childcare predictors of 30 month outcomes:** Childcare variables (age of entry, average weekly hours, quality) not related to performance on mental and motor scales. Childcare variables not related to behaviour problems or attachment security at 30 months. Number of hours per week did not influence outcomes. More positive changes in behavioural organisation from 12 to 30 months related to entering childcare at later age. More positive changes in adaptive behaviour from 12 to 30 months related to higher-quality caregiving in childcare. Quality of home caregiving was positively related to child–mother attachment security. Quality of home caregiving was positively related to behavioural organisation.	Authors noted 30 months could be too young to detect effects in some areas of development. About 10% of childcare arrangements not observed because of refusal—non observed arrangements are typically of lower quality. Could not conduct separate analyses by diagnosis or risk—insufficient numbers. Not designed to examine therapeutic childcare programmes on children with special needs. Highlights importance of quality at home and in centre. Questions whether early entry for children with special needs is optimal—authors suggest child may need more one-to-one care in first months.

Study, aim, country	Sample and analysis	Findings	Commentary
(Borge & Melhuish, 1995) Longitudinal Quantity of daycare experience Norway	Longitudinal. 120 children aged 4 years to 10 years in rural Norway. Health examination, maternal interview, MacCarthy Scales of Child Abilities at age 4. At 7 years, health examination, maternal interview (daycare history, parental employment, health promotion, maternal expectations about school, Behaviour Checklist completed by mother. At 10 years, maternal interview, Rutter Child Scales (family factors, social relations, parent employment, support) completed by mother. Rutter Scale B measure of level of behaviour problems completed by teacher. Behaviour problems reported by parents at 10 years showed little association with problems reported by teachers. Hierarchical regression analysis with behaviour problems score as dependent variable. Controlled for socioeconomic status, gender, and intelligence before estimating contribution of maternal employment and daycare experience. Undertook path analysis.	At age 4, boys had more behaviour problems than girls, as did children with lower IQ scores. Children with higher levels of behaviour problems at age 4 showed the greatest reductions between 4 and 7 years, and after allowing for other effects, children with more daycare centre experience during these years showed greater reductions in behaviour problems. At 10 years, the level of behaviour problems perceived by mothers was derived from levels at age 4 and 7, and no further effects from other variables. At 10 years, level of behaviour problems perceived by teachers was derived from maternal employment (0–4 years) and to some extent socioeconomic status. Higher level of behaviour problems with higher level of maternal employment and hence nonparental care 0–4 years. Level of behaviour problems at age 4 modified by ordinary Norwegian daycare centre experience in ages 4–7.	Can't calculate effect sizes. Before age 4 children at home, with relatives, day mother, or au pair/day mother. Quality unknown. Daycare centres available when children 4 years old. Used by mothers who were employed and not employed. Staff:child ratio 1:5 and 1:4. Children with special needs had assistant. One teacher with 3 years' college education and two assistants. Overall teacher was director. Parents involved in making and repairing equipment. Child in daycare until age 7.

Study, aim, country	Sample and analysis	Findings	Commentary
(Borge, Rutter, Cote, & Tremblay, 2004) Used NLSCY cross-sectional maternal questionnaire data from representational sample of 3431 Canadian 2–3-year-olds to compare rates of physical aggression shown by children looked after by own mothers and those attending group daycare. Created a family risk index to test whether any difference in physical aggression might reflect social selection rather than social causation. Canada	Data from National Longitudinal Survey of Children and Youth. Sampled 3431 Canadian 2–3-year-olds. Frequency of physical aggression: how often child kicks, bites, and hurts other children; when another child accidentally hurts him he reacts with anger and fighting; gets into many fights. Extreme group (6.4%) and rest. Independent variables: age, sex, siblings, maternal education, family functioning, socioeconomic status, type of childcare, type of care since birth, stability of care during first 12 months, hours per week at present type. Family assessment: quality of family functioning (communication, problem resolution, control of disruptive behaviour, showing and receiving affection). Grouped into categories. Also socioeconomic categories.	Mothers who used homecare during first 3 years less well educated, lower occupational group, larger number of children, less adaptive family functioning. When social selection effect taken into account, proportion of children with high physical aggression almost one and a half times as high in homecare as in daycare group. No tendency for physical aggression to be associated with homecare in large majority of population at lower family risk. Lack of risk of physical aggression associated with early group daycare. Key message that in considering possible risks of daycare, there is danger of overlooking risks associated with home care of children in socially disadvantaged families under risk. Need to ask what circumstances are under which daycare increases and decreases risk.	Notes a recent paper Jaffe, Moffitt, Caspi, and Taylor (in press)—effects of fathers' involvement beneficial when fathers not antisocial, negative when antisocial. Hypothesised effects of family homecare on aggression may be beneficial or risky according to whether family at risk or not. Compared findings with NICHD—measures of physical aggression in this study only three items (but purer) whereas NICHD six. Cut off of extreme point—6.4%, whereas NICHD 16%. Lower attrition than NICHD, therefore less possibility of bias. Ages—2–3-year-olds, NICHD 4½-year-olds. Weaker measures of daycare quality. Raises query about applicability of NICHD findings.

Study, aim, country	Sample and analysis	Findings	Commentary
(Bowes *et al*., 2004) Quantitative study, with cross-sectional, longitudinal, and time lag components, to gain understanding of how common it was for children in NSW to experience multiple and changeable childcare, and to assess impact of range of child, family, community, and childcare factors on children's developmental outcomes. Australia: City (Sydney) and rural (near Bathurst, NSW).	Three age groups of children (0–1, 1–2, 2–3 years) from 363 families (from 693 of full sample) and recruited through long day and family day settings. Measures taken at time 1 and then time 2 approximately after a year and time 3 approximately after 2 years. Questionnaires to directors—info about centres and children—using standardised measures—infant toddler temperament questionnaire, behaviour checklist, social skills rating. Telephone interview with parents (this was used in first and second year—in second year it replaced the questionnaire). Used standardised measures—behaviour scale and family adaptability and achievement scale. Range of socioeconomic indicators (including employment levels and income). Observations by researchers of family daycare homes and centres—ITERS, ECERS, FDCRS, and ECERS. At age 3 all children assessed on tests used by Head Start researchers on child development indicators. Further measures planned for age 4. Summarises main preliminary findings. Regression analysis—multiple care and children's language and communication skills. Multiple care and parental stress.	Use of multiple care for children aged less than 3: - 45% reported weekly arrangements that involve two or more settings. - 26% reported one or more changes over last 12 months. Level of multiple and changeable arrangements similar in the two locations despite differences in locality, income, and education. Parents reported high degree of satisfaction with care arrangements (mean 4.4 on 5-point scale). Reasons for multiple care arrangements were matter of preference rather than constrained choice. Reasons were convenience and interests of child. Affordability of care and access to care less often endorsed as reasons. Reasons for changes in care—more likely because previous arrangement becoming unavailable or staff turnover. Mothers took lead role in transporting children, and caring for children when sick. Fathers involved in transport and choice of care. Language and communication outcomes: Predictors of language skills = age (older children had higher skills), gender (girls higher), health (poor health lower), mother's education (more highly educated higher). Regression analysis—multiple care contributed to language and communication skills over and above these predictors (children in two or more settings had higher scores than children in one). Same trend present in full sample but not statistically significant. Dealing with multiple arrangements did not seem to increase daily parenting stress. Age of child—having a toddler—was a better predictor of daily hassles.	NOTE: Can't calculate effect sizes. Did not include informal care. Reviews evidence of use of multiple forms of care. Cites NICHD (1998)—children in US experienced multiple use in first two years exhibited more problem behaviours than children with fewer care arrangements. Goodfellow (1999)—children in Australia with multiple and changeable outcomes—confused, lost in group, or difficulty forming relationships. Parents reported stress in juggling multiple care arrangements.

Study, aim, country	Sample and analysis	Findings	Commentary
(Broberg, Wessels, Lamb, & Hwang, 1997) Longitudinal study of effects of childcare on children's development. Examines findings at age 6½ and 8½. Examines effects of different types, quality, and amount of out-of-home care on children's cognitive abilities. Goteborg, Sweden	146 children (72 girls) average age 16 months. No previous regular out-of-home care experience. Within 3 months 54 entered centre care and 33 entered family daycare. Data collected on entry to project, after one year and after two years, then when children 6½ years and 8½ years. **Child characteristics** Gender, temperament, number of siblings, prior cognitive abilities. **Family background**: socioeconomic status, quality of home environment, extent of paternal involvement. **ECE arrangements**: type, amount, and quality. **Child's verbal abilities** (in second and subsequent phases) **Child's mathematical abilities** (ages 6 and 8). 123 children (65 girls) still in study at age 8. **Inhibition:** At age 40 months—mother ratings and observer ratings, at preschool—teacher ratings. **Time in daycare:** total number of months irrespective of whether full or part-time. **Quality of alternative care:** structural (group size, ratios, average hours, longest regular day, total caregivers working in group) and process (based on observations) quality.	Children who spent more months in centre-based care before age 40 months obtained higher scores on tests of cognitive ability at 8½ than did children in home care or family daycare. For children who had spent three or more preschool years in out-of-home care, quality of care was predictive of outcomes. Quality of adult–child interaction predicted verbal abilities, and child:staff ratio, group size, and age range predicted mathematical abilities. Crude effect sizes for entry before age 40 months and ignoring all other variables: Verbal-0.71 Maths-0.80 (Would be lower if other variables taken into account.)	NZCER statistician calculated effect sizes. No child in centre-based care before age 16 months, probably because of Sweden's generous parental leave provisions of at least a year. Also leave to look after sick children. Daycare centres purpose built, well equipped. Regulated staffing. Children under 4 mostly assigned to toddler groups—12 children with three or four staff, one of which is teacher, rest are nurses. Family daycare—mother cares for four children. Subject to fewer regulations.

Study, design, setting	Sample, measures	Findings	Commentary
(Brooker, 2002) Exploring the ways in which 16 children learn the culture of their first classroom, and the rules for being a member of it. Responding to the statistics that conclude that there is a growing gap between the highest and lowest achieving ethnic groups in many LEAs in the UK, and asking why children from poor or minority communities have poorer educational outcomes. UK	An ethnographic study, over a period of 18 months, of 16 four-year-old children from working class backgrounds, who started school in a single Reception class in school in a poor inner urban neighbourhood. Eight of the children were “Anglo” (their parents born and educated in the UK; eight were from Bangladeshi homes (all of their parents were born in the province of Sylhet). Data from: field notes, entry assessments, parent interviews, a parent diary over a day, a researcher diary over a day of school once a term, parent questionnaires, systematic observation, child interviews, document analysis, analysis of children’s products and ongoing records, staff interviews, end-of-year assessments, debriefings with the parents.	Data analysed using conceptual models from Bernstein (classification—strong and weak boundaries—and framing—strong and weak rules—in different contexts), Bourdieu (habitus and learning dispositions), and Bronfenbrenner (nested contexts). Four desirable attributes or “learning dispositions” were important for the success of the children in this first year of school: compliance (self-regulating, takes responsibility), prosociality (interacts with peers and adults, co-operates and collaborates), independence (selects and sustains a range of activities without adult direction), and involvement (absorbed, focused, committed, and curious).	Three critical factors emerged from the research on these learning dispositions (p.150): The high level of interdependence between the conditions that are needed for each; The critical importance to all of them of the child’s confidence and self-esteem; The significance of the adult’s role in fostering such feelings (of confidence and self-esteem). As with the qualitative study by Pollard and Filer (1996; 1999), empirical validity is obtained through three strategies: unobtrusive data gathering (“natural” social processes are undisturbed); respondent validation (subjects recognise and affirm the findings); and triangulation (a variety of types of data are collected).

Study, aim, country	Sample and analysis	Findings	Commentary
(Brooks, 2002) Cross-sectional study compares working poor families receiving subsidies for childcare with demographically matched families from waiting list on maternal employment and income, childcare and child physical health, socio-emotional maturity, and cognitive wellbeing. Georgia, US	52 working poor families receiving subsidies for childcare and 50 demographically matched working families with preschool children aged 3–5 from waiting list. Family economic wellbeing: employment (jobs held, hours per week, pay, out of pocket expenses, total income)—interview mother. Income-to-needs ratio—multiplies gross household income by 12 and divides into the US Census Bureau Poverty threshold (congruent with family size). Childcare: type, hours, number of months current arrangement, receipt of financial help, how easy to find care, desire to change care. **Child outcomes** Cognitive: school readiness, mother report measure of child's socio-emotional development, mother's assessment of child's physical health. **Analysis** Chi-square, t tests, MANOVA.	Children whose mothers on subsidies significantly more likely to be in formal care, also slightly smaller average family size (1.9 versus 2.6). Compared to mothers from waiting lists, mothers receiving subsidies were more likely to be employed (v = 0.30). Unemployed mothers had half median income of employed, 2/3 of wait list mothers very poor, 17% of employed wait list v. poor, 2% employed subsidy mothers very poor. Wait list mothers spent half as much of their income on childcare as subsidy. Very poor = incomes less than half subsidy rate. Majority of families in both groups had incomes below poverty rate (71% subsidy and 72% wait list). Childcare arrangements twice as stable for families receiving subsidies, and children were more likely to be in a licensed childcare centre (92% compared with 28%, p = .005). Higher percentage of mothers in wait list found it to be a problem or big problem in finding care (Cramers v = 0.48). No significant differences on outcomes for children between groups.	Context—welfare reforms of 1996–. Income of families moving from welfare to work is very modest. Childcare subsidies seen to be crucial. But despite increases in subsidies, demand far exceeds supply. Minimal level of childcare regulations in Georgia—among the least rigorous in US. Authors report average quality of care for low-income families in Georgia, regardless of subsidy status is not very good. Mothers had to be employed to be on the wait list. Many wait list mothers lost jobs while on list. Authors suggest job retention helped by subsidy. Low wage economy is an issue—majority of families making less than half what they need to be self-sufficient. No direct details about quality of care—just that more in formal care. Unlikely subsidy rates which lag behind market rates high enough to enable families to afford high-quality care.

Study, aim, country	Sample and analysis	Findings	Commentary
(Brooks, Risler, Hamilton, & Nackerud, 2003) US Cross-sectional comparison of matched working poor families, one group receiving childcare subsidies, one not, in relation to maternal employment, family income, childcare use, child outcomes. Georgia, US	52 families with subsidy, 50 on waiting list for subsidy, with preschool children aged 3–5. Maternal reports on employment, childcare costs, type, hours, length, ease of finding care, desire to change care; child's socio-emotional development; physical health; fieldworker testing child's cognitive development (using school readiness component of Bracken basic concept scale). Chi-square tests, Cramers V for chi square used for effect sizes; multivariate analysis of variance.	Subsidy families smaller. 98% employed cf. 80% waiting list mothers, 2% very poor cf. 17% of employed on waiting list, and 67% of non employed on waiting list. 91% subsidy children in licensed ECE cf. 28% waiting list; average length in current care 18 months cf. 9 months waiting list; no problem finding care 81% cf. waiting list 33%; desire to change care 12% cf. 68% waiting list. No difference in child outcomes (school readiness, health, socio-emotional development).	Cites two earlier 1990s studies also comparing those receiving childcare subsidy and those on waiting lists with similar findings in relation to employment, quality, or parental satisfaction with ECE, favouring those receiving a subsidy. Authors note studies finding low quality of ECE in Georgia, and note that subsidy amount was behind market rates for ECE, suggesting that subsidy would not cover more expensive high-quality care.

Study, aim, country	Sample and analysis	Findings	Commentary
(Burchinal, Roberts *et al*., 2000) Longitudinal Aimed to determine whether children's outcomes differ statistically among children who do and those who do not experience care that meets recommendations with respect to teacher:pupil ratios and teacher education. US	89 African American infants attending community based childcare centres. Children selected for longitudinal study were less than 12 months of age at enrolment and were developing normally. All attended for at least 30 hours per week. Most from families with incomes less than 185% of federal poverty threshold. Data collected at age 12, 18, 24, and 36 months. **Measures** Childcare quality: ITERS and ECERS for process quality; class size, number of adults during observations, and staff qualifications for structural quality. Categorised on whether met standards. Childcare outcome data: cognitive and language development measures collected between 1 and 3 years. Family environment: HOME assessment of childrearing environment at home. Hierarchical linear model analysis.	Higher quality significantly related to higher scores on measures of cognitive outcomes, language development, and communication skills, after adjusting for child and family characteristics. Classrooms that met professional recommendations regarding child:adult ratios scored significantly higher across time on measure of receptive communication with an estimated difference of 1.01 points in terms of developmental months at each age (0.34). Also had significantly higher overall communication skills with adjusted means of 103.8 for children with good ratios and 98.1 children with poor ratios (effect size 0.54). Classrooms that met professional recommendations regarding teacher education more strongly linked to outcomes for girls—tended to have *girls* with better cognitive and receptive language skills. Adjusted mean 113.9 compared with 103.5 for girls whose teacher did not have higher-level qualification. Children in classes with teachers with more education showed larger gains in expressive language over time.	Would have been big differences with sample of 89 to produce these effect sizes. Recommended ratios: per adult: three or less for infant classes, four or less for mixed age and toddler, five or less for 2-year-olds, six or less for 3-year-olds. Teacher education: whether teachers had achieved at least 14 years of education (high school diploma and two years college or community college). Did not have info about childcare training degrees.

Study, aim, country	Sample and analysis	Findings	Commentary
(Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000) Secondary data analysis to examine whether factors such as poverty, minority ethnic background, gender, or parental authoritarian beliefs moderate the association between childcare quality and child cognitive and social outcomes. US	Pooled data from Cost, Quality, and Child Outcomes Study, North Carolina Head Start Partnership Study, and the Public Preschool Evaluation Project—all included same measure of childcare quality and family selection factors, and similar or same measures of language and pre-academic development and social skills. Same investigators. Sample size 1307 children. Childcare quality: ECERS Outcomes: language skills, pre-academic achievement in reading and mathematics, teacher-rated social skills. Family risk factors: poverty, ethnicity, and parental values. Log-linear and regression analyses (adjusted for dependencies among observations from same site and combining data). Divided centres into high, medium, and low quality.	**Behaviour problems:** Childcare quality was related to the incidence of behaviour problems, but did not interact with other predictors or show differential effects across three studies. Children in higher—quality centres less likely to have behaviour in problematic range (17%) compared with children attending poor quality (29%) and high quality (21%). Boys more behaviour problems (24%) than girls (13%). Children from impoverished families more behaviour problems (21%) than others (16%). Language skills: Quality related to language skills for all children. Large differences between adjusted mean among children in poor quality and those in medium quality (effect size 0.69) and children in high quality (effect size 1.01). Quality more strongly related to language skills of children from ethnic backgrounds. Among children "of color", differences between adjusted mean for children in poor quality and those in medium quality (effect size 1.12) and children in high quality (effect size 1.54). Among white children, differences between adjusted mean for children in poor quality and those in medium quality (effect size 0.26) and children in high quality (effect size 0.48). Moderate to large effects were also observed in analyses that controlled for parental beliefs and education. Pre-reading and pre-math: Both significantly related to quality. Children in poor quality centres had significantly lower reading scores than those in medium quality (effect size 0.42) or high quality (effect size 0.52). Children in poor quality centres had significantly lower math scores than those in high quality (effect size 0.48). Math scores of children in medium quality not significantly different from poor quality (effect size 0.33) and high quality (effect size 0.15).	Insight into question of whether effects are stronger for children from less advantaged backgrounds. Notes limitations of some studies that measured type rather than quality of care; included too few children with risk factors; and did not involve samples with diverse quality and home experiences—this study has sufficient numbers of children from diverse backgrounds in centres of varying quality. Only limited support that childcare quality matters more for those experiencing risk factors—i.e. for finding that for language development childcare quality interacted with ethnicity.

Study, aim, country	Sample and analysis	Findings	Commentary
(Burchinal, Roberts, Nabors, & Bryant, 1996) Examined relations between quality of centre-based childcare and infant cognitive and language development. US	79 African American 12-month infants attending one of nine community based centres. Entered childcare between 1 and 10 months. All full-time. Structural (class size, infant:adult ratio) and process measures(ITERS) of quality. Home environment. Infant outcomes: Standardised assessments of cognitive and language development. Family and child characteristics. Regression analysis.	**Cognitive**: quality of care modest but significant correlate of cognitive and language development. Process measures of quality related to cognitive development, higher standard ratios to better communication skills. Neither child nor family factors moderated association quality and infant development.	Quality of care tended to be poor to minimally adequate. None high quality. Only two centres in this study non-profit.

Study, aim, country	Sample and analysis	Findings	Commentary
(Campbell & Ramey, 1995) Carolina Abecedarian project. Intervention study US. Compared programme and control group on IQ, cognitive outcomes, and academic achievement. US	Age of entry 6 weeks, disadvantaged children, 111 randomised. Compared: preschool treatment followed by elementary school treatment, preschool treatment only, early elementary school treatment only, and untreated controls. IQ and general cognitive tests.	Preschool outcomes: At every age from 18 months through 36 months children treated in preschools significantly outscored preschool controls on measures of intellectual development. Age 8 outcomes: Significant positive effects of preschool attendance on IQ test scores and tests of reading and mathematics from infancy to age 8. Age 12 outcomes: Maintained positive effects from age 8 on IQ, reading, and mathematics. Age 15 outcomes: Seven to 10 years after any treatment, students who had preschool treatment scored significantly higher on individually administered tests of reading and mathematics and had fewer instances of grade retention and assignments to special education. Benefits of preschool stronger for academic test scores than IQ. (Campbell, Breitmayer, & Ramey, 1986) Parental outcomes: Programme and control group mothers comparable on education and employment pre-intervention, but programme mothers had on average one more year of education than controls when children 54 months, fewer were unemployed or had unskilled jobs, more were financially self-supporting. See review (Zoritch, Roberts, & Oakley, 2000)	Preschool programme infancy to public kindergarten, full days, 12 months of year; staff:child ratios 1:3 infancy, 1:6 toddler and preschool; good resources; emphasis language development and pre-literacy skills. Stimulating equipment and resources; infant curriculum biased towards informational language. Social work services. School-based intervention up to 8 years for proportion of children. Home-school resource teacher when child entered school.

Study, design, setting	Sample, measures	Findings	Commentary
(Carr, (1997) A study investigating the learning outcomes for a group of 4-year-olds as they worked in the construction area of a New Zealand kindergarten, set in an area of middle-income housing. The research investigated empirical evidence for a transactional model of the interface between learning disposition (socioculturally defined) and dispositional milieu. New Zealand	Participant observation of the construction area in every session over six weeks. Five techildrenological practices were compared as contexts for the development of learning dispositions. Three domains of learning disposition were identified from the data: privileged discourses; preferred responses to difficulty; and favoured patterns of responsibility. Data collected: field notes, tape recording of every session, videotaping on the final 14 days and some photographing, structured interviews with the children about one disposition (preferred response to difficulty). Episodes of joint attention were used as units of analysis inside the units of techildrenological practice. An analytical tool for the dispositional milieu associated with responsibility was a four-level adult power scale (derived from 25 codes of adult utterance). All adult utterances in the five techildrenological practices were compared using this quantitative analysis.	Two major findings were: (i) The techildrenological practices were working as "narrative niches", characterised by privileged discourses, preferred responses to difficulty, and favoured patterns of responsibility. (ii) Apparently robust individual learning dispositions and narratives were developing in the early years; 17 "regular" players were identified, and 13 of these 17 children were playing out familiar learning dispositions in one or across a range of activities. However, there were 10 occasions when these children were trying out new narratives as well (p. 305), often because they were trying an activity outside their "niche", or encouraged by children who were resisting the dominant disposition or narrative that had become characteristic of a particular activity.	Six weeks of intensive observation in one area of one kindergarten. Empirical validity (accountability, plausibility, or trustworthiness) in this interpretive study was obtained by (i) clearly outlining the role of the researcher as participant observer, (ii) collection of additional structured data (interviewing the children), (iii) the robust nature of the primary data (using two tape recorders), (iv) taking a comparative approach—"case studies" within the same site, (v) combining the analytic and the systemic (an early childhood setting as a complex system of interdependent and nested sub-units) and using a theoretical framework against which to "test" the data (in this case outcomes sited at the interface between the learner and the context in a transactional model of learning).

Study, aim, country	Sample and analysis	Findings	Commentary
(Chryssanthopoulou *et al*., 2005) Health—cortisol production in children. England	56 mo-child dyads; children aged 3–4½, attending childcare centres or nurseries. Am and pm levels of cortisol, measured at home. Info from mothers on childcare use (number of hours per week, length of time since first attendance, age of first attendance), child temperament, family characteristics, and maternal employment. Average hours per week 21.6; age of entry 21.5 months; attending ECE for 26.3 months. Majority middle-class families in "relatively stable, wellfunded preschool programmes". ANOVA. Regression analysis, comparing groups of high/low outcomes.	No relationship of cortisol output with ECE hours, length, or age of entry; or with child temperament. Higher cortisol levels in children where: - highly expressive or reserved families - mothers had low levels of job role quality, or high levels of emotional exhaustion Frequent childcare use decreases impact of latter two aspects on cortisol levels: (of around 2ng/ml in relation to emotional exhaustion, and around 1 ng/ml in relation to job role quality (the mean was 1.95 (SD 1.5 ng/ml for sample).	No definition of low and high ECE frequency. No information on ECE centre quality.

Study, aim, country	Cleveland commentary
(Cleveland, 2006) Commentary on EPPI-Centre review (Penn *et al*., 2006) on long-term economic impact of centre-based EC interventions by member of Peripheral Review Group.	Criticises inclusion and exclusion criteria for being too narrow. Excluded careful statistical analyses from NICHD, *Cost quality and Childcare Outcomes*, Head Start, or other US studies. Did not take account of studies on labour supply effects in Quebec (Lefevbre & Merrigan, 2005, of 1997 childcare reforms, effects on tax revenues (Baker, Gruber, & Milligan, 2005), or of positive findings Andersson's (1989, 1992) Swedish study, or EPPE study. Did not consider studies from other sources. Cleveland concludes from material reviewed in EPPE review: Intervention programmes have good effects. Children likely to do better in school, better in job market, mothers (or fathers) able to participate in labour force; for some populations visible reductions in criminal activity; likely other benefits. Long-term benefits greater than the costs. These effects likely to be tip of iceberg—value of good ECE for all children, not just disadvantaged. Believes reasonable to infer likely to be positive benefits if repeated in other countries. Better to have universal than targeted services.

Study, aim, country	Sample and analysis	Findings	Commentary
(Cleveland & Krashinsky, 1998) Assessment of economic impact of major investment public money on good quality childcare for Canadian children aged 2–5 years. Reviews evidence on educational and developmental impacts of childcare. Analyses economic impacts on mothers' participation in labour force and family life. Calculates value of benefits and costs of good quality ECE for all preschoolers. Calculates incremental benefits of changes to Canadian childcare arrangements. Canada	Uses literature showing good quality ECE beneficial for children and parents. Calculates net additional cost of proposed childcare programme to: - provide sufficient high-quality publicly funded ECE to accommodate 50% of all children aged 3–5 years - provide sufficient high-quality publicly funded ECE to accommodate 50% of children outside this age group whose children are in paid labour force. Estimates value of benefits to children from studies of child development. Estimates value of increased incomes, increased taxes, decreased poverty and social assistance, reduced likelihood of later poverty, and improved equality of women in workforce. Compares costs and values.	Calculates incremental benefits of high-quality ECE to all children aged 2–5 years with employed parents and enriched nursery school (sessional) for children primarily cared for by parents at home as two dollars for every dollar of cost to public purse.	Notes while focus on economic analysis important not to reduce purpose of good ECE to limited focus on readiness to learn or later productivity: quality important at time of attendance. Childcare alone cannot solve unemployment problem: also need adequate jobs and wages.

Study, aim, country	Sample and analysis	Findings	Commentary
(Connelly & Kimmel, 2003) Using 1992 and 1993 SIPP panel data (nationally representative sample of households conducted by US Bureau of the Census). Each panel is interviewed every 4 months over 3 years. One of these interviews has information about childcare use and costs for currently employed parent with children younger than 6. Study aims to estimate impact of childcare subsidies on decision to work and on welfare receipt. US	1523 single mothers; 43% on welfare. Data includes maternal employment, wage, welfare receipt, childcare use and costs—analysis for youngest child. Also included age, education, number of children 0–2, 3–5, ethnicity, poverty; and set of state-based variables including urban/rural, average welfare and Medicaid payment, unemployment rate, per capita income, and regulated staff:child ratios and teacher education. Bivariate probit model predicting employment and nonzero expenditure for childcare, results of this model used to create selection terms, for a further model to predict hourly price of childcare for each mother. Because of small sample size, included all mothers in the first model. Results used to simulate how changes in price of childcare might affect employment and welfare receipt.	Notes that employed mothers on welfare more likely than other employed mothers to work part-time; fewer paid for childcare, but if they did, paid more –authors suggest this may because part-time ECE costs more, or that they may have been able to afford more if eligible for a subsidy (no question asked about that). Simulation of decreases in childcare costs showed that if childcare expenses were reduced by 10% for all single mothers, their employment would rise from 48.5% to 52.8%, and welfare receipt from 40.1% to 34.9%. If childcare expenses reduced by 50%, employment would rise to 74.7% and welfare fall to 12.5%.	Welfare reform in 1996 allowed states to set their own childcare subsidy schemes, and required less state matching of federal funds, leading to less increase in assistance than had previous system continued; one estimate is that less than 15% of eligible children were getting a subsidy. Authors note the high percentage of earned income needed to purchase reliable care—around ¼ of earnings for single mothers on minimal wage. Also note that this dataset "represents a more diverse population of welfare recipients than current welfare load, since economic growth in late 1990s-early 2000s meant high proportion of mothers with barriers to employment. Using the 50% subsidy for single women only the cost of the subsidy was 2/3 of the savings from reduction in welfare receipt, i.e. having childcare subsidy was less costly for public spending; taking into account the US earnt income tax credit (applying to workers only, in this respect like New Zealand working with families policy), public spending increased by 18%.

Study, aim, country	Sample and analysis	Findings	Commentary
(Corter *et al*., 2006) Phase 1 evaluation of Toronto First Duty sites bringing together kindergarten, childcare and family support services into single accessible programme, located in schools and co-ordinated with EI and family health services. Evaluation—baseline data 2003 and follow-up 2005. Toronto, Canada	Five First Duty sites No information about numbers and characteristics of children, parents, staff. Summary report only. Developed indicators of integration in respect to governance, seamless access, staff team, EC environment, parent participation. Assessments of programme quality (ECERS–S) Child outcomes (teacher ratings of child's physical health/wellbeing; social knowledge and competence; emotional health maturity; language and cognitive development; communication skills and general knowledge); and direct assessment of 76 children on PPVT test of early reading ability, number sense, and social responsibility in 2003 and 2005. Parent, staff, and community surveys. Surveyed parents in non integrated centres and in integrated sites. Economic analysis Child attendance tracked through Intake and Tracking System—single intake form, electronic database to record attendance, and capacity to produce reports at site or across sites. Examined programmes children attend without a parent/caregiver; adult:child programmes; adult only services such as workshops, outreach, and referral, including home visiting, health screening, open houses; and specialised interventions outside regular programme hours. Analysed indicators of change over period 2003–2005, 2001–2005.	Increased co-ordination and collaboration in respect to governance, seamless access, staff team, EC environment, parent participation—at each site. Programme hours and participants increased at all sites. Serves more families more flexibly than other non integrated programmes at slightly lower costs. Quality as measured by ECER-S improved in all seven areas (space and furnishings; personal care routines; language reasoning; programme activities; staff-child interactions; programme structure; parents and staff. Biggest improvement in use of space, program activities, and parent/staff communication. Professionals said they benefited—support from administrators and system managers, programme resources, better communication with families, enhanced professional development, peer learning, and support. TFD parents compared with parents from non-integrated centres and centres with no preschool—more likely to talk to teacher and help child learn at home. Also made fewer trips to library because books and literacy activities available at the site. Most parents had multiple goals related to self and child—goals for children outranked goals for self. Children liked play the best. Play not liked when other children "don't let you play" or "don't play nice". Universal reach. Patterns show increase and intensification in immediate school neighbourhood from 2003 to 2005. Use of services improved 2003—56.9% and 2005—35.6% of parents unable to use many of services. Outcomes for children improved in three of five sites—and for all sites in social, emotional, and language outcomes as assessed by teachers. Child measures showed significant improvement in language measures, total early reading ability score, and number knowledge. Impacts on community—most heard about TFD from school. Unlikely TFD played role in creating support for co-ordinated ECE.	Professional team of kindergarten teachers, ECE educators, family support staff, and teaching assistants plan and deliver the programme. Space and resources are combined. Single intake procedure and flexible enrolment options. Aims to promote "healthy development of children from conception through kindergarten while at the same time supporting parents to work or study and in their parenting role" (p. 5). Outside Quebec EY services in three streams—kindergarten, childcare, family resources. Key to change—time to meet and plan programme, ongoing professional development and support, common goals and problem solving, leadership especially from school principal, system support and affirmation, school space for joint programming. Different interpretations of integration. Separate funding, governance, and legislative structures for education, family and children's services make it hard to integrate. Differences between funding, training, labour affiliations, compensation, and work environments kindergarten teachers and ECE staff were seen as barriers to creating a fully integrated staff team.

Study, aim, country	Sample and analysis	Findings	Commentary
(Cote *et al*., 2007) Tested hypothesis that nonmaternal care services could prevent the development of physical aggression problems, depending on the age at which the child begins to receive services. Canada	Group of children who followed a trajectory of atypically frequent physical aggression between 17 months and 60 months among a population sample of 1691 Canadian families. Controlled for variables significant association with NMC and PA trajectory—derived from maternal characteristics (mother age, antisocial behaviours, depression, nicotine and alcohol consumption); child characteristics (sex, temperament, ethnicity, health, birth status); family characteristics (income, family situation, number of children); family functioning. Multiple regression analysis and logistic regression analysis. Compared children of mothers with low levels of education and children of better educated mothers. Nonmaternal care included types of daycare arrangements in child's home or outside used regularly during preschool period. Examined effects if nonmaternal care initiated before 17 months and after 17 months. Mother ratings of physical aggression at 17, 30, 42, 54, and 60 months.	Children of low-income mothers less likely to receive nonmaternal care (NMC). Children of low-income mothers at significantly lower levels of risk of physical aggression (PA) if received NMC during infancy (effect size d = -0.62), during preschool years (d = -0.38) compared with those who never received it. Children of mothers who graduated from high school were not at higher risk for PA if they received NMC during infancy or preschool. Same results for high trajectory PA group. Family characteristics are generally more important determinants of PA problems than NMC.	Authors suggest children of at-risk mothers who receive early NMC are likely to have reduced exposure to family risks at important developmental time. Care and learning experiences of NMC likely to be superior. Importance of encouraging high-risk families to use services.

Study, aim, country	Sample and analysis	Findings	Commentary
(Cunha, Heckman, Lochildrener, & Masterov, 2005) Paper developing theoretical econometric model of skill formation (life-long), based on empirical studies of how skills and abilities are formed over the life cycle. The theory also draws heavily on developmental psychology.	From developmental psychology, an individual has multiple abilities and skills. The purely cognitive (IQ) is affected by the environment up to about age 10, and then is relatively constant. Non-cognitive (attitudinal) skills are most strongly affected by the environment, at all ages. Achievements (e.g. test scores) are affected by cognitive, non-cognitive, and environmental influences. According to their theory, two attributes of skills are: - *self-productivity*: skills persist across different lifecycle periods and are self-reinforcing; one skill can reinforce other skills (e.g. attitudinal skills reinforce other attitudinal skills and achievement) - *complementarity*: skills from one period may raise productivity of skills in a later period (there is a synergy). This, however, only happens if the environment is conducive to that skill (e.g. high quality ECE can improve IQ, attitudinal skills, and achievement, but these advances can be lost if the primary education environment does not match the quality of the ECE) Illustrate the theoretical model using data from the three most commonly used early intervention studies: Perry, Abecedarian, and Chicago CPC.	Returns from late-childhood investment and remediation are low, but those from early-childhood investment are high. Further, the returns for early-childhood investment are greatest for the most disadvantaged, while those for late investment are greatest for the least disadvantaged. This is because of the self-productivity and complementarity of the early investment.	Synthesis of theory from developmental psychology and economics. Takes account of cognitive, attitudinal, and achievement skills. Compares and contrasts costs and benefits of early and late interventions.

Study, aim, country	Sample and analysis	Findings	Commentary
(Currie & Thomas, 2000) Used data from the National Educational Longitudinal Survey to examine quality of school environments for black Head Start participants and white Head Start participants. Examined test scores for black and white participants after stratifying for an indicator of school quality. US	2531 black children; 14,341 white children from NEL Survey. School quality: average test scores of other children in the school at 8th grade; comparisons between Head Start children and other children in same school. Examines how Head Start children perform (relative to other children) within schools of different quality.	Black children who attended Head Start go on to attend schools of worse quality than other black children, i.e. they attend schools in which mean scores are low. Same not true amongst whites. Supports idea that poor schools can undermine early gains.	Explanation for faster fade out of Head Start effects for black compared with white participants.

Study, aim, country	Sample and analysis	Findings	Commentary
(Deater-Deckard, Pinkerton, & Scarr, 1996) Longitudinal study to investigate behavioural adjustment of a group of children who had experienced extensive centre-based childcare that varied substantially in quality, while considering variation in home environment. Massachusetts, Virginia, and Georgia, US	141 mothers of 73 girls and 68 boys—assessments at two times over four years. Most European–American, 93% mothers working more than 30 hours per week. **Measures** History of childcare usage. Centre quality: ITERS and ECERS, adult:child ratios, caregiver education, highest wage paid. Family characteristics: maternal age, marital status, employment, income, ethnicity. Parent stress, parent emotional support, harsh parental discipline. Outcomes: parent and caregiver/teacher ratings of temperament and behaviours. Regression analysis	On average centre quality low (though wide range), caregiver education and training low, wages ranged from legal minimum. Mothers highly educated, per capita income high, low to moderate stress. Modest to moderate associations between children's adjustment and measures of home environment (maternal stress and parenting) for maternal ratings of child adjustment 29 of 95 correlations (31%) were significant. Ten percent of correlations teacher-rated adjustment and home environment significant. Correlations between indicators of centre quality and children's behaviour were modest and generally non significant. Variation in centre quality unrelated to behavioural adjustment after differences in home environment. Strongest predictor of behavioural adjustment in middle childhood was behaviour problems and social withdrawal four years earlier.	Noted home and childcare environments may co-vary so important to consider both. Low mother-teacher agreement on child behaviour—consistent with other literature.

Study, aim, country	Sample and analysis	Findings	Commentary
Dickens, Sawhill, & Tebbs This policy brief from the Brookings Institute repeats possible cost-benefit analyses for high-quality ECE. The benefit is measured in life-long increase in GDP (so by 2080).	Quote studies that show that increasing the amount of education people get by 10% may lead to a 7–8% growth in GDP, although these figures are disputed in other studies. Use the High/Scope Perry Preschool Program, in particular, as a basis for their projections. In the study, those in the programme had an average of 0.9 more years of education (attainment) than non participants. The analysis took account of: - There is less than universal take-up of ECE - Varying benefit across differing SES levels (those from high SES homes may gain no benefit) - Existing enrolments, and subsequent varying benefits for those already in ECE (some will gain no benefit)	Point of departure for this paper is the need for a skilled workforce able to pick up the challenges of 21st century techildrenology and workplaces. The projections include roll-on benefit or dynamic feedback of the increase in physical and human capital. Even the most conservative of the three estimates presented suggests that provision of high-quality ECE could increase GDP by 1.34% by 2080. The more optimistic estimates are of increases of 3.5 and 4.02 percent.	This study ignores non-cognitive benefits (e.g., social skills, persistence, diligence), and focuses on educational attainment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Driessen, 2004) Netherlands	PRIMA cohort data—2-yearly data collection on students' cognitive and attitudinal aspects (self-confidence, well being, social behaviour, work attitude) in kindergarten, grades 2, 4, 6 in c. 10% of primary schools plus info from parents on ECE length and type and socioeconomic characteristics of parents, gathered when children in kindergarten. This study uses data on 3596 children who started kindergarten in 1996, and who were in grade 4 in 2000. ECE length starts at 60 days, up to a total of 240 days (before age 4, when most children start kindergarten). Analysis of variance comparing ECE length within type, and non attendance of that type, in relation to student cognitive and attitudinal competencies in kindergarten (age 4), grade 2, and grade 4, holding family socioeconomic characteristics constant.	No relation between length of ECE attendance and children's competencies (comparison of different lengths done separately within each type of ECE). Lower language and maths scores for children who did not attend a preschool; highest scores for those attending preschool for 120 days on average for 1½ years, but these differences did not remain once family socioeconomic characteristics included. Non attendance of an ECE type includes both those attending another ECE type and non attendance of any ECE. Children attending preschool had higher language and maths scores than those who had no ECE experience or a combination of other types. But these differences did not remain once family socioeconomic characteristics included. No associations between ECE experience and attitudes and social behaviour.	Author notes moves to improve quality of ECE in Netherlands started in 2000, as did funding to create more ECE provision; and on basis of consistency of research showing relations between quality of ECE and outcomes for children, expects '"more progress" in later cohorts of children [this suggests an analysis comparing kindergarten competence scores for different cohorts].

Study, aim, country	Sample and analysis	Findings	Commentary
(Early *et al*., 2006) Used data from National Center for Early Development and Learnings (NCEDL) to examine association between teachers' education, major, and credentials, with classroom quality and children's academic gains. US	237 pre-kindergarten classrooms and over 800 4-year-old children randomly selected from six states with well-established state-funded pre-kindergarten programmes. Used classroom observation (ECERS), direct child assessments of early academic skills in Spring and Autumn of pre-kindergarten year, questionnaires to teachers. Teacher's education: years of education, highest degree, Bachelor's versus no Bachelor's degree. Also analysed college major, state teaching certification (have to hold Bachelor's degree and specialised training in education), and Child Development Associates credential (CDA sanctions that holder is qualified). Those who are credentialed lacked formal education in early childhood education. ANCOVA Controlled for selection factors (e.g. ratios, maternal education).	Modest evidence of a relationship between education and one aspect of quality and one domain of child achievement, and relationship credentialing and children's basic skills. Teachers with more than Bachelor's degree received higher scores on ECERS Teaching and Interaction subscale than those with Associate degree. (This subscale is linked to academic gains for children.) Supports idea that well-educated teachers provide higher quality. But trend non-linear and fairly small. No other associations between quality and teachers' education. Children with teachers with more education gained more in math skills during pre-kindergarten. Gained more where teacher had Bachelor's degree compared with associates or no-post secondary. Children gained over 2 additional points on standardised measure of math achievement. Teachers' major and credentials not related to gains in standardised maths achievement, or other early academic skills. Credentialing related to gains in measures of basic skills (rhyme, name letters, numbers, colours, etc.) but not in higher-order skills like receptive and expressive language and mathematics.	Setting structural standards not sufficient to improve quality and outcomes. Notes requiring degree and compensating teachers professionalises workforce, can expect more, teachers may stay longer (committed), in-service meaningful with teachers with similar training.

Study, aim, country	Sample and analysis	Findings	Commentary
(Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005) Examined relationship between dimensions of classroom behavioural adjustment problems and emotional regulation, peer play in the home context, and foundational approaches to learning in the school context - for urban Head Start children. US	210 urban Head Start children, 12 classrooms, aged 42 to 76 months. Adjustment Scales for Preschool Intervention early in year Outcome measures end of year: emotion regulation, interactive peer play, approaches to learning (competence motivation, attention persistence, and attitude to learning), verbal ability. Hierarchical stepwise multiple regression	Socially negative behaviour in the classroom predicted emotional liability, maladaptive leaning behaviour, and disruptive play in the home at the end of the year. Withdrawn behaviour predicted lower effective engagement in the classroom and disconnection from peers in the home context.	Use of teacher ratings for constructs – teachers may hold onto same judgement over time. Importance of investigating ECE quality and behavioural adjustment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Fantuzzo, Rouse *et al*., 2005) Influence of centre-based early care and education on kindergarten cognitive, motor skills, social knowledge, and attendance outcomes (short term) for children attending kindergarten in large urban school district in US. Follow-up over one year of kindergarten. US	Representative sample of 3969 kindergarten children: 64% African American, 17% Caucasian, 15% Hispanic, 4% Asian, 0.1% Native American. Early care and education parent–teacher interview to collect information about pre-kindergarten early childhood and learning experiences. Categorised as centre-based care, informal care, and no extra care. Teacher assessments of performance across three points in time of cognitive outcomes: Language Arts Skills, Mathematics Skills, Social Knowledge (knows name, address, family members and role, identifies people and places in neighbourhood); and motor/behavioural outcomes: motor skills and work habits (follows direction, completes task independently, demonstrates attention span appropriate to task). Information on kindergarten attendance collected at three times, also family poverty, maternal education, neighbourhood context, and school region. Outcome variables were converted to binary –"poor" those in bottom 15% and "adequate", the rest, for preliminary multiple logistic regression analysis. Main analysis linear models (ANOVA/ANCOVA). Multiple logistical regression analysis to check which variables to include in more complex model.	Controlling for significant child and family variables, children who participated in centre-based experiences scored significantly greater than children without these experiences over the three points in time in Language Arts (effect = 0.31, 0.29, and 0.25 respectively); Mathematics (effect size = 0.19, 0.19, and 0.18 respectively), Motor Skills (effect size = 0.19, 0.19 and 0.18 respectively), Social Knowledge (effect size = 0.25, 0.23, and 0.27 respectively). No significant main effect of care and education experience on children's work habits. Attendance at kindergarten was high for Asian/other children (2.7 times as likely to have adequate attendance as for Caucasian), low for families in poverty (not poor 1.9 times as likely to have adequate attendance as poor), high for maternal education (1.7 times as likely to have adequate attendance for those whose mothers completed high school as not) and 1.56 times as likely to have adequate attendance for those who attended centre-based care as those who did not.	Did not assess quality. Conjecture that experience of centre-based care encouraged greater valuing of education.

Study, aim, country	Sample and analysis	Findings	Commentary
(Farrell, Taylor, & Tennent, 2002) Child data on pilot project of ACCESS Study of Child and Family Services, a research programme of how child and family services align with interests and needs of local families. Australia	76 children aged 3–8 years using one of two childcare centres, two kindergartens/preschools, one playgroup and one primary school. Asked in informal conversation with caregivers to comment on experiences in the service (positive and negative) and consider advice they might give to newcomers who were to take part in the service.	Reasons for attendance: Children attending childcare viewed reasons as parents' employment. Children at preschool and school viewed reasons as learning and preparation for the future. What children like: Younger children—toys, play equipment, and activities. Older children—subjects, activities, and making friends. What don't like: adverse behaviours of others or getting into trouble (all). Advice to newcomers: younger children—enjoyment of fun activities; older children—knowledge of and compliance with rules and protocols.	Contains rationale for integrated service provision to enhance social capital and community capacity building. Limited or no reference to adults. Positive experiences sometimes marred by negative behaviours of peers.

Study, aim, country	Sample and analysis	Findings	Commentary
(Friendly & Lero, 2002) Working paper exploring circumstances under which ECE contributes to social inclusion. Defines concept of social inclusion (child wellbeing, development lifelong learning prospects; parent education, employment, child-rearing, social solidarity and cohesion, equity). Canada	Uses policy framework from OECD (2001) review of ECE in 12 member countries to examine Canadian policy and service provision.	Canada has: - fragmented services - divided responsibility for care and education except in Quebec - approach to access targeted not universal, children needing special support are not served - primarily user pays (not substantial public investment) - provincial differences in strength of regulation, strategies for improving quality little discussed - inadequate working conditions and pay - absence of consistent data - no long-term research agenda.	Describes social, demographic and economic trends—declining under 6 population, child poverty, financial support for employed parents, more two parent working families, longer working hours, low-waged jobs, most women return to work within year of childbirth, paid parental leave for year but many excluded and benefit level low.

Study, aim, country	Sample and analysis	Findings	Commentary
(Gagne, 2003) Uses three cycles of the National Longitudinal Survey of Children and Youth to examine whether parental labour supply and use of childcare influence the cognitive development of preschool children. Canada	Pooled data from first three cycles of NLSCY—children between 3½ and 5 with a PPVT-R score. Measure of school readiness: PPVT-R (picture vocabulary). Range of employment and education, child and family characteristics. Childcare hours. Data on siblings to analyse fixed effects.	Parental labour market participation has little effect on school readiness (PPVT-R) scores of preschool children. However, children of parents with better parenting skills tend to benefit slightly more in terms of cognitive skills when mothers do not work outside the home. Children of fathers with above average education exhibit slightly higher cognitive outcomes if father work part-time.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Gamoran, Mare, & Bethke, 1999) Analysed data on children of mothers from National Longitudinal Survey of Youth (NLSY). Compared cognitive outcomes for children cared for in three different types of care (home care, centre care, and no nonmaternal care) and interactions with family characteristics (especially income and maternal education). No measures of quality of ECE. US	670 children in 296 families that sent their children to different types of care as reported by mother when child aged 2–3 years (no effects for care in years 1 and 2. Peabody Picture Vocabulary Test revised at age 36 months, and up to 83 months (i.e. ages 3, 4, 5, and 6 years). Maths test from Peabody Individual Achievement Test. Family background: measure of "trainability" (Armed Forces Qualification Test) regressed on age, mother's age, total years of education at the birth of child, number of siblings at age 3, family average income. Controlled for differences amongst children and families. Used fixed effect model where more than one child in sample to control for differences between families. This reduced the sample to families with more than one child who sent their children to different types of care.	Socioeconomically disadvantaged children had less access to all types of nonmaternal care. Significant interactions between childcare types and mother's education. Centre-based care associated with lower maths skills for children whose mothers have low levels of education, higher skills for mothers who are well educated. Differences amount to about 15 to 20% of a standard deviation on PIAT-Math. Same trend for PPVT but not significant. Interactions with log income same as mother's education. Low-income children do less well on maths skills and high-income children do better than similar children who do not enter childcare. Interactions with poverty showed similar trend but not significant. Same pattern of findings using non parametric models. Authors suggest that advantage of centre care for high-income families greater than disadvantage for low-income. No difference for children in home care compared to those in maternal care.	Fixed effect model appears to be a model which removes family differences (average differences). Hierarchical model would probably have been more appropriate. Ignores families with only one child. More likely to include children born when mothers are young. Possible reasons for interactions: differences in quality; more educated may make better choices; home may reinforce cognitive effects; teacher expectations and behaviour may differ. NB can only be regarded as tentative.

Study, aim, country	Sample and analysis	Findings	Commentary
(Gilliam & Zigler, 2004) Update of the authors' 2001 summary and critique of 13 pre-kindergarten evaluations. Includes evaluations in additional 5 states, plus two different pre-kindergarten systems within the same state. US	Analysed methodologies of 20 evaluations. Most evaluated multiple cohorts, median follow-up second grade. No evaluation assigned children to programme and control group. All but two, limited access to children from low-income homes or at risk of failure. Six evaluations methodologically flawed. Presented findings from 13 state evaluations that used a comparison group and were able to analyse influence of the programme.	**Developmental competence:** (social, self-help, motor, language, cognitive, and academic or literacy skills): positive effects overall developmental competence in all except Connecticut at end of pre-kindergarten. Sustained for at least one cohort to kindergarten. Significant effects in almost every subdomain. Most common in social, self-help, language, and literacy and numeracy skills. Rarely reported on motor skills. By first grade, significant effects rare, but most common in language and literacy/numeracy domains. **Child perceived self confidence**: Kentucky only state to collect data. At end of pre-kindergarten participants perceived selves to be more competent in cognitive domain compared with non participants. No significant differences kindergarten or first grade. **Behaviour problems**: five states collected data. Kentucky, New Jersey, Washington—no significant impacts beyond preschool using teacher ratings. DC—no impacts at 5th grade. Florida—non participants with no preschool experience were significantly more likely than participants to have been disciplined during the school year (32% vs 11%). Used school record reports of corporal punishment, in-school and out-of-school suspensions, expulsions. **Health:** Washington—non significant differences on parent reports of child health between preschool participants and matched comparisons at end of 1st, 2nd,and 3rd grades. **Attendance**: with exception of Kentucky, all states evaluating this outcome found significant impacts in one evaluation cohort. Persisted beyond school entry. New York impacts—5th and 6th grades; Maryland—10th grade. **Grades in reading and mathematics**: DC and Washington found effects using matched comparison group. DC in reading and math for one cohort but only in kindergarten (second cohort—sample size too small);	Pre-kindergarten systems that have been evaluated compared with those that have not are twice as likely to require lead teacher to possess Bachelor's degree or higher (58% vs 30%) and to require full-day or school day services (45% vs 20%) and less likely to serve 3-year-olds (35% vs 59%). Not likely to have staff:child ratios better than mandated. Authors discussed view that behaviour rating scales may not be adequate method for documenting outcome prevention of later delinquency. Actual disciplinary records as used by Florida may be better. Oklahoma and Georgia evaluated universal pre-kindergarten—overall both support positive effects of universally available pre-kindergarten.

Study, aim, country	Sample and analysis	Findings	Commentary
		Washington for math only and only at first grade. **Academic achievement tests**: with exception of DC's (where sample small), all eight evaluations addressing this outcome reported statistically significant impacts on overall maths and reading tests. Large numbers in analysis. E.g. South Carolina 1st grade and Texas 3rd grade—standardised effect sizes 0.07 to 0.09. Michigan—statistically significant. Effect literacy and math at 4th grade (24% more pre-kindergarten participants passed state-wide literacy test and 16% more passed mathematics test. Maryland—statistically significant impacts in reading and math at 5th, 8th, 9th, and 10th (math only) grades. New York—significant effects in both at 6th grade. **School drop out**: Maryland only state to report this. By end 10th grade 8.2% pre-kindergarten dropped out compared with 11.3% non pre-kindergarten (effect size 0.18). **Retention rates**: Robust finding—When data analysed non-cumulatively, positive impacts were always found in each state's evaluation at one grade level. When cumulative (3 states)—pre-kindergarten participants were found to be 31% to 44% less likely to be retained for at least one grade level. **Special education referral and placement**: across eight state evaluations, only Maryland, South Carolina, and Texas reported significant differences—Maryland at 5th grade—13% in special education services at some point compared with 24% comparisons. **Parent involvement**: Michigan—pre-kindergarten parents greater involvement school activities, teacher–parent communication, adult–related school activities, no different parent expectations or home-based educational activities. Texas—positive impact on involvement at school. Georgia—no significant effect but small sample.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Goodman & Sianesi, 2005) Uses data from National Child Development Study to evaluate effects of any early schooling and preschool on a cohort of British children born in March 1958. UK	Controls for child family and neighbourhood characteristics.	Higher average test scores at age 7, notably in mathematics, and at lower rates, ages 11 and 16. Teacher reports of attitudes more favourable at age 7 for those who had some pre-compulsory ECE, but parental reports of poor self-control were higher for this group. These patterns did not persist to ages 11 and 16.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Gormley & Gayer, 2005) Effects of universal pre-kindergarten on cognitive development. Oklahoma, US	As above.	Pre-kindergarten increased cognitive knowledge scores by approximately 0.39 standard deviation, motor skills by approximately 0.24 standard deviation, language scores by 0.38 standard deviation. Higher cognitive scores, language scores, and motor skills for Hispanics in full-day programme than those just beginning. Higher language and cognitive skills for Blacks in full-day programme, and lower socio-emotional for Blacks in half-day than those just beginning. Whites in half-day higher socio-emotional score than those just beginning. Children who qualified for a free lunch had large statistically significant improvements in cognitive/ knowledge, motor skills, and language scores. No statistically significant effect for those who did not qualify for a free lunch. No impact for White children in full free lunch or Black children who were not receiving full or partial free lunch.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Gormley & Phillips, 2003) Effects of universal pre-K research highlights. Oklahoma, US	As above.	Overall pre-K benefits children after controlling for other variables. Positive effects on language and cognitive skills account for most overall effects; motor skills improve somewhat. For children as a whole no statistically significant effects on socio-emotional development. Hispanic children benefit most, followed by Black children. No significant effects for White children. No effects for higher income (ineligible for free or reduced price lunch). Hispanic children benefit most from full-day, no improvement for half-day. Students eligible for free lunch benefit if it is half- or full-day. Those eligible for reduced lunch benefit if full-day but not if half-day. Students who must pay full price lunch benefit if half-day. but worse if full-day.	Pre-K programme tends to emphasise development of language and cognitive skills. Authors less satisfied with measure of socio-emotional development.

Study, aim, country	Sample and analysis	Findings	Commentary
(Gormley, Gayer, Phillips, & Dawson, 2005) Effects of universal pre-kindergarten on cognitive development. Notes: From 1998 Oklahoma administered a universal pre-kindergarten programme—all districts receive aid for every 4-year-old enrolled. 2002/03 91% school districts participated. 56% of programmes half-day, 44% full-day. Oklahoma requires all pre-kindergarten teachers to have a college degree and certification in ECE. Pay rates same as elementary and secondary school teachers. Group size maximums are 20, ratios 10 students per teacher. Most classrooms have one teacher, and an assistant teacher with no specific training requirements. Reaches more 4-year-olds than other programmes (63%). Children are admitted to pre-kindergarten once a year. Those whose birth dates are beyond the cut-off date have to wait until the following year to attend. Therefore "young" pre-kindergarten children just met eligibility, and "old" pre-kindergartens of similar age had to wait a year to attend. US: Tulsa, Oklahoma	Sample: 1461 older children who had just started kindergarten and had completed pre-K. A control group of 1567 younger children who had just started pre-K. A control group of 1007 children who had just started kindergarten but did not have pre-K. Hispanics, Blacks, native Americans, and Whites included. Measures: Letter-Word identification, Spelling, and Applied Problems (early maths reasoning and problem solving) from Woodcock Johnson Achievement Test. Tests administered at beginning of school year to pre-K and kindergarten children. Examined effects by family income (free lunches used as proxy) and racial–ethnic group; and enrolment in half- or full-day by racial–ethnic group. Regression discontinuity design.	At similar age, pre-K programme had statistically significant effects on cognitive tests of pre-reading and reading skills (0.64), pre-writing and spelling skills (0.38), and maths reasoning and problem solving effect size = 0.38), favouring children who attended pre-K compared with children who had not. Overall effect sizes ranged from 0.38 to 0.64 higher than those reported by NICHD and for pre-K generally. Highest for reading—maybe because of Tulsa's reading programme. All racial–ethnic groups benefited to different degrees. Effect size for Hispanic 0.99–1; for Black 0.38–0.74; for White some n.s. and some 0.76, so some benefited more than others. But note ceiling effect on cognitive scores. Children from diverse income groups benefited. Children in full-day and half-day benefited.	Did not have information about ECE participation of control group children who did not participate in pre-K but could have had other programmes or no programme. Attention to selection bias. Consistent with other results that greatest effect cognitive, and these differences so great that okay even given reservations. Effect size = difference in mean/standard deviation. Teacher qualification requirement higher than in other pre-K programmes, Head Start and other childcare programmes. Also relatively strict ratio and group size requirements. Skills tests rudimentary—short list of skills, checklists. School oriented. Context free. Issues: Normality assumption—know had ceiling effect on cognitive scores. Use of $p<0.10$ as significant. NZCER statistician would have used $p>0.01$ results only. Varying sample sizes. Tulsa largest school district in Oklahoma. Racially and ethnically diverse.

Study, aim, country	Sample and analysis	Findings	Commentary
(Harrison & Ungerer, 1997) Present initial research outcomes form childcare component of Sydney Family Development Project, a longitudinal study of emotional development in infancy and childhood. Examines impact of maternal factor, and hours per week and type of childcare on attachment. Sydney, Australia	145 first-born children and mothers at age 4 and 12 months. Mothers screened on Defense Style Questionnaire and represented broad range of coping strategies. Wide range of ages, occupations, and educational achievements. Use of childcare: interviews with mothers at infant-age 4 and 12 months. Time spent in each type of care coded minimal 1–10 hours, part-time 11–20 hours, full-time over 30 hours. Maternal satisfaction with care: characteristics of caregiver, care setting, benefit to child, practical considerations. Security of infant–mother attachment at 12 months: Strange Situation procedure (videotaped)—anxious–avoidant, secure, anxious–ambivalent, disorganised. **Analysis** One way analysis of variance. Logistic regression analysis.	At end of 12 months, 71.7% (104) attending some regular nonmaternal care. Findings for 104 attending nonmaternal care. Mothers using father care or informal care more satisfied than mothers using formal family care or centre care or mixed formal/informal. Mothers of secure infants older and better educated than mothers of insecure. SES did not differ. Mothers' reasons for choice of care showed similarities and differences across groups. **Childcare factors** Age of entry did not vary with security classification. Use of more than 10 hours per week nonmaternal care associated with higher proportions of secure attachment, after controlling for maternal education. Children in part- and full-time childcare had increased odds of being securely attached (odds ratio 3.63 and 3.79 respectively). After controlling for maternal education, children attending formal government-regulated childcare services had greater likelihood of being securely attached than those using informal unregulated childcare (odds ratio 3.37). Both amount and type of childcare made equal and independent contributions to security attachment.	Authors used findings to support arguments for high regulated standards. Noted insecurity may be associated with less than 10 hours care per week because minimal hours may be disruptive and unsettling, and insufficient for child to attain mastery over experience of separation.

Study, aim, country	Sample and analysis	Findings	Commentary
(Harrison & Ungerer, 2000) Examines type, amount and stability of childcare in relation to attachment with mother in infancy, adaptation to the social world of peers at early preschool age, and adjustment to school at age six. Sydney, Australia	Sydney Family Development Project 145 first-born children and mothers at age 4, 12, and 30 months, and during 4th term of first year at school (6 years). Mothers screening on Defense Style Questionnaire, Beck Depression inventory. Wide range of ages, occupations, and educational achievements. Parent questionnaires and interviews, observations of child in structured lab situations and naturalistic settings, child interviews, teacher questionnaires. Assessments with families at age 4, 12, 30 months, and age 6. Use of childcare: Interviews with mothers at each of four assessment points: infant–age 4 and 12 months. Time spent in each type of care coded minimal 1–10 hours, part-time 11–20 hours, full-time over 30 hours. Maternal satisfaction with care: characteristics of caregiver, care setting, benefit to child, practical considerations. Child development assessments: Security of infant–mother attachment at 12 months (Strange Situation Procedure), social competence with peers at 30 months (observations), adjustment to first year of school at 6 years (teacher reports, child self-concept, home assessments). Analysis of variance.	When formal care was used in first year, children more likely to be securely attached at 12 months (odds ratio 3.37), more effective in social interactions with peers at age 2.5, and were rated by teachers as performing better academically at age 6. Amount of care and instability of care (more changes) not associated with negative effects on developmental outcomes at age 1 or 2.5 years. At age 6, children who received higher hours in first 2.5 years had lower ratings for academic adjustment compared with those receiving medium or lower hours. Lower scores for informal care subgroups compared with early formal or parent care subgroups. Mean scores for academic adjustment lowest in group who received long hours of informal care, and highest in group receiving medium hours of early formal care. Children with pattern of unstable care birth to age 6 were rated as less well adjusted behaviourally.	Importance of childcare quality. Formal care has to meet regulated standards: 1:5 ratios under 2s, 1:8 for 2–3s; 1:10 for 3–5s (NSW), physical health, safety, equipment, space requirements, individualised planning. Proportion of staff have to have EC qualifications (3–4 year university, 2–3 year TAFE). Family daycare provides regular training and supervision by qualified staff. More uniform in quality than US.

Study, aim, country	Sample and analysis	Findings	Commentary
(Hausfather, Toharia, La Roche, & Engelsmann, 1997) Investigation of effects of age of entry, daycare quality, and family characteristics on preschool behaviour. Montreal, Canada	155 4–5-year-olds attending Montreal daycare centres of excellent (51), average (60), and low (44) quality using ECERS and Early Childhood Classroom Observation Scale ratings. Teachers rated children on Social Competence Scale and Preschool Behavior Checklist. Questionnaire to parents—demographic information, daycare history from birth, life inventory—stressful events. Parenting Stress Index. Family Adaptability and Cohesion Scale. Hierarchical regression analysis.	Effects of age of entry independent of quality: low but significant positive association between age of entry into present centre and only one outcome variable: anger defiance (r = -0.465). Interaction between age of entry and daycare quality. Under low quality, age of entry was related to increased anger-defiance (r = 0.45), but not so high quality. High quality: age of entry was related to increased interest—participation (r = 0.35), but not so low quality. Time spent in high-quality centre negatively associated with apathy-withdrawal (r = 0.38). Interaction between daycare quality and social class does not significantly improve the prediction.	Can't calculate effect sizes—small study.

Study, aim, country	Sample and analysis	Findings	Commentary
(Herrera, Mathieson, Merino, & Recart, 2005) Examined associations between childcare quality and child development outcomes through 3 years of schooling. Chile	Process quality measures: ITERS, ECERS, and School Age Care Environment Rating Scale. Three studies: 1. 63 classrooms in Concepcion province, using ITERS. 2. 60 centres in two regions, Metropolitan and Biobio, one classroom in each chosen randomly, using ECERS. In each centre 4 children aged 4–5. Total 120 classrooms and 526 children. 3. Original children from Biobio in study 2 evaluated 3 years later at school and SACERS used. 247 children in 134 schools and 168 classrooms. **Child outcomes:** Comprehension vocabulary, social development in the classroom (social development and adaptive behaviour). Divided classes into low, medium, and high according to mean scores on process quality. Hierarchical regression analysis running age and gender; family variables including home environment; classroom quality; neighbourhood characteristics; region and province.	Quality range large. Most mediocre. Variation greater for infants and toddlers. The model explained 52% of variation in child outcomes. Quality of preschool centre explained 5% of variation, as much as child characteristics and almost a third of family characteristics. In follow-up study, model explained a total of 55% of variance in child outcomes. Quality of ECE centre explained 8% of variance.	National curriculum framework, focused on holistic child development and wellbeing. Structural features such as group size, teacher:child ratios, space, materials, and teachers' pay described as unsatisfactory. Did not specify what child development outcomes at 4–5 years. Unclear how calculated score for child outcomes.

Study, design, setting	Sample, measures	Findings	Commentary
(Hill, Comber, Louden, Rivalland, & Reid, 1998) A study of the connections and disconnections in literacy development in the last three months of their year prior to school and the first nine months of their first year of school for 20 case study children in five research sites across Australia. Part of a study of "100 children go to school" in which quantitative literacy assessment data were collected for a whole class group in each of the five sites. Examines what different children take up from the literate and pedagogical practices made available to them at home, in preschool, and in the first year of formal schooling. Australia	20 children chosen to represent "as fully as possible" a range of Australian contexts, including family financial resources, home language, gender, ethnicity, and geographic location. Data collection included observations of children in their homes, preschools, daycare centres, and schools, and interviews with their caregivers and teachers, children, and siblings. Samples of work and everyday literacy materials were collected and analysed. Teachers visited the homes of the case study children with the site researcher before they started school (using conceptual framework from Luis Moll—funds of knowledge). A total of 58 assessment items were used in the prior-to-school phase.	A summary in Comber (2000). The first phase documented very great differences in children's literacy competencies before beginning schooling; these differences increased exponentially after nine months of schooling. Comber writes up three case studies. She concludes that some children could "call on existing capital to make school work for them" (p. 40): they have a selective repertoire of social and communicative practices upon which school literacy learning is contingent. Early childhood classrooms require certain dispositions or ways of "being and doing". Comber concludes that the interests and resources that children bring with them into the classroom (their funds of knowledge) could be included in the literacy classroom (p. 47) and recommends a concern with non literacy outcomes or dispositions: children's participative repertoires.	As with the qualitative study by Pollard and Filer (1996; 1999), empirical validity is obtained through three strategies: unobtrusive data gathering ("natural" social processes are undisturbed), respondent validation (subjects recognise and affirm the findings), and triangulation (a variety of types of data are collected including literacy assessment tests).

Study, aim, country	Sample and analysis	Findings	Commentary
(Hill, Waldfogel, & Brooks-Gunn, 2002) Examined data from Infant Health and Development Study (IHDP) to analyse differential effects of access to high-quality care for children who would otherwise have participated in one of three childcare options: no nonmaternal care, home-based nonmaternal care, and centre-based care. US	Children birth to age 8 (see Infant Health and Development Research Group, 1997). Used data on Follow-up only children to determine distinctive choices made by parents and the characteristics as a group of parents choosing different options, e.g. children later in birth order tend to choose maternal care. Fewer Hispanics compared with whites and blacks choose centre-based care. Took only near normal birthweight children. Children assigned randomly—follow-up/not. Matched the groups of the follow-up parents with groups of the intervention parents on background characteristics. Used matching to guesstimate what intervention option children would otherwise have had. Enabled cleaner/better less biased estimates of effects of intervention.	Children who would otherwise have been cared for by their mothers, and children who would otherwise have participated in home-based childcare, would have had much stronger cognitive outcomes at age 3, and also in some tasks at ages 5 and 8, if they had access to high-quality childcare at level provided by IHDP intervention. Children who would have participated in centre-based care without the intervention would have had effects at age 3 with the intervention, but after age 3 only a significant positive impact on age 8 PPVT-R. High-quality centre-based care on average better than maternal or home-based. Children participating in no nonmaternal and home-based nonmaternal only would have gained most from centre-based and retained bulk of benefits over time.	Authors noted centre-based care in these university communities could have been of higher quality than others. Authors use these findings to argue for universal high-quality centre-based care—beneficial to all types of participating children.

Study, aim, country	Sample and analysis	Findings	Commentary
(Hodgen & Wylie, 2006) Draft findings for Competent Children, Competent Learners study at age 16. New Zealand	Similar analysis to above for age 16. Account for age-5 achievement in similar competency, maternal qualifications, and age-5 family income. ANOVA: Compare first three quartiles combined with highest quartile.	Numeracy: Just under 30% of variation in age-16 score accounted for by age-5 numeracy score, 10% by maternal qualifications; ECE staff guiding child accounted for just under 4%. Literacy: just under 8% of variation in age-16 score accounted for by age-5 literacy score, 10% by maternal qualifications. No statistically significant associations between ECE literacy and ECE variables. Cognitive composite: about 50% of variation in age-16 score accounted for by age-5 score, 16% by maternal qualifications. Indicative effect for staff join children in their play. No statistically significant associations between ECE literacy and ECE variables. Attitudinal competencies, ECE socioeconomic mix showed significant association with all competencies, but none significant once age-5 composite and social demographics taken into account. Variability in social skills accounted for by maternal qualifications (7.2%), and age-5 attitudinal composite (2.4%). ECE staff responsiveness and staff guide children had indicative effect after these accounted for. For social difficulties, 6.7% of variability accounted for by maternal qualifications, 2.9% by age 5 scores. ECE staff ask open-ended questions statistically significant when fitted after these variables. ECE centre provides print-saturated environment not statistically significant in one way model.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Honig, 2004) Comparison of outcomes for children in Family Development Research Program (FDRP) with control group as teenagers, 10 years after entry to the programme. US	FDRP group = 65; Control group = 54. Teachers who were blind to status of students evaluated them at age 15. Parent interviews, youth interviews. Being processed as probation cases by County Probation Department.	More of the FDRP youths expressed a liking for their own physical and personal attributes, said they disliked nothing about themselves, were more likely to see themselves in a schooling situation 5 years into the future compared with contrast group. Contrast group more likely to say worst thing about school was the trouble one could get into. Strongest finding—juvenile delinquency. Only 6% of FDRP youth (4 of 65), compared with 22% (12 of 54) of contrast group were processed as probation cases. Severity of cases graver for contrast group and 5 of the 12 were repeat offenders. Estimated juvenile court costs per child were $186 compared with $1985 per child for contrast group. Males did not do better on educational outcomes than control males. Females did significantly better—better grades and fewer days absent from school.	Programme to provide education, nutrition, health and safety, and human resources services for very deprived families recruited during last trimester of mother's pregnancy. Families low-income, mothers had less than high school qualification, and no work or semiskilled work history. Mean age 18 years. More than 85% single parents. Programme involved weekly home visiting by child development trainers and advocates before birth until 5 years, babies in high quality Children's Center Program when 6 months old. High levels of staff training, environment provided many areas of choice, excellent teacher–child interactions.

Study, aim, country	Sample and analysis	Findings	Commentary
(Hubbs-Tait *et al*., 2002) Examined whether cumulative family risk would moderate the relation between regularity of attending Head Start and three child outcomes: receptive vocabulary; teacher ratings of social competence; and teacher ratings of following instructions. Oklahoma, US	94 Head Start children and their caregivers attending Head Start in 1996–1997 in rural North-Central Oklahoma. Ages 4.01 to 4.09. 59% Caucasian, 41% native American or multi-ethnic. Cumulative family risk = sum of four measures: low income; low cognitive stimulation; intrusiveness, and depression. ECERS to measure class quality. Attendance: sum of number of days child present by days centre open. Child outcomes: PPVT-R (receptive vocabulary), teacher rating of peer social functioning, teacher-rated California Preschool Social Competency Scale, teacher rating of "following instructions". Regression analysis.	All but one of 16 classroom environments rated good or better on ECERS. Relation between Head Start attendance and receptive vocabulary moderated by cumulative risk with children from higher-risk families benefiting more. Regardless of cumulative family risk, attendance predicted teacher ratings of social competence. Regardless of attendance, cumulative family risk predicted teacher ratings of following instructions.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Infant Health and Development Research Group, 1997) Randomised clinical trial of special services for low birth weight premature infants compared with control group. Reports on child outcomes at age 8. US	985 low birth weight premature infants randomly assigned to follow-up only or early childhood intervention group. At age 8, 336 children in intervention group, 538 in follow-up only. Pre-treatment variables: Child birth weight and head circumference, sex, number of weeks pre-term, birth order, neonatal health index, twin status. Mother's age, ethnicity, marital status, and educational status at birth, indicators for substance abuse while pregnant, of whether she worked and whether she received prenatal care. Father's ethnicity. Sites—demographic variables, child supply. **Outcomes:** Developmental quotient and IQ, academic achievement, parental reports of school performance, behaviour, and health.	At age 8, lighter LBW group, intervention, and follow-up similar on all outcome measures. Differences favouring heavier intervention group: full-scale IQ (4.4 points higher, p = 0.007), verbal IQ (4.2 points higher, p = 0.01), performance IQ (3.9 points higher, p = 0.02), mathematics achievement (4.8 points higher, p = 0.04), receptive vocabulary (6.7 points higher, p = 0.001). On physical functioning, whole intervention group less favourable ratings. Lighter LBW intervention group lower ratings assessing social limitations caused by behaviour. Noted though many favourable, attenuation of largely favourable effects found at 3 years. Similar numbers of hospitalisations, surgical procedures, and school absences. (Note: at age 3 average number of reported health conditions was higher for intervention group (0.27 conditions per year), but not at age 5.	Can't calculate effect sizes. Low attrition. Child Development Center service home visits (birth to 3 years), parent group meetings (1 to 3 years).

Study, aim, country	Sample and analysis	Findings	Commentary
(Jackson, 2006) A small study investigating whether or not a supported playgroup used by refugee families could be considered a protective environment. Western Sydney, Australia	Playgroup, running for approximately 2 hours per week, in grounds of local school. Five families who had one or more children under age 5 attending playgroup, and had been exposed to war-related violence or related disruptive environments in past 3–4 years. Semistructured interviews with five adults. Semistructured group interview with nine children. Participants observed in interactions with each other and other group members. Semistructured interview and open-ended questionnaire for facilitators on their views of interactions and experiences occurring within group, identify relevant organisational factors of relevance.	**Interactions** Positive social interactions between adults and children through child-centred activities. All children reported enjoying playing with friends and using play equipment. All parents and both facilitators reported increases in child's social confidence and prosocial behaviours and decreases in shyness, which they attributed to playgroup attendance. Four of five parents reported improvements in child's moods and behaviours at home. **Learning activities** Most allowed children to express selves freely within own levels of mastery and access assistance—offered opportunities to increase self-esteem and self-efficacy. Art activities prescriptively presented. **Separation anxiety** Adults remained in playgroup—felt comfortable because children could come to them at any time or a caring person would offer assistance. Minimisation of separation anxiety may make playgroup especially protective for refugee families. **Transition to school** Facilitators thought children's transition to school eased through attending playgroup in school grounds. **Parent–child relationships** All parents and both facilitators viewed parenting support related to child's behaviour as an important aspect of playgroup. Facilitators emphasised guidance and play strategies in the programme and parents reported benefits of having these modelled. **Social capacity** Playgroup had become a family for participants, social isolation reduced through close friendships developed through group. Often the only reason parents had to leave homes each week, felt safe to share experiences and talk about feelings. All parents reported increased self-esteem, confidence, and stress reduction as major benefits. Provided opportunity to learn more about cultural practices and integration, provided access to information and resources. Also developed individual networks that extended beyond group. **Playgroup structure and content** One facilitator emphasised teaching parents about importance of play and how to emotionally support children; the other emphasised relationships and social networks as major goals. All parents found social and educational aims beneficial.	Supported playgroups—run by government or community organisations for migrant, refugee, and other families for children birth to 5 years, facilitated by EC teachers or community workers.

Study, aim, country	Sample and analysis	Findings	Commentary
(Karoly & Biglow, 2005) Analysis of the economics of investing in universal preschool education in California US	Used data from Chicago Child-Parent Centers Program (CPC). The design of this program is quasi-experimental allowing the measure of the actual benefit, and is longitudinal, following the children until age 20 or 21. The children involved were mostly at-risk. Cost-benefit analysis using as costs: - universal preschool provision at an uptake rate current in other parts of the US - increasing quality above the current rates - more years in education if retention in secondary and tertiary education increases Benefits: - reduced need for remedial education due to retention in grades, and special education interventions - reduction in child abuse/neglect - reduction in juvenile crime (court costs) - increased parental earnings - increased earnings by children when in the labour force (as better educated) - reduced adult crime The analysis was carried out under differing scenarios: - differing rates of benefit for children from medium and high SES families - differing migration rates (migration into and out of California are potentially a costs, rather than benefits) - differing benefit rates (as baseline, the benefits were based on data from the Chicago CPC; more and - less optimistic values were also used) The analysis did not include less tangible benefits: - to those *not* victims of crime (as crime rates decrease) - macro-economic benefits derived from an increased workforce with higher qualifications - benefits to the next generation	The findings are corroborated by the Early Training Project (1962–1965), High/Scope Perry Preschool Project (1962–1967), and Head Start, and a meta-analysis carried out by Washington State Institute for Public Policy of 48 evaluations of targeted preschool programs (implemented between 1967 and 2003). Under differing scenarios (see previous column), benefit–cost ratios of between 1.95 and 4.21 were obtained. Their recommendations were for a one-year universal programme. A universal programme was recommended as this avoids administrative costs associated with a targeted programme, as well as the need for decisions about cut-offs and how to accommodate changed circumstances during that year. Some research indicates that a two-year programme does not have many (certainly not twice as many) benefits over a one-year programme. There may be no (or considerably reduced) benefit if the programme does not deliver high quality ECE.	Wide range of benefits and costs included in the analysis. Under even the most conservative there is still a considerable benefit, which is likely to underestimate the true benefit, given the intangible benefits not accounted for.

Study, aim, country	Sample and analysis	Findings	Commentary
(Karoly, Kilburn, & Cannon, 2005) Review of early childhood interventions. US	Chapter 4 reviews evidence from existing benefit cost analyses of economic benefits of ECE intervention. Also considers some other economic and noneconomic benefits that can accrue but are not captured in benefit cost studies. Analyses benefit cost analyses of seven studies: home visiting/parent education (HIPPY and NFP) and of ECE intervention studies combining home visiting/parent education with ECE (CCDP, IHDP, Abecedarian, Chicago CPC, Perry preschool). Notes differences in information available, methods used, services available. Some longer term—range of benefits measured in these is wider, e.g. include employment and social welfare outcomes. Need caution in interpreting results. Small number of programmes with high-quality evaluations. Programme effects may vary depending on programme design, population served, and local context.	Range of potential "spillover" benefits that are quantifiable in dollar terms: - value of childcare received - child maltreatment, accidents and injuries, teen childbearing, school performance - educational attendance and attainment, labour force participation, use of social welfare programmes, criminality, smoking and substance abuse, childbearing Main way that non participant benefits can be quantified is reduction in crime. All programmes combining ECE with parent education/home visiting generated positive benefits to participants, government, and society—excluding CCDP and IHDP which had short follow-up and measured only one benefit (CCDP included just one category of benefits—welfare use, which increased), IHDP (did not estimate values for any benefits except test scores—effect size 0). The three longest follow-up intensive intervention programmes—Abecedarian, Chicago CPC, Perry preschool—had largest economic benefits. E.g. Perry Preschool at age 4 follow-up just over $17 for every dollar invested. Chicago—over $7.14 for every dollar. These programmes are both small and large scale.	These quantifiable outcomes are limited, e.g. don't include gains for child and families at time. Differential effects on higher risk versus lower risk. But still benefits from universal programmes. Doesn't account for labour market benefits, macroeconomic benefits—more educated workforce linked to higher rate of economic growth, more skilled workforce, non economic benefits, e.g. reduced income disparities.

Study, aim, country	Sample and analysis	Findings	Commentary
(Kohen, Hertzman, & Wiens, 1998) Used data from first collection of National Longitudinal Survey of Children and Youth (NLSCY) to examine the impact of changes in care arrangements, school changes, and residential mobility on the competencies of children of preschool and school age. Canada	0–3 = 7545 4–5 = 3909 6–11 = 11,378 **Outcomes for infants and toddlers** Motor and social development—asks parent whether child can perform specific tasks (classified as low score if more than one standard deviation below mean). Difficult temperament—parent perceptions on Infant Characteristics Questionnaire—focused on fussiness/difficult temperament subscale. **Outcomes for preschoolers (4–5)** Verbal competence: Measure of receptive vocabulary from Peabody Picture Vocabulary Test-Revised. Behavioural problems: parent report. At risk = 1 standard deviation above mean. **Outcomes for school-aged children** Behavioural problems (cf. preschool). Math achievement—standardised test. Grade repetition. Covariates: family sociodemographic characteristics, parent (most knowledgeable about child) Multiple logistic regression analysis.	Changes in care arrangements for infants and toddlers in last 12 months were more likely to be associated with having a difficult temperament (19%) compared with children in care arrangements but experiencing no change (12%), but not with motor and social problems, after controlling for maternal mental health and family socio-demographic characteristics. Four- and 5-year-old children who changed their care arrangements obtained lower PPVT–R scores (19%) compared with children in care arrangements but experiencing no change (12%), after controlling for above.	NLSCY: national cross-sectional study of Canadian children from birth to 11.

Study, aim, country	Sample and analysis	Findings	Commentary
(Kohen, Lipps, & Hertzman, 2006) Used data from the National Longitudinal Survey of Children and Youth (NLSCY) to examine associations of different forms of ECCE with a variety of standardised, parent-reported, and teacher reported outcomes two years later when children in kindergarten. Canada	1207 children 2–3 years of age in 1994–1995. Data collected through parent interviews, standardised tests and questionnaires completed by teacher. **Measures** ECCE = any service parents reported using for the care and education of their children. Hours of ECCE participation—hours per week in childcare or hours in all ECCE activities. Child and family control variables: maternal education, household income, household size, family status, child gender, province of residence, age at kindergarten entry. Outcome measures: Receptive verbal abilities (Peabody Picture Vocabulary Test—Revised), teacher-reported indices of competence, academic skills, behaviour problems, and pro-social skills. Parent-reported measures of behaviour problems and pro-social skills. Regression analyses.	Participation in nursery programmes ages 2 and 3 associated with higher teacher ratings of academic skills and scores on PPVT-R at age 7, but relationships not statistically significant when controlled for child and family variables.	NLSCY is a national longitudinal Canadian survey, with a nationally representative sample of children of approx 20,000 Canadian children aged 0 to 11 years, surveyed in 1994–1995 and followed up in 1996–1997.

Study, aim, country	Sample and analysis	Findings	Commentary
(Lee, 2005) Uses data from Infant Health and Development Program (IHDP) to examine effects of centre-based childcare on children's cognitive and behavioural outcomes. US	Sample for this study drawn from families whose income to needs over the years when children were 1, 2, 3 years was less than or equal to one. Spanish speaking families excluded since cognitive test in English. Final sample 416 mothers and children (FUO = 241, INT = 175). Groups comparable on infant birth weight and neonatal health index. **Measures** Controlled for levels of family income to needs, maternal ethnicity, maternal education, maternal age at child's birth, marital status at child's birth, maternal verbal receptive skills. Public assistance (did/did not receive annually during first 3 years) and employment status (total months worked part-time or full-time during each year) Childcare—formal centre-based or nonmaternal home-based. Also measured age when received nonmaternal care, hours per week in each type of care. Cognitive test scores (IQ), child behaviour checklist at 36 months (parental reports). Multiple linear regressions to examine effect of maternal employment, childcare variables, and intervention.	Hours spent in quality centre-based care by intervention group—positively related to children's cognitive and behavioural outcomes at age 3. More hours cognitive test score age 3 = 90 (FUO = 76.3), fewer hours = 83 (FOU = 79.2). More hours: behavioural problems age 3 = 47.3 (FUO = 44.3), fewer hours = 51.9 (50.9 FUO). More hours spent in centre-based care by Follow-Up Only children—lower on cognitive tests when they spend more than 11.3 hours there. May be because of poor quality (not assessed) or other factors.	IHDP is an eight site randomised clinical trial designed to evaluate efficacy of comprehensive intervention programme for low birth weight premature infants. Random assignment to medical follow-up only group or EC intervention group. Programme provided full-time quality centre-based childcare programmes for children from predominantly poor families from 12–36 months—minimum of 5 hours per day, 5 days per week. Staff:child ratio 1:3 12 to 23 months, 1:4 24 to 36 months. Staff had 3 days intensive training, received higher salaries. Mothers in INT participated in child rearing workshops and received home visits for first 3 years. Also medical, developmental, and familial assessments for both groups. Reviews some evidence about welfare reforms and maternal employment, importance of quality and shortage in supply of regulated care in low-income communities. Poor children cared for less often in centres. Argues provision of quality care should precede mandatory work requirements.

Study, aim, country	Sample and analysis	Findings	Commentary
(Lefebvre & Merrigan, 2002) Uses data from Cycle 1 (collected 1994–1995) of Canadian National Longitudinal Survey of Children and Youth to investigate relationship between childcare arrangements and developmental outcomes of young children through age 5. Canada	Data has information on type of childcare, hours, activities done (e.g. ECE programme, toy library), mother's employment status, family background, and developmental instruments. These instruments were Peabody Picture Vocabulary Test (ages 4 and 5) and a Motor and Social Development test (ages 0 to 47 months).	Infant toddler no–parental care arrangements (home-based and centre-based) have insignificant or negligible impacts on motor and social development scores for children aged 0–47 months. For children aged 4–5 years, modes of care and education do not on average influence cognitive development. When care was combined with some educational activities, there were modest positive outcomes for: - educational care at ages 0–3 (0.74) and 3 years (0.91) - education and care at age 4 years (0.8) - kindergarten at age 5 years (1.9) - other educational activities at 0–3 years, 2 years, and age 5 years.	Canada has spilt care and education system—"care" provided in daycare and "education" in junior kindergarten, nursery daycare. No information on childcare quality or group size, staff qualifications, staff:child ratio. Only quality indicator educational care and other activities. Good—did random effects model within families. Instruments are narrow tests of skill, and only two are considered. Questions: cross-sectional.

Study, aim, country	Sample and analysis	Findings	Commentary
(Lefebvre & Merrigan, 2005) Introduction of daycare subsidies starting 1997 (see description with Baker *et al*., 2005). Policy designed to lessen poverty, increase mothers' labour market participation, and enhance child development and equality of opportunity. Policy includes replacement of half day kindergarten with full-day kindergarten in school settings for 5-year-olds (most 5-year-olds already attended half day kindergarten). This study focuses on effect of policy on labour supply of mothers with preschool children (0–5 years). The number of low-fee spaces is below the level of demand, with waiting lists common, and advice from the department in charge of family policy to make a choice as much as a year in advance. Thirty five percent of all children 1–4 years had access to a subsidised space in 2000. Less demand for places for children under 1: a federal programme has increased parental benefits during child's first year of life—about half of their families received benefits, and of these, more than 70% of mothers had leave of absence from work for at least 11 months. Childcare expenses can also be deducted from income for federal income taxes in all Canadian provinces; this tax credit increased from 1996 to 2000 in Quebec, perhaps because there was a shortage of subsidised places. Quebec	Statistics Canada Survey of Labour and Income Dynamics (SLID); rotating panels, interviewed once a year for 5 years. Data on labour market use and childcare annual expenses, but not childcare type. Comparison of pre and post periods of introduction of low daycare cost, on labour force participation in April and August of same year, annual number of weeks and hours worked, annual earned income; full-time employment. Used difference-in-differences analysis to compare Quebec mothers with mothers with children of similar ages in other Canadian provinces, where subsidy levels remained largely unchanged, with low numbers in subsidised care. Uses 1999 as first year of programme, because few new spaces were available until then, and likely that subsidy used by mothers already working before it was introduced. Control variables in estimations include maternal education, age, foreign-born, single-parent, number of other children in the household (<6, >5, <3, other earned income in household) Three estimation models with slightly different assumptions about pre policy regional trends and constancy of programme effects, p-values estimated to test assumptions (choose which estimation model is best based).	(as per Baker)—large increase in childcare attendance; decrease in spending on childcare. Little difference in maternal labour force participation in first year of programme (bearing out hypothesis that early use would be by those already employed). Effect sizes for labour market participation 0.07 to 0.09; larger effects for years 2001 (0.11) and 2002 (0.13); authors call this very large given labour force participation rate of 57% in 1994 (around 17% increase between 1994 and 2002). They estimate the policy *per se* to have increased labour force participation by 7.6%. Increase mostly coming from increase in full-time work. An estimated increase of 138–148 hours a year on an average number of 980 hours worked; and higher for women with a high school diploma or less: 141 cf. 118 for mothers with more than a high school qualification; authors suggest because latter more likely to have already been working longer hours. Weeks worked: effect sizes of an increase of 3.3—4.6, when mean hours worked in 1993 was 30. For those with a high school diploma or less, up to 9.2 hours (but not statistically significant). Not statistically significant increases.	Inequity for families because not enough subsidised places; authors note that policy supports full-day ECE, and thus full-time labour market participation, where mothers may prefer to work part-time.

Study, aim, country	Sample and analysis	Findings	Commentary
(Lemke, Witte, Queralt, & Witt 2000) Introduction of welfare reform 1996–97; analysis is of impact of price, quality, and availability of childcare on labour market decisions of current and former welfare recipients: on whether they work or take part in training/education; and if they work, hours per week. Massachusetts welfare to work programme includes requirement after youngest child is 2 to be involved in some kind of work for at least 20 hours a week; voluntary access to employment services programme, includes education; however if not work-exempt must also work at least 20 hours a week. Childcare voucher if on welfare and employed, in education, actively job seeking, job training, can be used for either formal/informal care; sliding scale co-payment dependent on income needs, family size, amount of childcare used. Transitional access to childcare and medical assistance, structured job search assistance, reduced transport costs for at least 1 year; after being off welfare 1 year, these also available, dependent on income. Massachusetts, US	Merged two administrative datasets to cover 14 months; 75% of the 13,823 mostly sole-parent families who are current/former welfare recipients and current childcare voucher recipients. 60% were employed, average hours 32, 60% used voucher for centre use, and 87% for full-daycare. Analysis includes information on availability, price, and quality of childcare in locality, and variables related to other major policies, such as earned income tax credit, nature of local labour markets, community characteristics, include in models costs of working, and characteristics of ECE. Model probability of working cf. job training/education, and if working, hours per week, taking above variables into account.	Increase in childcare voucher from average $434 to $511 per child increased probability of working by 3.6% (as opposed to training/education, the two options available in this policy setting). Increase in median time local ECE centres in operation from 3 to 6 years increases probability of working by 11.1%. Increasing number of NAEYC accredited ECE centres from 10% to 50% in locality increases probability of working < 2%. Having full-day kindergarten in locality increases probability of working by 3.2%. In terms of community characteristics, one indicator of relatively safe community (police clearance rate of crimes), probability of working increases by 2.7% when clearance rate is 40% cf. 10%. Increases in subsidies or quality of ECE related to small increases in weekly hours—but increases in co-payments (from $20 a day to $30 a day) lead to decreases in hours worked (as much as 6 hours a week).	Incentive of policy rules is to take up education/training while youngest child under 2; part-day ECE encourages education/training rather than employment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Loeb, Bridges, Bassok, Fuller, & Rumberger, 2005) Use data from the National Center for Educational Statistics to examine effects of preschool centre attendance on children's cognitive and social skills, analysed by income levels, age of entry, and weekly hours of attendance. US	14,162 kindergarteners. Assessments of early language and pre-reading, understanding of numbers and mathematical concepts. Teacher rated social and emotional development. Childcare variables: type, age of entry, intensity of attendance. Statistically adjusted for 32 features of child's home and family, and for 13 characteristics of community.	**Preschool attendance compared with none** Attending a preschool prior to kindergarten raised early language and pre-reading and math skills by 10% of a standard deviation. Magnitude of benefit more than double for English proficient Hispanic children (0.23 SD) compared with White children. Children from extremely poor homes displayed greatest gains in pre-reading and math skills from preschool attendance—0.20 SD gain pre-reading and 0.22 SD gain in math concepts compared to counterparts with no preschool experience. Translates to 8 and 9 percentile gain on a standardised test. Children from middle and high income experience modest gains from preschool attendance in pre-reading (middle income 0.13 SD) and math (middle income 0.12 SD) compared to counterparts with no preschool experience. Attendance at preschool hindered rate of socio-emotional development (externalising behaviour, interpersonal skills, self-control in engaging in classroom tasks). Slowing of rates of growth strongest for Black children and children from poorest families. Hispanics no signs of lagging compared with counterparts. **Age of entry** Cognitive benefits in pre-reading and math stronger when children first enter programme between 2 and 3. Overall benefit greater than when children enter before age 2, and after age 3. Social benefits: on average, earlier a child enters the slower their pace of social development. Children who enter before age 1—lag in social development of 0.29 SD. Effect of growing up in home with depressed mother ranges from 0.35 SD to 0.70 SD. These two patterns observed across all ethnic groups. **Quantity per week** 15–30 hours per week: on average these children experience stronger cognitive gains and weaker social development, compared with those less than 15 hours. Attendance for more than 30 hours on average does not appear to yield additional cognitive benefit but it does further suppress rates of social development. E.g. children attending 15–30 hours and those attending more than 30 hours score approximately 8% of a standard deviation higher on pre-reading than those attending fewer hours. Children attending 15–20 hours per week score 10% of a standard deviation lower on behavioural index than those attending fewer hours, while those attending more than 30 hours score on average 25% of a standard deviation lower. For children from lower-income homes, additional hours does not slow social development, while it advances cognitive gain. But for children from higher-income families, additional hours slows social development and fails to improve cognitive outcomes relative to 15–20 hours per week.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Loeb, Fuller, Kagan, & Carroll, 2004) Longitudinal Investigates quality of childcare available to women in welfare system; compares centre-based and home-based programmes; investigates how type and quality influence child's social development; examines differences in developmental effects after controlling for family characteristics. US: California and Florida	451 families in welfare system using centre-based and home-based care setting, demographically diverse sites, variation policy and stock of centre programmes. Maternal interviews and child assessments (cognitive and language), mother's ratings of child's social development (behavioural and emotional problems) in 1998 (children 2½) and 2000 (approx. 4 years). Childcare exposure, type, and stability. Childcare quality—ECERS and FDCRS, Arnett Scale of Caregiver Behaviour, adult:child ratios, group size, caregiver completed high school. Regression analysis.	Cognitive: large consistent positive effects from centre participation in cognitive domain (comparative group kith and kin). Strongest for those in a centre programme in 1998 (wave 1) and 2000 (wave 2). Experience in centre at both waves increased school readiness total and composite scores by 0.6 and 0.3 SD, literacy measures by 0.3–0.5 SD. Mother assessed cognitive scores 0.3 SD higher for children in centre care at wave 1 and 2 compared with children in kith and kin care. Positive effects also for children moving to centre care at wave 2. Effects positive and significant after controlling for mother's education, children's baseline proficiency, site effects, child age, mother's cognitive proficiency. Mother's cognitive proficiency approximately half as strong as impact of centre enrolment. Social: effects of type on social behaviour less consistent. Children in Family Child Care Homes (FCCHs) more aggressive behaviours than children cared for by kith and kin (0.42 SD). Mother's emotional depression associated with higher incidence of child's social problems, but not associated with cognitive outcomes. Site, quality, and stability: Centre effect for school readiness composite, mother assessed cognition, and social development stronger for children in San Jose after taking into account previous predictors. Stability had strong consistent positive impact on outcomes. Children who had attended current setting for more months before wave 2 displayed higher cognitive proficiencies at wave 2. Children in centres and FCCHs with higher Arnett Caregiver interaction scores displayed greater reading readiness and fewer social problems. Children in centres with more educated caregivers scored higher on school readiness composite and Bracken Basic Concepts scale.	Quality higher in California centres, especially San Jose. Note fewer social problems in children in settings with higher caregiver interaction scores.

Study, aim, country	Sample and analysis	Findings	Commentary
(Love *et al*., 2001, 2002) Evaluation of 17 Early Head Start programmes. Two-generation programmes targeted to low-income pregnant women and families with infants and toddlers, started in 1995. In 2002 Early Head Start was in 664 communities, serving around 55,000 children. Programmes can be centre-based (with a minimum of two home visits a year to each family); home-based (with a minimum of two group socialisations a month for each family); or mixed (both centre and home based options). US	In 1996 the sample programmes had about equal numbers of centre-based, home-based, and mixed; a year later seven were home-based, four were centre-based, and six were mixed approach. By 1999, only two programmes were home-based, and 11 were mixed; the four centre-based programmes remained that way. Random assignment, involves c. 3000 families. Although some attrition, nonresponse similar for programme and control groups. Nonresponse more likely for most disadvantaged. Data on outcomes from a wider range of sources than most studies: child assessments, observations of children's behaviour, ratings of videoed parent–child interactions, parent ratings of their children's behaviour, and parent self-report. Also rated data gathered on programme implementation through site visits in 1997 and 1999. Regression analysis, adjusting for child and family baseline characteristics.	*Children* **Small–moderate effects** At age 2: participants had higher IQ scores (d = 0.15), and fewer with IQ scores in at risk range (34% cf. 40% control group). Language scores higher (d = 0.11) Only one difference in nine measures of behaviour: less aggressive behaviour by participants (d = 0.10). At age 3: similar pattern to age 2, slightly smaller effects for IQ; larger effects for language (but also change in measure) *Parents* **Small effects** At age 2: effect size differences of around d = 0.12–14 for a range of measures including support in play, home environment, reading, and regular bed-times favouring participants cf. control group. At age 3: similar pattern, slightly weaker. For parenting knowledge and discipline measures, effect sizes from d = 0.08 to 0.13 favouring participants on 5/8 measures at age 2; effect sizes of d = 0.09 to d = 0.14 on 3/6 measures at age 3. Health and family functioning: at age 2, effect sizes of d = 0.09–0.11 on 3/7 measures; no differences at age 3. Parent self-sufficiency: participants more likely to take part in education/training (d = 0.11) at age 2 and age 3 (d = 0.17), to have had employment (d = 0.09), and fewer pregnancies (d = 0.09) at age 3. No differences in welfare receipt, income. At age 3, fathers participating were less likely to spank their children (25% cf. 36% control), and more engaged with their children in play. Effect sizes much larger (d = 0.2–0.5) across many outcomes for: mixed approach programmes, African American families, families enrolled in pregnancy, and families with moderate number of demographic risk factors (cf. those with low or high number). Programmes that fully implemented the Head Start programme performance standards had a stronger pattern of impacts (analysis done for mixed and home-based programmes only). High scores for parenting outcomes at age 2 were associated with high scores for children's cognitive outcomes at age 3.	Some changes in the study communities may have narrowed gap between participants and control group, e.g. local economies improved, as did access to services. No information in study summary on ECE experiences of control group. Mixed approach programmes also more likely to keep families enrolled for longer; and were more flexible in relation to family needs. Families with high risks "may be overwhelmed by changes that a new program introduces into their lives, even though that program is designed to help". They were also more likely to be in home-based or mixed-approaches that were not fully implemented early, suggesting some impact from staff turnover.

Study, aim, country	Sample and analysis	Findings	Commentary
(Love *et al*., 2003) Examines research from three studies to investigate how quantity and quality of childcare may relate to children's development. Studies from Haifa, Sydney, and US.	Sydney Family Development Project (SFDP)—147 primiparous mothers. Examined relationships of type, amount, and stability of childcare experiences to developmental outcomes: infant–mother attachment at 12 months, behaviour problems at 30 months and 5 years, teacher-rated adjustment to school at 6 years. Haifa-NICHD merged data—151 infants in Haifa, 143 US. Childcare ratio in Haifa twice as large as in NICHD study. Early Head Start programme evaluation—developmental progress during first 3 years. 3001 children from low-income families randomly assigned control or intervention. Head Start intervention included family and child development programmes (home- or centre-based). Childcare quality measured by ITERS or ECERS–R. Hierarchical regression analysis.	**SFDP study**: security related to formal rather than informal care at 12 months; no associations between mother's scores for internalising, externalising, and total behaviour problems and type or quantity of care at 30 months and 5 years; teacher–child conflict at 6 years associated with more unstable care over time, but not type or quantity. Ratings of social-emotional adjustment at 6 years related to stability of care. Personal adjustment ratings higher when children attended formal in contrast to informal care during first 30 months. Competence in learning (paying attention and interest)—higher ratings for formal versus informal, lower ratings for longer hours. Competence scores highest for children attending formal care for fewer hours and lowest for more hours informal care. Authors attribute differences to different systems of provision and regulation. **Haifa study**: childcare, especially centre care, increased likelihood of attachment insecurity to their mothers—accounted for by very high infant:caregiver ratio (average 8:1). Maternal behaviour less salient for these infants. Percentage of securely attached infants was significantly lower (54%) than in NICHD study (67%). **Early Head Start:** Improved cognitive and language development at 24 and 36 months, programme children higher than control. Positive on social-emotional development at 24 and 36 months. Centre-based services as effective as those offering home-based or mixed approaches. Amongst those attending childcare centres, those in higher-quality centres showed enhanced cognitive development at 24 months and language development at 36 months. No relationship child:adult ratio. Mean hours in centre care over time predicted higher scores on cognitive development 24 and 36 months, and language development 36 months. Neither quality nor amount predicted aggressive behaviour at 24 or 36 months.	Extends level of childcare quality from restricted range of NICHD study, and breaks correlation between quality and SES found in NICHD study. Haifa study adds sample using much lower quality across all SES groups; Australian study adds families from different SES groups using generally higher-quality government-regulated care relative to US; Early Head Start adds sample low-income families experimentally offered care of higher quality for infants and toddlers than generally available in the US, and who are more diverse than NICHD. Reviews provisions in each country. Indicates limited generalisability of NICHD findings.

Study, aim, country	Sample and analysis	Findings	Commentary
(Love *et al*., 2005) Evaluation of Early Head Start through randomised trial of 3001 families in 17 programmes. Compared Early Head Start participants with controls. Summarises impact on child and parent outcomes when children aged 3 years. US	3,001 families in 17 programmes—1513 in programme, 1488 in control group. Diverse in ethnicity, age, having first and later born children, living in urban, suburban, and small town localities. Control group could access other services in community but not Early Head Start. Programme approaches chosen to meet needs of communities. Services included four providing centre-based programmes (child development services mainly in centre based childcare, parenting education and minimum two home visits); seven home-based (not ECE) and six mixed. Cognitive and language measures; child socioemotional development, child health, parenting. Regression adjusted impact analyses.	Strongest and most numerous impacts for programmes offering mix of centre-based and home visiting and that implemented Head Start performance standards (rated on early childhood development and health services, family and community partnerships, programme design and management) early. **Outcomes within mixed approach programmes** Effect sizes of 0.28 on Bayley MDI scores and 0.34 on percentage of children scoring below 85 on PPVT-IIII. Reduced parent reported early aggressive behaviour. Effect size (programme versus control) -0.15. Effect sizes child sustained attention with play 0.42, engagement of parents during play 0.43. Positive impacts on parent–child interactions—Head Start parents compared with controls provided environments that were more supportive of children's learning and development and the child during play ES 0.27), read to child daily (ES 0.46), less spanking (spanked child last week ES-0.26).	Early Head Start is a Federal programme begun in 1995 for low-income pregnant women and families with infants and toddlers.

Study, aim, country	Sample and analysis	Findings	Commentary
(Maccoby & Lewis, 2003) Commentary on two papers (NICHD ECCRN (Early Child Care Research Network), 2003; Watamura, Donzella, Alwin, & Gunnar, 2003) suggesting risks in nonmaternal care to children's social development.	NICHD—more hours in nonmaternal care over 4½ years more likely externalising behaviour problems in preschool and kindergarten, and lower levels of social competence and more conflict with teachers. Watamura *et al*.—cortisol levels infants and toddlers to age 3. Increases in levels of stress hormone (cortisol) over the day for infants and toddlers in daycare, but no such morning to afternoon increases for same children on at-home days—with increases for mainly shy and fearful children.	Argued that out-of-home pre-elementary care can contribute to positive social development if it emphasises (a) children's attachment to school and peer group, (b) constructivist rather than didactic learning where children have many opportunities to initiate and plan activities and work with peers, (c) intrinsic and internalised motivation (e.g. pleasure of helping or solving a problem rather than competition), and (d) group structures that support social development.	Noted several countries have provided job protected maternal or paternal leave through most of infant's first year, plus income replacement for at-home parent. Others have subsidised out-of-home care for infants and toddlers.

Study, aim, country	Sample and analysis	Findings	Commentary
(Magnuson & Waldfogel, 2005) ECLS-K 1998–99 cohort—nationally representative US sample of children who attended kindergarten in 1998, follows children for their first two school years. US	16,592 children Data sources: parent surveys, assessments of children's academic skills, teacher and school administrator surveys, observational studies of school environments. This analysis uses data from parent surveys, including ECE experience: type of non-parental care; age started this type of care (centre-based, Head Start, relative care, non-relative care); if child had participated in this type of care in year before kindergarten, and if so, number of hours attending during typical week. Outcome measures for this analysis were spanking of child; domestic violence; parenting stress (a year after ECE participation ended). Regression analysis controlled for family and child characteristics likely to be correlated with differences in ECE use or the outcomes; included socioeconomic, ethnicity, first language, residential stability, family structure, number in household; whether child born early, age, height, weight, gender. Separate models were also run for low-income families, mothers with low educational levels, single parents, and two-parent families.	Modest reduction in spanking one year after Head Start attendance for low-income (10% variance accounted for) and two-parent families (4% variance accounted for; 16% reduction), but no gains for other kinds of ECE. Modest reduction in parent views that they would spank their child if their child hit them for two-parent families with Head Start or centre care (7% variance accounted for; reductions of 14 and 18%). No associations found between ECE and reduction in spanking among those who did spank their children in previous week. Higher current parenting stress among former Head Start users (4% variance accounted for) Marked reduction in domestic violence for low-income two-parent families with Head Start attendance (5% variance accounted for, a reduction of 29%).	Authors suggest that parent involvement component of Head Start may be a reason why this programme showed more effect; it could also be that these parents were more aware that spanking was seen as undesirable (but this does not account for similar responses to the hypothetical situation of what they would do if their child hit them among centre and Head Start parents). No information on ECE quality or children's health or behaviour—authors thought this might help exploration of finding that ECE use did not decrease parenting stress; also noted however that parent stress levels may relate more to current situation.

Study, aim, country	Sample and analysis	Findings	Commentary
(Magnuson, Ruhm, & Waldfogel, 2004) Effects of pre-kindergarten on children's school readiness at kindergarten entry, over time and for children from disadvantaged backgrounds compared with others. US	Data from the Early Childhood Longitudinal Study—Kindergarten Class of 1998–99—nationally representative sample, 10,224 children for whom all information below was available. Extensive information on family background, school ECE and childcare experiences. Also used information on neighbourhood (prevalence of crime, abandoned buildings, drugs, safe play places), and state per capita income and public spending on welfare and education programmes. Outcomes: individually assessed mathematics and reading skills; teacher reports of externalising (aggressive) behaviour and self-control—measured in fall of kindergarten and spring of 1st grade. Measures of home learning environment at these dates. Regression analysis comparing pre-kindergarten group with other groups, controlling for family, neighbourhood, and state conditions.	Pre-kindergarten (comparing children with pre-kindergarten attendance and parent-only care)—significantly raised mathematics and reading performance at school entry—effect sizes 0.10 and 0.12. Would move child from 50th to 55th percentile for reading and 50th to 54th percentile for mathematics. Pre-kindergarten attendance was associated with small increased teacher reports of externalising behaviour (d = 0.19 and 0.14) and decreased self-control (d = -0.12 and -0.08) at school entry. Externalising behaviour refers to aggressive behaviour (how frequently the child fights, argues, gets angry, acts impulsively, or disturbs ongoing activities). Absolute levels of aggression were quite low with unstandardised means of 1.5, and levels of self-control quite high with unstandardised scores of 3.12. Externalising behaviour is highly negatively correlated with self-control (-0.70, p<.01). Pre-kindergarten attendance increased aggression and decreased self-control—effect sizes 0.07 to 0.11. Other types of centre-based care had positive effects on academic outcomes and negative effects on behaviour, though smaller than pre-kindergarten effects. For most children, cognitive benefits of pre-kindergarten quickly fade, but behavioural effects persist. More lasting cognitive gains for disadvantaged children. Among children in same public school as kindergarten, their higher reading and mathematics skills are not accompanied by behaviour problems.	Structural indicators (such as levels of teacher education) suggest pre-kindergarten programmes are of higher quality, especially those in public schools.

Study, aim, country	Sample and analysis	Findings	Commentary
(Marcon, 2001) Examined data from a subsample of students participating in longitudinal study to examine the influence of three different preschool models (Marcon, 2002) on school success at 8th grade (age 13). US	Stratified random sample of 80 students at 8th grade, 60 having graduated from Pre-K or Head Start, and 20 had entered school as kindergarteners. 20 children who had Pre-kindergarten or Head Start had attended child-initiated model, 20 an academically directed model, and 20 a middle of the road approach. In kindergarten, 66% in classes emphasising academic preparation, 34% socio-emotional goals (see Marcon, 2002). Individual interviews about goals and aspirations, accomplishments and violations.	**Preschool attendance vs none** Adolescents who attended preschool more likely to be proud of themselves for achievement-related reasons. **Type of preschool** Graduates of child-initiated preschools most likely to report prosocial reasons for feeling proud. Graduates of teacher-directed academic EC programmes had somewhat lower post secondary aspirations, were less likely to participate in sports, and were the only ones to report intentional violation of community rules.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Marcon, 2002) Followed children who began school at age 4 (Year 1) to age 10 (Year 6) to examine the influence of three different preschool models on later school success. US	Low-income, mainly African American children who had attended two years of full-day preschool (preschool and kindergarten) prior to entering first grade. Three types of preschool setting: child-initiated, academically directed, or a combination approach. Data collected in Year 5 (160 children in 61 schools) and Year 6 (183 children in 70 schools). All preschool teachers held Bachelor's degree or higher. Preschool model: Pre-K Survey of Beliefs and Practices (scope of developmental goals, conceptualisation of how children learn, amount of autonomy given child, conception of teacher's roles, provision of possibilities of learning from peers) led to categorising in one of above three models. Observations affirmed model classification valid. Report cards: overall grade point average; grades in 11 subjects (arithmetic, reading, language, spelling, handwriting, social studies, science, art, music, health/PE, citizenship). Special education placement and retention. ANCOVA. Covariate to control for influence of economic differences was eligibility for subsidised lunch.	**End of 5th year** Children whose preschool experience was more academically oriented had been retained in grade less often (one-half as likely) than peers. No difference attributable to preschool model for special education placement. No difference in academic performance of children who had experienced three different models. Teachers did however see the school behaviour of children who had attended academically oriented preschools as being notably poorer than peers. Girls earning 10% higher grade point average than boys (effect size = 0.34). **End of 6th year** Children whose preschool had been academically directed earned significantly lower grades compared to children who had attended child-initiated preschool classes. Grade point average for child-initiated preschool 4% higher than combination preschool and 14% higher than academic. Difference between child-initiated and academic moderate (effect size = 0.38). In all subject areas except music academically oriented had lowest grades; child-initiated highest. Teachers continued to rate school behaviour of children who had attended academically oriented preschools as poorer than peers.	Authors conjectured could have been greater continuity between preschool and school for academically oriented, accounting for lower grade retention end of 5th year. Those in other types of preschool may have had lower income levels. Mastery of mathematics and reading may have been emphasised in respect to grade retention—but this does not measure more integrative experiences that are assessed later.

Study, aim, country	Sample and analysis	Findings	Commentary
(McGivney, 1997) Postal survey and telephone interviews about benefits to parents/caregivers of pre-school group involvement carried out between April and July 1996. England	Postal survey of parents/caregivers involved in a pre-school group and identified by Pre-School Learning Alliance branches. Response rate (311), just under 50%. Information about ethnicity, sex, age, school leaving age, qualifications, occupation, and occupational status. Telephone interview of 50 respondents.	**Survey** Majority derived benefits (in order of ranking): - New friends/social contacts - Greater interest in and knowledge of child development - Increased ability to relate to children and help them learn - Increased ability to organise and manage children's play. Next were personal and practical benefits, i.e. enhanced communication, self-confidence and self-esteem, improved social skills, new practical skills, improved sense of wellbeing, better relationships with other family members, confidence to undertake learning activities, improved organisational skills. Wider horizons were rated next most important—wider personal aspirations, interest in wider range of jobs, greater readiness to seek paid employment. Skills used in home (77%), in organisations outside home (22%), in current employment (14%), as a stepping stone to other education or training (7%), to gain a qualification (5.5%), in family business (5.5%), to change jobs (2%), other (6.5%). **Telephone interviews** Interviewees who did not claim benefits tended to be in groups without PSLA constitution, which did not involve parents. Learnt about children through seeing children different from own, insight from watching group leaders. Involvement in management committees helped improve interpersonal skills. Experience in managing and running the group led to range of practical skills (e.g. budgeting, fundraising, insurance, etc.). Some continued to serve on committees and community groups. 20.5% had participated in PSLA courses. Perceived outcomes of courses: contributed to knowledge and skills to do with children. Also important was gaining or progressing towards a qualification, knowledge of legislation affecting charitable organisations. Many enhanced personal skills, e.g. confidence in learning, management, administration, study. Respondents who left school at 16 tended to attach more importance to personal skills and to gaining of qualification than those who left later. Courses being free was a factor in deciding to attend. Also most likely to report increases in self-confidence and enhanced communication skills, social skills and practical skills, and wider aspirations and motivation to undertake learning activities. Gains especially important for first time parents, isolated, rural, new, respondents left school before age 16.	Some limitations in reporting. Percentage reporting benefits not provided. Extent of differences between groups not reported.

Study, aim, country	Sample and analysis	Findings	Commentary
(Melhuish, Sylva, Sammons, Siraj-Blatchford, & Quinn, 2006) The Effective Preschool Provision in North Ireland (EPPNI) project investigated the effects of preschool education and care on children's intellectual and social/behavioural development for children aged 3–8 years. It examined the effectiveness of types of ECE setting, characteristics of more effective settings, impact of child and family characteristics, and whether preschool effects persist. Northern Ireland	Nursery schools/classes, playgroups, private day nursery, and reception class/groups and 837 children from differing social backgrounds across Northern Ireland. **Child/family characteristics** from parent interview **Child outcomes** At 3+: cognitive tasks of BAS 11; teacher completed Adaptive Social Behaviour Inventory. At school entry: cognitive assessments, literacy measures, teacher completed social behavioural profile of child. At end of first year school: number, reading, writing and literacy, social behavioural profile. At end of second and third years of primary school: further assessment of reading and mathematics, info on school progress, attendance and special needs, teacher assessed social behaviour. (At age 7 child also reported on own attitudes.) Quality of preschool: ECERS–R and ECERS-E, and Caregiver Interaction Scale. Adult:child ratio, staff qualifications. Quality home learning environment Case studies in three good quality	**Cognitive—impact over preschool period** *Impact of attending* Home versus preschool comparison. Preschool had higher scores for verbal, nonverbal, and general cognitive skills for all children. Children who attended part-time showed more progress in co-operation/conformity and antisocial worried behaviour than full-time. But no difference between groups in overall attainment. Disadvantaged children benefited more when with mix of children from different backgrounds. *Type* Nursery school best outcomes, with good outcomes for playgroups. All produced benefits. *Effects of specific practices* Children attending centres with higher ECERS–R language scores made greater progress for nonverbal skills, ECERS-E maths subscale associated with early number concepts. **Social/behavioural—impact over preschool period** *Importance of home learning* For all children, home learning environment more important for both intellectual and social development than parent occupation, education, income. **Preschool versus home** Positive effects of preschool on all social/behavioural subscales except co-operation conformity. Compared with home group: Nursery school children more sociable and confident, also more antisocial worried. Playgroup more sociable, confident, and empathetic. Private nursery more sociable and confident, also more antisocial/worried.	This report is a summary—does not include specific findings.

Study, aim, country	Sample and analysis	Findings	Commentary
	settings. Regression model retaining predictor variables having statistically significant effects on outcome variable.	Reception group more sociable, confident, independence/concentration and antisocial/worried. *Preschool characteristics* Children attending part-time made more progress in co-operation/conformity and less antisocial worried than those full-time. No difference overall attainment though. More adults to children associated with progress for independence/concentration, co-operation/conformity, and sociability. Staff training and qualifications associated with better quality provision. ECERS–R language subscale showed effects for confidence and independence/concentration, maths subscale associated, with co-operation/conformity. Caregiver punitiveness associated with increased progress for co-operation/conformity, independence/concentration, and empathy. Peer group confidence tended to depress sociability progress. **Key findings at end of Key Stage 1 (8 years)** Effects through stage 1. Some reduction in strength for some outcomes. Effects most strong for nursery schools (attainment, numeracy, and literacy), followed by playgroups (numeracy), reception class (numeracy). No difference attainment, numeracy, or literacy in home children and children attending reception class or private day nursery. Higher ratings ECERS–R subscale Parent and scored higher and made more progress numeracy. Children “at risk” helped by ECE experience. Disadvantaged children benefit more when with mix of children from different backgrounds—higher scores numeracy and more progress literacy. Higher rating on Home Learning Environment index, better scores literacy and numeracy. Effects mainly in preschool period—no additional significant effects through schooling.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Meyers, Heintze, & Wolf, 2002) Low-income single mothers, current and recent welfare recipients in 1995; estimation of their likelihood of receiving childcare subsidies and effect of this probability on labour market activity. Complex picture of support for low-income mothers to access ECE in California; authors note rationing could occur through number of ECE or employment support programme places; or through “burdensome application procedures and administrative activities”. California, US	AFDC household survey, stratified random sample, two phone interviews 18 months apart (first 18 months after sample drawn); this study covers single mothers with at least one child under 14 (n=903). Models of labour market activity, childcare use, receipt of government childcare subsidy; included variables of maternal education, age of youngest child, nonparental adults in household, knowledge about AFDC, and subsidies.	85% received welfare 3 years after sample drawn. 51% employed/in job preparation, of whom 76% also received welfare. Mothers of preschoolers most likely to receive subsidies (probability of 0.53). No other family characteristics associated with differences in subsidy receipt. For whole sample, only 13% of those who were employed and 18% of those with any labour market activity used childcare subsidies; 69% used unsubsidised care. Simulation of impact on probability of employment in terms of probability of receiving subsidy: if latter is 0, probability of labour market activity is 21%; at average subsidy level (27%), c. 49% mothers predicted to have labour market activity; when subsidy is 60%, predicted labour market activity over 80%.	Notes low proportion of low-income mothers receiving childcare subsidies in US (put another way, the absence of free ECE provision), thus question of whether simulations showing positive impact of childcare subsidies on maternal employment may overestimate for US because not all potential low-income mothers will get subsidies. Caveat about sample, since based on phone interviews, and therefore does not cover those who are “less residentially stable and more disadvantaged”. Study covers mothers whose youngest child up to age 14, and simulation relating childcare subsidy receipt to employment does not distinguish those with preschool children from sample as a whole, so can’t get comparable estimation with other US studies.

Study, aim, country	Sample and analysis	Findings	Commentary
(Milfort & Greenfield, 2002) Compared teacher and observer ratings of young children's social behaviour in the context of peer play with both sources using the same measure and instructions. US	215 African American and Hispanic Head Start children from 22 classrooms. Rated on social behaviours by teachers and observer, using Penn Interactive Peer Play Scale.	Both teacher and observer ratings revealed factor structures that reflect play interaction, disruption, and disconnections. Despite overlap, in factors observed, ratings of individual children by teachers and observers were significantly correlated on only one of three factors. Observer ratings distinguished between nonaggressive disruption and aggressive disruption. Teachers better able to identify positive play behaviours than observers.	Observers may provide more detailed information on type of disruptive behaviours**.**

Study, aim, country	Sample and analysis	Findings	Commentary
(Mitchell *et al*., 2004) Undertaking action research with help from researchers over 2003–2006 on parent engagement and sustaining a community of learners, uses of schemas and Teaching and Learning stories and learning progression, continuity and quality across sessions. Parent/whänau-led ECE centre. Parents responsible for all aspects of operation, including delivering curriculum. High levels of parent involvement and training. Report on baseline phase (2003). Wilton Playcentre, Wellington Centre of Innovation	16 Wilton Playcentre families and 22 children (aged birth to 5 years). **Measures:** observations of process quality; Teaching and Learning stories; parent survey; documentation about planning, assessment, and evaluation; group discussion of value of playcentre. Outcome measures at baseline: parent views of benefits for them and their children from families' responses to survey (14 of 16 responded).	**Benefits of playcentre for children and parents** Opportunities to be involved in child's learning and benefit of playcentre for child (100%). Adult education and working with other adults who are good role models (100%). Being part of a supportive community (71%). Greater understanding of child development, how children learn and adult's role in children's learning. Parents thought increased understanding helped them realise the importance of their role and helped them bring out the best in their children. (Majority—percent not given.) Examples of how playcentre changed family views about how children learn best and how playcentre contributes to parenting. Examples of playcentre validating the role of parents, increased confidence as parents through taking on roles and responsibilities, seen to be especially important for people not in paid employment (from group discussion).	

Study, aim, country	Sample and analysis	Findings	Commentary
(Mitchell, Haggerty, Hampton, & Pairman, 2006) Teachers, parents, and whänau working together in early childhood education. Case Studies (three education and care; three kindergartens). Centres registered with one professional development adviser and known to be interested in the topic were invited to participate. All approached agreed. A one-year research (action research) and professional development project. Aim: supporting ways in which teachers and parents/whänau worked together (to enhance children's learning and wellbeing). Socioeconomic profile (as described by EC E staff): low income (1), low/middle (1), middle/high (3), wideranging incomes (1). Theoretical frame led to two principles/assumptions about "working together" (from Bronfenbrenner, Habermas, Lyotard): recognition of funds of knowledge; goals and aspirations are discussed and shared. New Zealand	Interviews with staff, five parents/families, children (where possible—data did not yield useful information), and professional development advisers, in April/May in the first year and in March of the next year. Parent interviewees were randomly selected. Questionnaire about involvement to all parents (response rate: from 15% to 100%; a low response rate in four of the six centres).	Centres were based in very different communities, but key themes in common. Respect and belonging: Where partnerships developed, consciously formulated actions and strategies created a welcoming atmosphere. Parents identified affective factors as most important characteristic of a good ECE service. One centre provided an "outstanding" example of integrated action and sharing knowledge between home and ECE. Strategies that teachers found helpful for finding parents' views were identified. Relationship focused on pedagogy and children: Four main ways in which this focus was established. The "hard" issues: A number of issues were identified (e.g. parents' desire for tests and literacy teaching. (Report writers provided sources of assistance for teachers.)	This project combined professional development with action research. The facilitating aspects of environments that afford teachers, parents, and whänau working together were identified for six centres. Five randomly chosen family members in each centre provided useful data on parent views. Staff interview data often included "surprise" about their practice. A value of the project was to identify ways of finding out parents' views, and the opportunity for interviews from external researchers to surface surprising aspects (e.g. gender-based assumptions). Child outcomes were not a focus, but the research that makes the link between this "working together" and child outcomes is surveyed in the report. Interviews suggested that including parents in assessment planning and curriculum discussions had consequences for child outcomes: parents became more understanding of their own child's learning; children seemed to benefit.

Study, aim, country	Sample and analysis	Findings	Commentary
(Mitchell, Royal Tangaere, Mara, & Wylie, 2006) Assessed the contributions parent and whänau-led ECE services are making to: children's learning, parent knowledge/skills and social support, and community. Qualitative research study of 28 parent/whänau-led centres (eight playcentres, eight playgoups, six köhanga reo and six Pasifika centres) aimed at showing apparently consistent patterns for the types of service. Sample of centres chosen to provide a cross-section of services within each type, with regard to location, roll size, socioeconomic status (via Equity index) and qualifications (via rate 1 or rate 2 funding). Not a "before" and "after" study, and too small for statistically significant correlations by type. Wideranging sources of data however. Results in accessible summary charts, and a detailed case study for each service type. New Zealand	28 centres. Methods of data collection: Two observations in centres using rating scale from Competent Children study (new items developed in 2004). Inter-rater reliability check by joint scoring before the start of study. Parent questionnaires (65% response rate in Playcentre—113 parents, 26–33% response rates in the other types of service). Profile filled out by person chosen from service. Group discussions with staff/whänau/kaiako. Discussion with supervisor or equivalent.	Findings consistent with philosophies of service types. Playcentres: rated highly on parenting skills and community outcomes. Playcentres: less highly rated on: children's thinking and learning dispositions; tikanga Mäori and te reo Mäori; evidence for acceptance of diversity. Köhanga reo: highly rated for: children's learning of te reo and tikanga Mäori, children's socialsisation, inclusion of special needs. General playgroups: two out of four rated strongly on social support; Puna playgroups' patterns of strength included children's learning and social support. Pasifika services' patterns of strength: children's learning, parents' voluntary and paid work skills, and Pacific language for parents.	Study acknowledges small sample; nevertheless the outcome tables keep the data transparent by service (the researchers do not accumulate data over small numbers), and data on outcomes is sought from a number of sources. Researchers suggest some of the structural features for quality outcomes for children's learning: good quality resources, adult qualifications, participation in professional development and wananga; where there are kaiako and kaumatua working with the children who have a high level of language fluency, then the level of children's use of te reo and tikanga Mäori is high.

Study, aim, country	Sample and analysis	Findings	Commentary
(Montes, Hightower, Brugger, & Moustafa, 2005) Compared socio-emotional outcomes for children in classrooms with excellent process quality with children in classrooms with good quality from October to May. Compared effect sizes of associations between socio-emotional factors and process quality with those in the Cost, Quality and Child Outcomes study. US: Rochester, New York	Most students high poverty, urban. 78.5% black or Latino, 49% boys. 88 classrooms serving mostly 4-year-olds. Measures: ECERS–R, Teacher–Child Rating Scale (task orientation, behaviour control, assertiveness, peer social skills). Measures in October and May. Removed outliers. Classrooms split into two groups by median ECERS–R score representing excellent and good quality. Multivariate analysis of covariance.	At Time 1—students with socio-emotional problems evenly distributed across classrooms—no significant differences in risk status. At Time 2—students grouped into decreased socio-emotional risk status, unchanged risk status, and increased risk status. MANCOVA (controlled for gender and minority ethnicity distributions) showed significant differences in outcomes by process quality. Classrooms in excellent quality group had 5.7% more students in the Decreased Risk Status group and 4.6% fewer students in the Decreased Risk Status group. Differences are about half a standard deviation (d DRS = 0.52, d IRS = 0.41)—sizeable effect for socio-emotional outcomes. Durlak and Wells (1997) meta analysis—average effect size for this type of programme = 0.35. Higher quality not associated with students who had no change in risk factors.	Effect size larger than Cost, Quality, and Child Outcomes effect size. Rebuts hypothesis that effect sizes of process quality on concurrent socio-emotional outcomes decrease as quality increases. The evidence “points in the direction of increasing returns for increases in quality for classrooms that already have good quality” (p. 370). No parental data.

Study, aim, country	Sample and analysis	Findings	Commentary
(Montie, Xiang, & Schweinhart, 2006) Reported findings for 10 countries from IEA Preprimary Project, a longitudinal, cross-national study of pre-primary care and education designed to identify how process and structural characteristics of the settings children attended at age 4 are related to their age-7 cognitive and language performance. Finland, Greece, Hong Kong, Indonesia, Ireland, Italy, Poland, Spain, Thailand, and US	**Phase 1:** household survey to identify major ECE settings used by families with 4-year-olds. **Phase 2**: children in selected settings between ages 4 years 3 months and 4 years 9 months. In each country, goal was to select minimum of 24 settings of each type that were used by large numbers of families or were important for policy reasons, and 96 children (up to four children randomly selected from each). Observations: child activities (physical, expressive, story telling/language, preacademic, religious, media related, personal/social, expression of emotion, domestic, transitional, accidents, no active engagement); adult behaviour (teaching, participation, nurturance, child management, supervision, transitional, routine, and personal); management of time (running record). Questionnaires: family background, provider survey (physical setting, policies, teacher background, material resources for children); teacher expectations (ranking of eight areas of development in order of importance for pre-primary children to learn). Child developmental status: language at age 4 and 7, and cognitive at ages 4 and 7. Age-4 outcomes used as baseline to adjust age-7 outcomes. **Phase 3:** language and cognitive measures. Three-level hierarchical linear model that allowed decomposition of variation of child outcomes into variation among children within settings, among settings within countries, and among countries. Structural features not available for Greece, Indonesia, and Spain. Ten country analysis of all other features; seven-country analysis of structural features. Total children = 1897.	**Four findings apply to all countries** Children in settings in which free choice activities (teachers allow children to choose their own activities) achieved significantly higher average language score at age 7 (0.18 point of the standardised score) than counterparts in which personal/social activities (personal care and group activities) predominated, and a nearly significant higher score than counterparts in which pre-academic activities predominated. As level of teacher education increased, children's age-7 language performance improved. Less time children spent in whole-group activities, the better age-7 cognitive performance. As number and variety of materials in settings increased, children's age-7 cognitive performance improved. **Findings that varied across countries** Increased adult–child interaction is related to better age-7 language scores in countries that have less adult-centred teaching or activities that require group response, and poorer language scores in countries that have more adult-centred teaching or activities that require group response. Increased child–child interaction is related to better age-7 language scores in countries that have fewer whole-group activities or more teachers who rank language skills among the most important, and poorer language scores in countries that have more whole-group activities or fewer teachers who rank language skills among the most important. Increased adult–child interaction is related to better age-7 cognitive performance in countries where teachers propose a lot of free choice activities, and poorer cognitive performance in countries where teachers propose few free choice activities. **No relationships** Group size was not found to relate to children's age-7 language or cognitive scores.	Authors noted research showing that parents and teachers with higher levels of education use more words and more complex language when communicating with children. Conjectured that free play offers opportunity for children to interact verbally with other children, opportunity for adults to engage in conversation about play and interests and children may choose activities that are interesting and engaging and difficulty level is suitable. Authors suggested nature of interaction in different contexts varies. For example, little opportunity in large-group activities for children to have reciprocal conversations to plan play or problem solve. Where child-centred teaching, adult–child interaction more likely to encourage freedom of thought and expression, and foster language development. Authors suggested relationship between group size, adult:child ratios, and process characteristics are country specific rather than universal.

Study, aim, country	Sample and analysis	Findings	Commentary
(Morris, Gennetian, & Duncan, 2005) Next Generation Project, based on seven random-assignment sites, evaluating 13 employment-based anti-poverty programmes in US and Canada. Studies began in early-mid 1990s. Some of these included childcare support. US and Canada	This analysis pools data from the evaluations for 25,779 children from 11,502 low-income families, mainly single-parent, then provides analysis for three programmes providing earnings supplements (additional money supplementing wages) for 3 years, with 1407 children. Analysis of impact on school achievement 2–3 years and 4–5 years after parent started on programme—based on parent report (authors tested the robustness of this in relation to test scores available for some of the programme evaluations and found that "our results did not depend on the measure assessed"). Analysis compares different programmes, then undertakes instrumental variables analysis to see whether positive effect for children related to increased income and earnings for those in these programmes cf. employment-only programmes, or childcare support that increased access and availability of centre-based arrangements.	Small effect sizes (d = 0.07 for children who were aged 2–3 when their mothers entered a programme, and 0.10 for those who were aged 4–5) for those who were in programmes with generous earning supplements. 2–3 years after programme began, effect sizes were d = 0.13 for children in these programmes, and 4–5 years after, d = 0.09. Instrumental variables analysis showed that a $1,000 increase in annual income sustained on average across 2–5 years of follow-up boosts child achievement by 6% of a s.d. (d = 0.06). Use of centre-based ECE cf. informal care in preschool years increases school achievement by d = 0.10. Greater use of centre-based care in programmes offering childcare support. When centre-based care is included in the income model, the income effects for children decrease substantially.	Authors conclude that both income improvement and centre-based childcare support low-income children's cognitive development; it is not possible to separate them in these programmes.

Study, aim, country	Sample and analysis	Findings	Commentary
Muller Kucera, K & Bauer, T (2002). Evaluates and quantifies costs and benefits for child care centres in Zurich.	Based on individual household data comparing the weekly working hours and composition of households that currently use childcare with comparable households not using childcare. Identifies benefits by calculating opportunity costs, if the current child care centres disappeared. Identifies potential costs and benefits for children, parents, taxpayers and firms of Zurich. Identifies direct benefits, indirect benefits, intangible benefits.	Main findings: Investment of 18 million CHF offset by at least 29 million CHF from reduced spending on social aid and additional tax revenues. Availability of affordable childcare predicted to result in rate of maternal employment almost doubling, especially for single-headed households with one or more children.	Available data did not allow a marginal analysis of an additional investment (authors stated this would have been more appropriate). Projected costs and benefits. Authors note could be some double counting, but offset by not costing intangible benefits.

Study, aim, country	Sample and analysis	Findings	Commentary
(National Evaluation of Sure Start Team, 2005a) Evaluation of impact of first Sure Start Local Programmes (SSLPs) on child and family functioning. Compared data on 9- and 36-month-old children and their families living in SSLPs with data on comparable children and families in areas designated to become SSLPs later. UK	**Sample**: 16,502 families in the first 150 SSLP areas and 2610 families in 50 comparison Sure Start-to-be communities. **Differences in communities** Comparison communities were somewhat more deprived than SSLP communities. Later analyses corrected for differences. **Control variables** Child age, gender, ethnicity. Demographic, socioeconomic, and parental characteristics. Area characteristics. **Outcome variables** Child cognitive and language development (36 months only)—verbal and nonverbal Child social and emotional development (36 months only)—parental report of conduct problems, hyperactivitiy, prosocial behaviour, independence, emotional regulation, overall behavioural difficulties. Child physical health—birth weight, child ever breastfed, child breastfed through first 6 weeks, one or more accidents in last 9 or 12 months, one or more hospital admissions in last 9 or 12 months). Parenting and family functioning. Maternal psychological wellbeing. Local area—ratings by mother and research team observer. Services—number used and usefulness. **Analysis** Factor analyses of parenting/family environment	Reported significant difference in outcomes between SSLP and comparison children and families after controlling for background characteristics. **Overall main effects—both analyses** Overall extremely few main effects of SSLPs. SSLP scored lower (i.e. better) on home chaos than Sure Start-to-be communities at 9 months. Mothers in SSLP areas rated local areas less favourably at 36 months. Mothers of 36-month-olds were more accepting of their children's behaviour (i.e. less likely to slap, scold, use physical restraint). No evidence that SSLPs affected children's health and development. **Overall effects for one analysis only** Breastfeeding through 6 weeks was less frequent in the SSLP communities (in the imputed data analysis). Hospital admissions for injury were more frequent in the SSLP communities (in the complete data analysis). Mothers used less negative parenting at 36 months in the SSLP communities (in the imputed data analysis). **Differential effects on sub-populations—both analyses** Three-year-old children of non teen mothers exhibited less behaviour problems and more social competence and the mothers showed less negative parenting when living in SSLP community. When analysis re-run controlling for negative parenting, effect of SSLP on social competence reduced to insignificance—suggests SSLP positively affects children by first positively affecting parent/family functioning. Adverse effects for the most disadvantaged families with	Area based—universal services within targeted area for under 4s and their families—avoids stigmas. Locally determined interventions not prescribed list. SSLPs operate in disadvantaged areas and are part of the Government's policy of reducing social exclusion. Aim to increase availability of childcare, improve children's health and emotional development, support parents as parents, and in aspirations towards employment. Wide diversity of programmes. All had to have core services: family/parent support, child and maternal health, and play and childcare. Emphasis on community development. Play and childcare component varied widely—e.g. childminders, day nurseries, parent and toddler groups, play areas, play groups, summer play schemes, book start schemes.

Study, aim, country	Sample and analysis	Findings	Commentary
	variables and of child socio-emotional functioning. Two clear factors emerged leading to creation of four variables: supportive parenting, negative parenting; (less mother-child closeness, more harsh discipline, more household chaos); child social competence; child emotion-behaviour difficulties. Home learning environment analysed separately. Analysed groups having complete dataset only, and groups having some imputed data. Multivariate statistical procedure	3-year-olds: Families with teen mothers (less social competence, more behaviour problems, less verbal ability), with lone parents (less verbal ability), and with no employed parents (less verbal ability) when living in SSLP community. **Differential effects for one analysis only** Dual parent families had higher home learning environment (imputed data only). Mothers of 3-year-olds employed full-time: child higher on verbal and nonverbal abilities (imputed analysis), more acceptance of child behaviour (imputed analysis), used more services (imputed data only). Least economically deprived mothers of 3-year-olds manifest more supportive parenting, including more acceptance (complete data only). Fathers of 3-year-olds in middle range of incomes for this sample rated higher on involvement with child in the SSLP communities (complete data), and mothers more acceptance and less negative parenting (complete data only). Mothers of 3-year-olds employed part-time: more malaise, lower self-esteem, more negative parenting (imputed data only). Mothers of 3-year-olds not in employment showed more acceptance of child's behaviour (imputed data only). Three-year-olds lower in verbal ability when mothers had lower household incomes (imputed data) or middle income for this sample (complete data). When mothers worked part-time 3-year-olds scored lower in verbal ability, social competence, and higher on behaviour problems (imputed data only).	

Study, aim, country	Sample and analysis	Findings	Commentary
(National Evaluation of Sure Start Team, 2005b) Examined links between aspects of SSLP implementation and the level of effectiveness on child and parenting outcomes for the 150 SSLPs in the impact study. UK	Developed ratings of 18 dimensions related to what was implemented (service quality, service delivery, identification of users, reach, reach strategies, service innovation) processes underpinning implementation (partnership composition, partnership functioning, leadership, multi-agency working, access to services, evaluation use, and staff turnover), and holistic aspects of implementation (vision, communications, empowerment, and ethos). Tended to be consistency in scoring across the domains (low, average and high). Also information on aspects of service and staffing. Examined association with outcomes.	Integration is central to effective intervention **For families with 9-month-olds** - More empowerment by SSLPs related to higher maternal acceptance. **For families with a 3-year-old** - Better identification of users by SSLPs was related to higher non verbal ability for children. - Stronger ethos and better overall scores on the 18 ratings related to higher maternal acceptance. - More empowerment related to more stimulating home learning environments. - More inherited parent-focused services related to less negative parenting. - More improved child-focused services related to higher maternal acceptance of child behaviour. - Greater proportion of staff that are health-related associated with higher maternal acceptance **General comments** Eighteen ratings are related to each other. Where programme high on empowerment, it will tend to score high on other ratings especially partnership composition, functioning, communication, leadership, multi-agency working, and ethos. Identification of users also scored high on reach strategies, leadership, and ethos. **Community variations** In the case of 9-month-olds, health agency leadership predicted significantly more father involvement relative to all other lead agencies, and more favourable ratings of the area by mothers relative to local authority as lead. SSLPs with a higher level of reach (in contact with more families) were associated with mothers showing more supportive parenting. With 3-year-olds, fewer accidents where programme led by health agency than local authority; more favourable mothers rating when led by health agency or local authority.	SSLPs related more to improvement of parenting than improvement of child outcomes. Authors suggest strengthening empowerment may be means to improve effectiveness. This in turn may lead to better child outcomes—maternal acceptance and home learning environment predict better child outcomes. Empowerment means, for example, parents being involved in service planning and represented on the board; community volunteers; training for volunteers; balance of paid and voluntary staff; services will include self-help groups run by users; features to develop local people's involvement; mutual respect for parents, staff, and others. Identification of users refers to programmes having good strategies for identifying potential users; shared record keeping; links between agencies to locate families in the programme area. Possible reasons for differential effects? - More advantaged use more services. - Home visiting may be unwanted and add to stress (cf. Early Head Start). Staff may lack skills to communicate effectively. - May be harder for staff to work with hard to reach groups and therefore less pleasant. Therefore don't spend so much time with them.

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Child Care Network, 1999) Examined child outcomes when childcare centre classes meet recommended standards for quality. US	1526 families who agreed to participate. (NICHD sample) Created index of extent to which a class met following standards: child:staff ratios of 3:1 at 6 and 15 months, 4:1 at 24 months, and 7:1 at 36 months; group sizes of 6 at 6 and 15 months, 8 at 24 months, and 14 at 36 months; and formal post high school training in child development, ECE, or related field; and caregiver education that included some college. Each class observed was scored 1 or 0 on each of the four features. Covariates: family variables. Child outcome variables: 24 months Bayley MDI; 36 months school readiness composite of Bracken Basic Concept Scales, Reynell Developmental Language Scales, mother reported behaviour problems, mother reported positive social behaviour.	Most classes did not meet all four standards. The more recommendations followed, the better children performed. Linear associations were found between number of standards met and child outcomes, and this was more the case at 36 months than 24 months. There was no evidence of threshold effects. Children in classes who met the standards had better school readiness and language comprehension scores as well as fewer behaviour problems at 36 months. Child outcomes were predicted by staff:child ratio at 24 months and caregiver training and education at 36 months. Not meeting any standards was related to lower than average scores for language comprehension, and meeting all of them with above average scores, using population norms. With respect to externalising and internalising scales, children in classes not meeting any recommendations had more problems of both kinds than the norming population at 36 months, whereas children in classes meeting all of them scored at the mean for this population at 24 months and 36 months of age.	Recommended levels: Ratios: 1:3 at 6 and 15 months, 1:4 at 24 months, 1:7 at 36 months. Group size: 6 at 6 and 15 months, 8 at 24 months, 14 at 36 months. Qualifications: formal post high training in child development, ECE, or related field at all four ages. Classes for older children were more likely to meet standards—better quality for them than infants and toddlers.

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Child Care Network, 2002) Uses structural equation modelling to test paths from structural indicators of childcare quality, i.e. caregiver training and child:staff ratio, through process quality to child outcomes.	Used 54 month data on 1083 children from NICHD Study of Early Child Care. Quality: Process measures of childcare quality (based on observations); information on caregiver training and child:staff ratio. Family background: mother's education in years and income-to-needs ratio. Maternal caregiving: three measures (observer's ratings of structured play—autonomy and hostility (reversed), HOME—quality of physical and social resources in environment, nonauthoritarian child rearing attitudes and values. Cognitive competence: seven measures (cognitive and language). Caregiver and mother's ratings of social competence: Child Behaviour Checklist (Internalising and externalising behaviour problems). Structural equation modelling.	Quality of care strongest predictor of cognitive competence, as well as caregivers' ratings of social competence. Quality of nonmaternal caregiving was associated with cognitive competence and caregivers' ratings of social competence. Mediated path from 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 by family variables.	Authors noted—provides support for improving regulations for training and staff:child ratios: "We suspect that more caregiver training may lead to better interactions between children and adults, while lower ratios may lead to more interactions" (p. 206).

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Child Care Network, 2003) US	Analysis of following measures of childcare quality: - overall rating of positive caregiving quality - language stimulation - watching TV - positive physical contact - positive talk - positive interaction with other children - stimulating physical materials	**Overall quality** Children in higher-quality care performed better on measures of cognitive development, were less impulsive and were more socially competent according to their caregivers. No difference in sustained attention, social competence ratings made by mother, social competence observed with a friend, or behaviour problems. **Domain-specific associations** Greater language stimulation by the caregiver was related to higher scores on five of the six cognition measures, but not outcomes in the socio-emotional domain. More TV watching associated with lower scores on three measures of cognitive ability. Children in settings with more stimulating, varied, and well-organised materials received higher scores on language comprehension and short-term memory. Children with positive interactions with other children had better language skills and fewer behaviour problems (but not better social skills). Amount of emotionally supportive behaviour not related to outcomes. **Relationships with quality of early care** Some features of cognitive performance related to quality of earlier care, with quality of concurrent care controlled. But social emotional behaviour and attention only related to concurrent care. **Relationships quality and outcomes with earlier abilities controlled** Only 2 of 10 outcomes linked to quality with child's earlier ability controlled. Children whose settings improved compared with children whose settings declined in quality—only one change in ability in expected direction found. Indirect paths from quality at 6–36 months, through abilities at 36 months, to outcomes at 54 months—cognitive. Failed to support proposition that more exposure (number of hours per week and number of months) to high-quality care caused improved performance and more exposure to low-quality care detrimental.	

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD ECCRN (Early Child Care Research Network), 2003) Uses data from NICHD Study of Early Child Care to examine relationships between time in nonmaternal care through first 4½ years and children's socio-emotional adjustment. US	NICHD sample at 4½ years (1081 children). Quantity of care: cumulative amount of time in nonmaternal care through first 4½ years (from phone interviews with mother at 3–4-month intervals. Examined average number of hours and linear rate of change of hours per week. Quality: observation of caregiver environment (ORCE) Type: primary arrangement. Instability: number of times child started a new arrangement. Maternal, child, and family characteristics: Child adjustment at 4½ years: mother, caregiver, and teacher reported measures of social competence and problem behaviour. Mother reported social competence: Social Skills Questionnaire—co-operation, assertion, responsibility, and self-control. Caregiver reported (children in care for at least 7.5 hours per week): California Preschool Social Competency Scale, with four new items—co-operation, following rules in games, empathy, and aggression. Behaviour problems: Child Behaviour Checklist – assertiveness, disobedience, and aggression subscales. Teacher: child conflict. Dyadic interaction: videotapes of child with a peer—ratings of positive and negative interactions. Behaviour in childcare: time samples of child's behaviour, rated positive and negative.	More time in any of a variety of nonmaternal care arrangements, more externalising behaviour problems and conflict with adults at 54 months and in kindergarten, as reported by mothers, teachers, and caregivers. Effects remained (largely) when quality, type, and instability of care were controlled, and when maternal sensitivity and other family background factors taken into account. Quantity of care effects were modest and smaller than those of maternal sensitivity and family SES, though typically greater than those of other features of childcare, maternal depression, and infant temperament. More time in care predicted problem behaviour in a dose pattern and at-risk but not clinical levels of problem behaviour, as well as assertiveness, disobedience, and aggression.	

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Child Care Research Network, 2005) Used longitudinal data from NICHD Study of Early Child Care and Youth Development to examine whether the quality of family and nonmaternal childcare experiences would relate to attention, memory, and planning in first graders, and whether the timing of these experiences would differentially predict development in these cognitive skills. US	Sample of 700 first graders for whom there were multiple observations from the family context, the childcare context, the classroom context and for whom child outcome data were available when child in first grade (mean age 6.98 years). Outcome measures: Attention (sustained attention and impulsive responding), memory (short-term and long-term), and planning efficiency when child in first grade. See NICHD study for description of control variables and quality measures. Two hierarchical regression analyses with different variable blocks entered first and second.	The quality of the family environment accounts for most of the variance in scores on attention and memory tasks at first grade (ranging from 1% to 4% of variance). Quality of childcare, preschool, and school environment not consistently linked to these cognitive skills. However, short-term memory was significantly related to quality of infant childcare. Quality of the early and late family environment predicts first graders' attention and memory skills. When early quality measures entered after later quality measures they did not contribute significantly. This finding challenges belief in primacy of experiences in first 3 years over later experiences in predicting performance on memory and attention tasks. No statistically significant links between quality of family environment and planning.	

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Childcare Research Network, 2005) Examined whether relations between: - childcare quality and mathematics and reading performance evident at age 4½ would continue in primary grades (end of 3rd grade) - childcare quality and behaviour problems (evident at 3 but not 4½) would be apparent childcare quality and children's work habits (not considered at earlier ages) would be found. US	Analysis sample: 772 of the children. Also included quality of parenting, primary classroom instruction, and amount of out of school care.	Hours per week of childcare negatively correlated with teacher ratings of social skills (Effect size -0.55), emotional adjustment (-0.003), and work habits (-0.007). Previous relation between amount of care and externalising behaviours decreased and was not significant. Quality of childcare positively correlated with standardised achievement/cognitive test scores and teacher ratings of social skills and work habits. More experience in centre-based care associated with enhanced memory, and with more mother-child conflict and teacher-rated externalising behaviour.	Childcare settings were centre, family daycare home, and nanny in the home. Didn't control for confounding factors.

Study, aim, country	Sample and analysis	Findings	Commentary
(NICHD Early Child Care Network, 2006) NICHD SECCYD (Study of Early Child Care and Youth Development) Longitudinal. Considered effect sizes for quantity, quality, and type on child outcomes (absolute, relative, and contextual) and parenting effect sizes. Examined degree to which changes in parenting and childcare quality, quantity, and type related to changes in the outcomes (absolute effect size). US	1364 mothers enrolled with babies in 1991 when babies one month. Measures at ages 1, 6, 15, 24, 36 and 54 months. Adjusted for family selection factors. Child outcomes: scales/tests assessing cognitive, language, and pre-academic, and mother and caregiver ratings of social competence and behaviour problems, and researcher observations of peer relations. Family characteristics: gender, ethnicity, maternal education, income, partner in household, depression. Parenting: videotaped mother behaviour in interaction with child in free play condition, and rating of home stimulation and responsiveness. Childcare quality (observational assessments), quantity (mean hours per week), and type (centre care). Created extreme groups on parenting, childcare quality, and quantity, and compared top and bottom quartiles. For type, compared no centre experience with any centre experience (relative effect size).	Whether a child was in childcare, and childcare quality, quantity, and type were linked to family characteristics and child outcomes. **Absolute effect sizes** Consistent and strong effect sizes for **parenting** (d = 0.62–1.33) and relatively consistent and modest effect sizes for **childcare quality** (d = 0.16–0.39) for advanced cognitive, language outcomes at every age. Better socio-emotional and peer outcomes at some ages. Quality and social skills at 24 and 54 months (d = 0.41 and 0.31 respectively) and negative peer relationships at 54 months (d = -0.41), also negative relationships with behaviour problems at 36 months (d = -0.32). Modest effect sizes for **childcare hours** for social outcomes—more problem behaviours at 36 and 54 months (d = ,29 and 0.42 respectively), negative behaviours in interaction with friend at 54 months (d = 0.40). But more pro social behaviours at 24 months (d = 0.32). Mixed pattern **for type of care.** **Relative effect sizes** Effect sizes for childcare quality ranged from twice the parenting effect sizes for social outcomes to between half to a third for cognitive, language, and academic.	Useful discussion of meaning and interpretation of effect sizes. Summarises selected childcare findings in a single document. Childcare settings were centre, family daycare home, and nanny in the home. Needs care.in interpreting this for New Zealand setting. Shows we need to know more than just whether child in childcare—need to know about variations in childcare experience and parenting, i.e. conditions. Very low quality not seen. Bit of review of other programmes and effect sizes. Data based on quartile groups for childcare and parenting variables. Only up to 4 ½ years.

Study, aim, country	Sample and analysis	Findings	Commentary
(Niles, Reynolds, & Nagasawa, 2006) Using data from Chicago Longitudinal Study, explored association between large federally funded preschool intervention (Child-Parent Centers) and the social and emotional development of participants. Chicago, US	1378 primarily African American youth who participated in Chicago Longitudinal Study and who had scores for two or more social competency indicators from age 7 through age 15. **Outcome measures** Short term: perceived self-competence (child questionnaire at ages 9 and 9–10) and social adjustment in school (teacher ratings at ages 7 and 8–9). Longer term: perceived self-competence (child questionnaire at ages 11–12), social adjustment (11–12), assertive social skills (12–13), task orientation (12–13), acting-out behaviours (12–13), frustration tolerance (12–13), shyness/anxiety (12–13), peer relations (12–13), total competency (12–13), total problems (12–13). Also any special education placement for emotional or behavioural disorder through age 15. Regression analysis. Effect sizes (Cohen's d) calculated (p>.05). Practical significance d = 0.20.	Overall participation in CPC was associated with positive social and emotional competence, especially in shorter term. Lasting impacts through early adolescence on some outcomes. **Short term** Effect sizes ranged from d = 0.15 to d = 0.45 for all short-term social and emotional competency outcomes. Social adjustment: (d = 0.45 at age 7), (d = 0.33 at age 8). These include assertiveness (d = 0.21), task orientation (d = 0.21), frustration tolerance (d = 0.22), and peer social skills (d = 0.24). Perceived competence: d = 0.16 (age 9), d = 0.18 (age 9–10). **Long term** Effect sizes longer term modest, all in positive direction. Effect sizes ranged from d = -0.19 for acting-out behaviours at ages 12–13 to d = 0.34 for social adjustment at ages 11–12. Significant effect sizes: social adjustment (above); assertive social skills ages 12–13 (d = 0.21), task orientation ages 12–13 (d = 0.21), frustration tolerance ages 12–13 (d = 0.22), peer social skills ages 12–13 (d = 0.24),	Authors noted though some effect sizes may not be statistically significant, e.g. effect size of 0.20 on acting-out behaviours, but to the teacher, social worker, or parent a visible difference may be seen. Suggested no studies have used such a large sample studying impact on social and emotional development through age 15. Used a broader framework than previous studies using CLS database.

Study, aim, country	Sample and analysis	Findings	Commentary
(OECD, 2004) PISA study.		Students who had attended ECE for at least a year before school scored 8 points higher on age-15 mathematics performance on average than those who had not, after taking socioeconomic background into account (p. 257).	

Study, aim, country	Sample and analysis	Findings	Commentary
(Oppenheim & MacGregor, 2002) Use previous studies, notably Chicago CPC, to provide data to project benefits for high-quality ECE for two years in the whole US, and in particular to each of Arkansas, Louisiana, Mississippi, and Texas.	Used data from High/Scope Perry Study, Chicago CPC, Head Start (which gives more conservative benefits, and is less often used in cost-benefit analyses), and some studies in other countries. The costs are based on providing ECE for 2 years. The public benefits are: - reduced welfare assistance - reduced claims for unemployment benefit - higher income taxes paid by the better-educated children - reduced burden on the criminal justice system - reduced retention in grade - reduced need for special education - reduced property loss, injury, pain and death Participant benefits are: - reduced childcare expense - increased lifetime earnings Additional benefits not quantified: - increased indirect taxes (sales, property, etc) - improved nutrition and health resulting in lower public and private medical costs - “multiplier” effects on those around them and the next generation - Increased earning power (and tax) for parents	Benefit:cost ratios to the public or society in the 8.3–9.5 range. Those to the taxpayer in the 1.9–2.4 range. Emphasis on need for high-quality ECE. In the US the gap between the richest and poorest is growing, and high-quality ECE is proposed as one way to close that gap.	Appears the authors did not cost additional years of education if subjects remain in the education system for longer.

Study, aim, country	Sample and analysis	Findings	Commentary
(Pagani, Jalbert, Lapointe, & Hebert, 2006) Montreal Longitudinal-Experimental Preschool Study to examine ongoing psychosocial and academic development of 4-year-olds participating in half-day junior kindergarten in Montreal's most disadvantaged neighbourhoods. Objective of Preschool Study: school readiness, including acculturation. This reports on benefits of junior kindergarten for linguistic minority 4-year-olds compared to linguistic minority classmates from same low-income neighbourhood. Montreal, Canada	260 girls, 262 boys representing one-third of children invited to participate in 1997. Two linguistic groups from these: (1) linguistic majority (children whose parents were born in Canada and were French speaking as a first language, n=201) and (2) linguistic minority children (not born in Canada and spoke a language other than French at home, n=108). Independent variables: learning climate scale completed by teachers. Classroom emphasis on child-driven activities, problem solving, and discovery learning (teacher ratings). Parent–teacher contact—methods offered. **Outcomes** PPVT—receptive verbal skills, intelligent development and school readiness. Number Knowledge Test. Social Behaviour Questionnaire. First grade performance in French language and maths. **Analysis** Examined between-group differences. Indicated degree if relative improvement or decline—change scores. Tested significance of differences on outcome variable change. Used MANOVAs to test possible teacher and parent factors that could moderate relative level of change.	**At beginning and end-of-year** Linguistic minority children had significantly less hyperactive behaviour and emotional distress (p< or = 0.01). **At beginning of year** Large lags on receptive language and number language (p<.01). **At end-of-year** Greater end-of-year improvement for verbal and math scores (p<.001). Controlled for family income and size, maternal age at first childbirth, and daycare experience—linguistic status remained a significant predictor end-of-year improvement (p<.001). Change in number knowledge did not maintain significance in multivariate model. Authors suggest "This suggests that improvement in number knowledge was explained by the concurrent improvement in language proficiency" (p. 212). MANOVAs: 1 At mid year teachers offered more support to linguistic minority students who showed difficulty as evidenced by lower end-of-year improvement on verbal skills compared with those who showed gains. 2 More likely to use more innovative teaching strategies to accelerate learning with these students compared with l.m that showed gains. 3 When teachers reported using less child-driven ideas for teaching and learning, larger receptive-language gains for these students compared with linguistic minority students performing less well and their linguistic majority peers. 4 Teachers reported using more classroom techniques that emphasised problem solving with those showing greater gains compared with other two groups above. 5 Greater gains on receptive language—less discovery learning compared with both groups (matched needs in acculturative process). 6 Teachers of linguistic minority children with less improvement more likely to offer range of ways to communicate with parents. Parents more apt to use array of methods when child had difficulties in verbal skills. Lag on PPVT had lessened by end of kindergarten. By end of first grade no difference in French language or math.	Reviews some literature on cultural challenges and second language learning. Some caveats—select group, did not have comparison group not at kindergarten, attrition overrepresented minority. Can't calculate effect sizes from MANOVAs but NZCER statistician has made some crude calculations not adjusted for background variables. Can use to compare end-of-year position between groups 0. Difference in verbal skills much greater than that in number. Junior Kindergarten Verbal: 0.40 (maj); 0.54 (min); Diff 1.02 Number: 0.57 (maj); 1.12 (min); 0.10; diff 0.10 Kindergarten Verbal: Diff 1.26 Number: Diff 0.20

Study, aim, country	Sample and analysis	Findings	Commentary
(Pagani, Larocque, Tremblay, & Lapointe, 2003) Used data from NLSCY to examine impact of junior kindergarten on children's behavioural development above and beyond regional differences and household factors. Canada	4828 children from 3837 Canadian households participating in first cycle of NLSCY—subsample had full information on all the variables. Independent variables: attended junior kindergarten or not; sex; age. Household levels: SES, single parent, high school diploma. Family functioning, family size, region. Dependent: parent and teacher assessments of hyperactive behaviour, prosocial behaviour, emotional disorder, physical aggression, indirect aggression.	Can't calculate effect sizes. Attending kindergarten did not decrease child behaviour problems. Very slight negative effect.	Quality not considered. Reported results relatively small and sample size large so even small changes are statistically significant.

Study, aim, country	Sample and analysis	Findings	Commentary
(Paquet & Hamel, 2005) Uses Quebec Longitudinal Study of Child Development to study relationship between family social position and health and development indicators, and to identify protective factors including daycare. Quebec	2120 children born to mothers in Quebec 1997–1998. Followed annually birth until age 4. All data weighted and adjusted for biases. Logistic regression analysis.	Dental cavities: After controlling for risk and protective factors, low SES associated with higher risk of children having cavities (112% higher than those better off). Another factor that increased likelihood of having cavities—not going to daycare. No dentist visits: Between 2½ and 4 years, socially disadvantaged children had an almost 48% risk of not having gone to dentist than better off children. In addition to low SES certain factors increased probability of not visiting a dentist: being an only child, not having attended daycare or participated in educational activities, and having an immigrant mother.	

Study, aim, country	Sample and analysis	Findings	Commentary
(Pascal & Bertram, 2001) Overview of cost-benefit analyses	Reviews cost-benefit analyses in the US. Starts debate in UK on how costs and benefits could or should be defined and measured.	Draws from developmental psychology to state that in the first 5 years of life the opportunities are best for modifying neural pathways that establish life-long patterns of behaviour.	No real findings, but analysis of the theory of cost-benefit analyses.

Study, aim, country	Sample and analysis	Findings	Commentary
(Peisner-Feinberg *et al*., 1999) Cost, quality, and child outcomes. Longitudinal from next to last preschool year through second grade. Investigated relationships between children's experiences in ECE and social, emotional, and cognitive outcomes. "Typical" centre-based childcare, representing a range of quality. Four states of US—California, Colorado, Connecticut, North Carolina US	826 preschoolers from 183 of 151 centres. Initial sample evenly divided by gender, about 30% "children of colour". Controlled for family characteristics.	After adjusting for background (maternal education, gender, ethnicity): 1. Children who attended childcare with higher-quality classroom practices had better **language and maths skills** from preschool through school years. ECE quality most strongly linked to language ability at year 1 and then association decreased. Association with maths remained over time. No relation letter-word recognition and quality. 2. Children with closer teacher–child relations in childcare had better **classroom thinking skills, language ability, and maths skills** from preschool to elementary. 3. Better-quality childcare was more strongly related to better **maths skills and fewer problem behaviours** for children whose mothers had less education. **Children as second graders** Higher quality—**better cognitive and social skills.** Positive classroom climates—better **relations with peers**. **Higher-quality effect sizes** PPVTR language Childcare Yr 1, 0.60, Yr 2 0.51, kindergarten, 0.30, second grade, 0.14. Math Childcare Yr 1, 0.29, childcare Yr 2, 0.28, kindergarten, 0.20, second grade, 0.29.	Attrition over time—tended to be greater in lower-income and "children of colour".

Study, aim, country	Sample and analysis	Findings	Commentary
(Peisner-Feinberg *et al*., 2001) Examined effects of childcare centre quality in preschool years to children's cognitive and social skills through second grade (8 years). Also examined impact of later kindergarten and school environments. Longitudinal. US	Cost, Quality and Child Outcomes in Child Care Centers study of centre based community childcare and children's longitudinal outcomes in four states. Followed children from 3–8 years—733 children in preschool year 1 to 345 in second grade. Sample similar to US families in general. Controlled for child and family background characteristics. Childcare quality: classroom practices (ECERS), teacher–child closeness (Caregiver Interaction Scale), extent to which teaching style didactic vs child-centred, teacher responsiveness to children. Single composite score computed. Elementary school practices measured. Child outcomes: language, academic achievement in reading and mathematics. Teacher survey of social and cognitive skills, teacher ratings of relationship with child. Parent survey (demographic information). Adjusted for: Descriptive and inferential analyses. Hierarchical regression analysis.	Analysed effect sizes for childcare quality aspects. Continued influence of childcare quality on children's skills through elementary school. Effect sizes (classroom practices index and teacher–child closeness) in childcare: - receptive language ability (0.18 and 0.10) - math ability (0.08 and 0.05) - cognitive and attention skills (0.03 and 0.43) - problem behaviours (0.11 and –0.32) - sociability (0.04 and 0.56). At kindergarten: - receptive language ability (0.11 and 0.08) - math ability (0.11 and 0.11) - cognitive and attention skills (-0.08 and 0.18) - problem behaviours (0.02 and -0.16) - sociability (-0.15 and 0.19). At second grade: - receptive language ability (0.04 and 0.08) - math ability (0.11 and 0.11) - cognitive and attention skills (0.06 and 0.15) - problem behaviours (0.04 and -0.17) - sociability (0.05 and 0.13). No association with reading. Generally positive influence for childcare quality for all children but in some cases stronger influences for children at risk: maternal education moderating effect for children's math skills and problem behaviours—childcare quality had stronger positive effect for children from less educated mothers.	Consistent with other studies within socio-emotional domain. Centres represented range of quality. Typical community childcare programmes. Some diminution over time.

Study, aim, country	Sample and analysis	Findings	Commentary
(Penn *et al*., 2006) Examines evidence from longitudinal studies of the long-term impact of centre-based early childhood interventions. Review	EPPI-Centre review of studies published in English after 1950. Defined "long term" (more than 10 years from date of intervention), "outcomes" for children and mothers to which a cost assigned (long-term social integration, or mental or physical health, rates of incarceration, remedial education, teen pregnancy rates, employment and earnings. Selection criteria determined. Only three studies reported in 58 papers met rigorous selection criteria (see commentary). These were Perry High/Scope, Abecedarian, Chicago Child-Parent Center. Two were randomised controls, CPC was matched controlled trial. All high quality. All US. Samples were African American families, in US inner cities living in poverty. Used slightly different outcome measures.	Each made estimate of ratio of dollars spent to dollars saved. Interventions did have positive impact on educational and cognitive outcomes. Probably reduced risk of involvement in crime for those who are at high risk of becoming involved in criminal activity. Money invested yielded a positive rate of return over long term. Authors suggested magnitude of return is sensitive to assumptions made in cost estimates. Cost-benefit ratio may be lower than suggested by headline figures (e.g. $7 for every $1 spent). Noted lack of measures of child wellbeing is major gap.	The disadvantage of this idealistic but also mechanical approach to selection of studies is that it sets artificial limits on the understanding that can be gained by making connections across different studies, imperfect though they may be judged according to one set of criteria. See also Cleveland (2006) for commentary.

Study, design, setting	Sample, measures	Findings	Commentary
Peters, (2004) This study (a PhD thesis) followed the progress of seven case study children and their families, from the children's last months in early childhood education, when they were 4-years-old, until the children were 8 and had been at school for 3 years. Their stories are nested within a broader framework, looking at the transition experiences of 16 other children and families. New Zealand	Children selected were the cohort from three kindergartens who were soon to enter a new entrant intake at a decile 10 primary school in a middle-class suburb in the third term of 1996. Eight families replied to invitation to participate; one did not at age 5 attend the target school. Four children had previously attended playcentre; two children attended home-based provision simultaneously to kindergarten. Interview and observation data were gathered from the children, parents, early childhood and new entrant teachers, and other relevant school personnel. Children themselves were interviewed over the 4-year period. Observations at kindergarten (20 hours) and in the new entrant classroom (32 hours) using continuous narrative. The seven case study parents were interviewed three times; teachers were interviewed once; children were interviewed when they were 8 years old (they also made drawings). Field notes recorded informal conversations during the study; school and kindergarten documents were collected.	The research revealed a "complex interweaving" of characteristics of individual children and their immediate and more remote environments. Transition practices that suited one group of participants were sometimes viewed as problematic by others. The author describes the transition to school as the border between different "cultures", each with its own habitus.	The author concludes that the "dispositions, resources and demand characteristics" of the case study children interacted with features of the environment that appeared to inhibit, permit or invite engagement. Deficit approaches, assessed by a list of basic skills, became a major focus for intervention at school, overshadowing much of the child's experience. "An alternative model of assessment, looking at the learner in action would have provided a very different picture: 'outcomes' like being able to access resources (resourcefulness) are recommended as relevant to successful participation in school, rather than isolated skills or 'independence' as valued outcomes. Author also emphasises contexts and "teacher-created" environments for the development of quality outcomes. She asks (p. 425) what "counts" as education at the early childhood and beginning school level. Dispositions in action (from the Learning Story framework in Carr, 2001) and learning strategies (from Cullen, 1988) were used as analytical tools to make sense of the children's learning over the transition.

Study, aim, country	Sample and analysis	Findings	Commentary
(Pierrehumbert, Ramstein, Karmaniola, Miljkovitch, & Halfon, 2002) Compared influence of parents and care providers' representations of childcare quality and observed quality on child behaviour, ego resiliency, developmental quotient and secure representations for 2–3-year-olds in home care and non parental care. Lausanne, Switzerland	Children experiencing either family daycare or centre-based care, at age 2 (n=106) and age 3 (n=89). All socioeconomic background, intact families. **Childcare variables** Parents and daycare providers' representations and values concerning their ideal definition of childcare. Instrument developed with seven independent dimensions of positive characteristics: availability, stimulation, firmness, warmth, autonomy, achievement, organisation. Observations of characteristics of childcare settings (rating scale developed based on above factors). **Control variables** Rate of NPC (mean rate between 0–3 years), predominant type of NPC, SES, child gender. **Outcomes** Parent reports of child behaviours (Child Behaviour Check List). Parent completed child personality questionnaire (California Child Q-set)—egoresiliency score (capacity to adapt responses to environmental demands) Assessment of developmental quotient (McCarthy) when child 3 years. Representations of attachment (Attachment Story Completion Task when child 3 years—profiles secure/competent, positive, and anxious representations concerning attachment relationships. Multiple regression analysis.	Nonparental care (NPC) providers seemed to value professional aspects of care (availability—patient, available, attentive) and organisation, mothers valued warmth. Also reflected in observations. Mothers more stimulating than NPC providers, NPC higher on achievement scale. Care providers' representations and observed variables of the NPC setting predicted behaviour problems. Effects were stronger than mothers' representations and homecare variables. Mothers' representations tended to influence development quotient (as much as 12% of variance). Care providers' representations tended to influence child's security of attachment, and slightly resiliency. Mothers' and caregivers' representations have important effects—often even stronger than observed interactions. Effects of NPC generally stronger than parental care.	Results contrast with others in field. Authors attribute this to wide span of dimensions and variety of settings. Assessed same characteristics in home and daycare settings. Instruments developed for the study include values of parents and providers—"culture sensitive" perspective. Substantial impact of representations on development indicates importance of them in the child's environment. Predominant type of care: centre daycare 33%; family daycare: 67%

Study, design, setting	Sample, measures	Findings	Commentary
(Pollard & Filer, (1996) A study of social influences on the learning of a small cohort of white, middle-class children attending one (age) 4–11 primary school in southern England. Evidence gathered over the 7 years of primary education; only the first 3 years are documented in this book. [The study is currently continuing into secondary school. Observations and interpretation developed alongside the development of theorisation. The main argument is that the social world of young primary school children has a considerable influence on their sense of personal identity and thus on the ways in which they engage with curriculum learning at school. England	Five case study children. Their experiences, perspectives, and behaviour were researched in family, classroom, and playground contexts. A longitudinal ethnography, or "classic" case study approach, with associated strategies of observing, participating, developing personal rapport, and discussions. Parent diaries, parent interviews, classroom fieldnotes, classroom photographs and video recordings, playground fieldnotes, pupil documents, pupil interviews, teacher interviews, teacher documents, school fieldnotes, school documents, and head teacher interviews. Major factor in school selection was a strongly supportive head teacher (this is part of a 7-year study at the same school). Reception class families were invited to participate; 22 of the 26 families were willing. Researchers chose the 10 eldest: five boys and five girls. All children were 4-year-olds. One child moved away after the first year. Five children are the subject of this book (an analysis over 3 years); the other four children are the subject of the 1999 book (an analysis over 7 years).	Summary matrices for each child at Reception, Year 1, and Year 2. Categories of analysis were: family relationships, peer-group relationships, teacher relationships, identity, and learning. An overview of child's experience over the first 3 years of "infant'" schooling in terms of patterns of relationships with family, teachers, and peers. The five children's self-confidence, motivation, and strategic resources were summarised in a matrix as well (p. 276); also their opportunities to learn and quality of assistance (p. 278). A "spiral" of learning, identity, and career is set out on p. 284: accumulating outcomes connected to relationships with family, teachers, and peers. Continuities and discontinuities in family, teacher, and peer cultures are relevant for an analysis of learning as the recursive nature of experience.	A longitudinal ethnographic study that can be read with Pollard & Filer (1999) for nine case studies. The authors comment in a chapter on the research process and validity of the study that empirical validity is obtained through three strategies: unobtrusive data gathering ("natural" social processes are undisturbed); respondent validation (subjects recognise and affirm the findings); and triangulation (a variety of types of data are collected). These children are middle-class children from the south of England.

Study, design, setting	Sample, measures	Findings	Commentary
(Pollard & Filer, (1999) This book follows directly from Pollard and Filer (1996). It describes and analyses the experience of four pupilss over the 7 years in which (from the age of 4 years) they attended a primary school in the south of England. The study has become known as the *Identity and Learning Programme*.	See Pollard and Filer (1996).	Similar summary matrices for each case study child. Categories of analysis: family relationships, peer-group relationships, teacher relationships, identity and (a new category instead of "learning'" career. Data shows (p. 301) that the children could develop new patterns of strategies or adapt familiar ones; and that they draw on identities developed in the home and wider community (including early childhood experiences, informal "playgroup" for three of the children; more formal nursery school for one) in elaborating and evolving their identities as pupils. Parents, particularly mothers, played a significant role in discussing, mediating, and helping to interpret new experiences and new challenges. Authors describe three principal components of the children's careers (p. 284): (i) *patterns of outcomes related to the learning and social contexts* of successive classrooms (together with those of the wider school and playground), (ii) *patterns of strategic action developed in coping with, and acting within, these contexts*, and (iii) the *evolving sense of self* which pupils bring to, and derive from, school, playground and external contexts.	See Pollard and Filer, 1996). Dimensions of the children's "strategic action" or characteristic orientations and responses defined as: conformity (adaptation), anti-conformity (deviance: not a feature of these four case studies, but observed in the wider class of pupils), non-conformity (independence), and redefining (negotiation/challenge). Each of the children demonstrated preferred "stances" or strategies but their patterns were likely to be disrupted when they moved to new (more or less viable or appropriate) classroom contexts.

Study, aim, country	Sample and analysis	Findings	Commentary
(Powell, 2006) National survey and case studies in New Zealand playcentres. New Zealand	622 playcentre parents. Two groups of playcentre participants—those who had participated for 5 or more years; and less than 5 years. Two rural and two urban playcentres, North and South Island. Adults mainly Päkehä, married, living with spouse, home owner, involved in part-time employment. National survey of playcentre adult participants asking about social capital and community participation. Case studies of four playcentres. Used individual interviews, focus group interviews, observation of parent management meeting, interview with community persons.	Playcentre outcomes for adults: - adult participation and contribution to community - provides social network - contributes to confidence and willingness to try new tasks - may link with other services - may be main meeting place in rural communities. - Length of experience affects acquisition of skills and competence, and perceived usefulness. Adult learning: parents strongly agreed/agreed: *Parenting* More resourceful in providing learning experiences for child (91%). Know more about child development (89%). Increased personal experience and knowledge with regard to parenting (79%). Majority completed Playcentre Course 1 (74%), 54% studying for higher levels. *Confidence* Increased personal knowledge and confidence in assuming responsibility for playcentre roles (88%), myself and my abilities (79%), interacting with adults (75%). *Friendships* Made more friends (98%), socialised with friends outside (90%), increased feelings of being part of community (91%). *Group differences* Parents involved more than 5 years more likely to have learnt teaching approaches, management, and organisation skills and more likely to report skills and knowledge useful.	Closed questions.

Study, design, setting	Sample, measures	Findings	Commentary
PricewaterhouseCoopers (2004) Assesses costs and benefits of universal early years provision in UK for 1-4 year-olds. Encompasses enhanced parental leave in first 12-18 months of life and wrap around care for school age children. Considers funding options.	Estimates current costs to parents of childcare and models quality effect of improvement in staff qualifications and salaries. Estimates following costs: - enhanced parental leave: 6 weeks at 90 percent of earnings, rest at minimum wage levels - home care allowance to parents who chose to stay at home with children 12-24 months, reduced for those working part-time, or extended parental leave to 18 months (50 percent of national minimum wage) - entitlement to 20 hours free ece for 2, 3 and 4 year-olds - "wrap around" ece for 2, 3 and 4 year olds and for parents of 1 year olds who do not take up home care allowance -wrap around care for 5-14 year olds - mixed economy of provision -upskilling of workforce (60 percent graduate level teaching qual by 2015, rest level 3 NVQ3 quals. - income related subsidies for care over 20 hours - Childcare tax credits abolished Estimates following benefits: - economic impact – value of increase in earnings by parents in short and longer term and by children in longer term, less costs of additional resources - fiscal impact - share of total costs of ECE funded by govt, less increase in tax revenues and savings in benefit payments.	Total cost to government is just over 2 percent of GDP, or around 2.5 percent if parent contributions included. Incremental spending over and above current levels is 1.7 percent of GDP by 2020. Incremental total spending above current levels around 1.8 percent GDP (level of parental contributions increases only slightly). Cost is similar to Sweden and Denmark. Estimate benefits could have equivalent value of 1-2 percent of GDP, broadly offsetting incremental costs. These estimates do not include social benefits - impacts on income distribution, child poverty levels, remedial education, improved health and lower crime rates. Argues for supply side funding.	Authors express concerns about reliability of available cost data. Assumes 100 percent take-up of free ECE for 3 and 4 year-olds, 80 percent for 2 year-olds by 2020. Assumes number of weeks ECE extended from 33 to 48 weeks by 2010. Assumes parents contribute 30 percent to wrap around costs. Uncertainties around precise cost estimates (e.g. sensitivity analysis shows lowering staff child ratios has large cost effects, as does changes in estimated takeup of parental leave and free ECE, and proportion of qualified teaching staff. Impacts on income distribution, child poverty levels, remedial education, improved health and lower crime rates not taken into account. Assumed average effect on child's lifetime earnings is 3 percent; on maternal earnings is 3 percent for those working fulltime and 1 percent for those working part-time.

Study, aim, country	Sample and analysis	Findings	Commentary
(Queralt, Witte, & Griesinger, 2000) Impact of increases in funding for childcare subsidies on employment and earnings of current and former welfare recipients over first 17 months of policy change. Policy change meant parents must be in work activity when their youngest child is 3 months old. Childcare subsidy does not cover all costs, with differences in parent co-payment levels dependent on family income, size, and whether ECE part/full-time (5 hours + a day); percentage of ECE costs paid by parents ranged from 5 to 8%, and much higher at margins of categories. Florida, US	4399 current/former welfare families, with data first collected 7 months before changes to funding for childcare. Data sources are welfare administrative records matched with childcare subsidy records. These databases include information on earnings, sociodemographic information for the family, professional assessment of barriers to employment. Data was also collected on availability and cost of childcare. Include in the analysis other major policy and administrative changes that could influence employment and earnings, including minimum wage increases and changes in income tax credits; and also control for socioeconomic characteristics, labour market conditions, and community characteristics related to employment and earnings. Models employment and earnings against policy changes (e.g. increases to childcare subsidy) over the period.	Increase in childcare subsidies associated with increase in probability of employment (56% to 65%) for those with few barriers to employment; increase lower for those with more barriers to employment: from 36% to 39%. Co-payment rates of up to c. 10% had no impact on parental earnings; over this, led to earnings decline of c. 18%. Likelihood of working and earnings not significantly effected by changes to ECE provider reimbursement rates or establishment of quality enhancement programme (which gave ECE providers gaining quality level higher rates). Changes to income tax credits—a $640 increase in level at which it phased out (from $11,290) had greater impact on probability of employment than childcare subsidy: increasing it from 29% to 48%. Other variables included also showed some associations, but not as great as income tax credits, childcare subsidy amounts, and co-payment rates.	Very comprehensive set of variables included—worth looking at in relation to ways of analysing impact of multi-pronged policy changes in New Zealand.

Study, aim, country	Sample and analysis	Findings	Commentary
(Ramey & Ramey, 2004) Reviews evidence of randomised controlled trials—Abecadarian study and nine replications of benefits (Project CARE and Infant Health and Development Project) of this study. US		Draws from Abecadarian study to show high-risk children without solid pre-kindergarten education foundation start kindergarten 2 or more years behind age mates who are more typical; these high-risk children do benefit from good school, but rate not sufficient to catch up; further delays occur during school closure in summer months. Synthesises effect sizes for cognitive outcomes from Abecadarian study: from 18 months to 4.5 years effect size ranged from 0.73 to 1.45, mean 1.08. Same developmental pattern in replications. Evidence at age 21 years: treated children performing better on IQ, maths, and reading assessments, almost 70% in skilled jobs or training compared with 40% control group. Delay of 2 years in having child.	Suggests some reasons other funded programmes have not received measurable results: Not provided preservice and inservice training. Programmes not very intensive, e.g. after age 4 and for only a few hours per day, limited months. Remedial rather than preventative focus. Focus on family support and only indirect child support.

Study, aim, country	Sample and analysis	Findings	Commentary
(Ramey *et al*., 2000) Abecedarian programme (child outcomes covered in introduction); this report includes maternal education and employment when children aged 15; comparison of randomly assigned to programme and control group. US	At age 15, 48 from programme, 42 of control group. Comparison of mothers in each group, whole group, and subsample of teenage mothers in terms of whether they had gained education post high school; and were employed.	All groups less than 10% post high school when programme started; at age 15: c. 40% control mothers had post high school education cf. c. 55% of programme mothers c. 30% control teen mothers had post high school education, cf. 80% programme teen mothers. Employment: 74% for control mothers cf. 84% for programme mothers; 66% for control teen mothers cf. 92% for programme teen mothers.	Programme in North Carolina, average unemployment only 3%; authors note strong school system, within a largely middle-class setting (therefore gap between control and programme children is even more notable).

Study, aim, country	Sample and analysis	Findings	Commentary
(Ramsey, Breen, Sturm, & Lee, 2006) Centre of Innovation for years 2003–2006 An action research project over 3 years. Five action "spirals" to do with affordance of ICT in enhancing family participation and child outcomes (aspects of wellbeing, communication, responsibility, and exploration). New Zealand	45 children in 3-hour morning session, 45 in 3-hour pm session. Children had 17 different home languages. For many English an additional language. Families communicate with family outside New Zealand. Based on distributed and situated view of learning. Data from teachers' documentation of children's learning, teachers' written reflections and tape recorded discussions between external researchers and teachers. Outcomes: identities as competent and confident learners; children and teachers as researchers; communicative competence.	Report examines whether activity theory is a model that can usefully describe the affordance of ICT in implementing learner outcomes consistent with the national early childhood curriculum. ICT added a mode of communication for children who had not yet learnt to read and write. Enabled them to "read" and revisit their learning, strengthening identity as confident competent learners. Enabled children to develop storytelling abilities and dispositions through telling visual stories with commentary (spoken or written). Added ICT to repertoire and enhanced dispositions to use other modes (speak, write, draw). Added motivation to participate. Added ways to take responsibility for learning. Provided a common language for families, teachers, and children to communicate. Encouraged children and families to be teachers. Study concluded ICT not sufficient on own to make a difference: it needs to be associated with changes to the distribution of power (or responsibility), the engagement of the wider community (families), the establishment of new routines and a culture of "what we (regularly) do here", and other supporting artefacts.	Teachers had time for reflection and discussion about children's learning and own teaching. Also had outside researchers acting as "critical friends". No statistical analysis or baseline data. The data that documents the changes are the children's portfolios over time, and the interviews with the teachers. This data is analysed with reference to a theory of distributed learning (activity theory) and the theory was found to be a useful analytical tool that could be used by other early childhood intervention or action research studies.

Study, aim, country	Sample and analysis	Findings	Commentary
(Rao, 2005) Two national evaluation studies of the Integrated Child Development Services (ICDS). India	Two studies: National Institute of Public Cooperation and Child Development 1990—implementation and use; problems in implementation; community perception and participation. Random sampling/control group. Over 50 indicators. NCAER evaluation (2001). No control group Preschool component very limited. Measures not useful for New Zealand context. Authors wrote of poor learning environment, lacklustre teaching, and drab curriculum.	NIPCCD—mothers-to-be more likely to seek antenatal care and obtain immunisations. Positive impact on children's health and nutritional status. More attended preschool in ICDS sites. Did better on (limited measures—count, label colours, colour circle). Higher percentage continued into primary education. NCAER—health, nutrition, education improved.	ICDS programme– medical checks, immunisations, referral services, supplementary feeding, ECE, health, and nutrition. Includes mothers and children. Emphasis developmental needs of under 3s. Indigenous development of services. Describes poverty, poor maternal health and nutrition, anti-female bias, deprived environments. ECE aims to enhance survival and development, and enable female children to attend primary school. Importance of integrated programme for mothers and children; developed with indigenous people. Quality ECE.

Study, aim, country	Sample and analysis	Findings	Commentary
(Reynolds, 1995) Investigated effects of Child-Parent Center Preschool Program on cognitive and social outcomes through 6th grade. Chicago, US	757 low-income Black children in inner city enrolled in 1 or 2 years of Child-Parent Center Preschool Program at age 3 or 4. Comparison group of 130 Black children. See Reynolds (2000) for details.	Two-year participants began and ended kindergarten more academically competent than 1-year—effect size 0.25 entering cognitive readiness; 0.28 word analysis, 0.23 mathematics, -0.22 (n.s.) teacher-rated social adjustment. Through elementary grades these children did not significantly or meaningfully differ from each other in reading comprehension, mathematics achievement, teacher ratings of social adjustment, rates of grade retention and special education placement, and teacher-rated parent-school involvement, except reading comprehension grade 2 (Effect size 0.24) and parent-school involvement grade 5 (Effect size 0.30).	

Study, aim, country	Sample and analysis	Findings	Commentary
(Reynolds, 2000) Chicago Child-Parent Center (CPS). Matched comparison. Mandatory parent involvement of at least one half-day per week in preschool, involvement encouraged at school age. Parent resource room. Integrated system preschool to third grade. Located in close proximity to elementary school they serve. Programme offers a combined preschool, kindergarten, and school-age programme for up to 6 years intervention. Single admin system. Relatively structured, enriched programme. Parent activities include arts and crafts projects in parent room, classroom volunteering (e.g. reading to children, listening to children describe experiences, conducting science experiments, practising maths activities etc), participating in school activities, taking part in class fieldtrips, helping prepare breakfast and lunch, engaging in education and training. Designed to accommodate parents' needs and schedules. Physical health and medical services on site. School community outreach to recruit families, visit when first enrolled and then according to need.	Sample: 1164 low-income mostly African American children in high-poverty central city neighbourhoods. Compared 1986 cohort of children with varying years of CPC participation (889) with group (matched on socioeconomic characteristics) with no CPC participation (275) at age 14 and age 15 respectively (some attrition—817 and 253 respectively). Characteristics: gender, risk status, (low parental attainment, eligibility for free lunch, four or more children in family, kindergarten in school where 60% or more low-income, unemployed parent, single parent, missing data on family background, minority status). Youth social competence. School achievement at age 14 and 15: Reading, math consumer life skills (function independently in community). **School competence**: grade retention age 15; years in special education age 15. **Social psychological behaviour**: delinquency infraction ages 13–15, perceived competence age 12. **Family socialisation**: parent expectations educational attainment ages 10–12; satisfaction with children's education ages 10–12; parent participation in school ages 8–12. Intervening variables: cognitive ability at age 5, social adjustment, perceived competence at age 9, school mobility, school quality.	**Youth outcomes at age 14 and 15** Any participation significantly associated with at least one youth outcome at age 14 or 15, above and beyond children's risk status and sex. Years of participation, extended programme participation and preschool participation most consistently associated with school competence outcomes especially reading and math achievement scores, consumer skills, cumulative grade placement and special education placement. Only follow on and extended participation were consistently associated with delinquency infractions. **Largest effect sizes were for maximum exposure of 6 years versus no participation**—pervasive and sizable. These effect sizes for **school achievement outcomes** at age 14 and 15 ranged from 0.31 for math achievement at age 15 to 0.57 for consumer life skills at age 14/15. **School competence outcomes** Percentage changes ranged from 48% reduction in special education placement by age 15 to 68% reduction in grade retention during elementary school. Years in special education. By age 15 effect size 0.42. **Social psychological behaviour** 17% reduction in age 13–15 delinquency infractions, 54% reduction in delinquency infractions age 13–14. Perceived competence at age 12 effect size = 0.23 **Parent outcomes**: Any participation, years of participation, preschool participation were consistently associated with family socialisation outcomes. **Effect sizes for maximum of 6 years versus none** were parent participation in school at age 8–12 = 0.48; parent expectations for child's educational attainment at age 10–12 = 0.33; parent satisfaction with child's education at age 10–12 = 0.26.	Pathways—suggests in magnitude and consistency that the hypotheses followed this order: greater social competence through cognitive advantage(through effects on early cognitive development); family support (enhances family support behaviour); social adjustment (enhances social development); and then motivational development.

Study, aim, country	Sample and analysis	Findings	Commentary
(Robin, Frede, & Barnett, 2006) Randomised trial comparing learning in literacy and mathematics at end of school year of children in low-income urban district randomly assigned to ECE programmes of different duration. US	339 children in low-income, urban school district selected from pool of children in a lottery to attend extended day extended year programme in 1999–2000. Children to reach 4 years on or before 1 October. 85 children in 8-hour programme for 45 weeks; 186 children in 2.5- to 3-hour programme for 41 week, 31 care at home or private childcare. High/Scope curriculum, certified teacher and assistant, mean ECERS score 4.8 (full day), 4.79 (half-day). Outcome measures: WJ-R—test of cognitive ability and achievement, including early literacy, language, and math skill and knowledge. Peabody Picture Vocabulary Test, III—listening comprehension and verbal ability. Regression and growth curve analyses.	Children in extended-duration programme had improved 11 to 12 standard points on vocabulary and math skills. Children in half-day programmes improved by 6 to 7 standard score points. Impact of child and family background characteristics weaker at end of first grade.	Good quality. Argues added hours effective in closing achievement gap between these children and more advantaged peers**.**

Study, aim, country	Sample and analysis	Findings	Commentary
(Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002) Examined childcare-related correlates to infant attachment in the Haifa Study of Early Child Care. Israel	758 children, aged 12 months, in five different kinds of care: maternal; individual nonmaternal by relative; individual nonmaternal by paid caregiver; family daycare; centre-based. Represented full SES spectrum in Israel. Potential control measures: SES, Maternal Separation Anxiety Scale, maternal role satisfaction, beliefs about employment, marital relations, knowledge of Infant Development Inventory, Life Experience questionnaire, Maternal Wellbeing and Social Support, Health Index. Mother measures: maternal sensitivity, maternal depression. Child temperament—mother's perception. Childcare: Type of care, age of entry, amount of nonmaternal care 3 months to 12 months, stability of care, number of different types of care, infant:adult ratio. Infant attachment measure—Strange Situation. Multivariate analyses.	Only 54% infants in centre-based care had secure attachment relationships with mothers compared with over 70% for all other groups. Within centre care, compared those with more favourable ratio of up to three infants per adult with those in group with more than three infants per adult. Incidence of insecurity significantly higher in high ratio group. Security of attachment for high ratio group exceeded 70% level. No significant association between amount of care and security of attachment.	Three months paid parental leave after birth of child, and entitlement to additional unpaid leave.

Study, aim, country	Sample and analysis	Findings	Commentary
(Schlosser, 2005) Impact of free public preschool for 3–4-year-olds on preschool enrolment and Arab mothers' labour supply and fertility. Policy implementation began 1999, in most disadvantaged areas (and did not expand further after 2000 because of government budget constraints). Law formally incorporating these towns did not occur until third year of policy. Enrolment rates of 3–4-year-olds in Arab towns 21%; increased to 83% in 2003. Israel	Quasi-experimental design made possible by implementation of policy in different towns at different times. Comparison of 12,956 children in "treated" towns in first two clusters of disadvantage, that got free preschool, and 12,656 children in towns in next two clusters, that did not. Similar rates of preschool attendance before the policy began. Comparison of all mothers with children aged 2–4 in two groups of towns, and another set of models with those whose youngest child was aged 2–4. Similar age and marriage status; those in "treated" towns had one more child on average (4.3) and 2.6 less schooling years; 5.7% employment cf 15.8% in control group, and lower hours: 1.5 a week cf. 4.8. Also compared within treated towns; mothers of children aged 2–4 with mothers with no preschool-aged children. Regression analysis to control for other variables.	Increase from 23% preschool attendance in 'treated' towns for 3–4-year-olds in 1999 to 64% in 2000, and 85% in 2003; increase in control towns to 29% in 2003. Treated town mothers increased labour supply to 17% (tripled), cf. control group increased only minimally, to 17.3%. Regression analysis gives estimate that free preschool provision increased labour force participation by 7%, and 11.7% for mothers whose youngest child was 2–4 years old. Effects do not take place immediately; for the latter group, they grow over time and become significant in third year of free preschool; for former group, effects take place mostly in fourth year of free preschool. This effect only for mothers with at least 12 years of schooling. Effect there regardless of husband's education level. Labour supply of mothers with no preschool children unchanged. Estimates an increase of 1547 working mothers in treated towns 2003; increase in childcare positions as a result of policy would be 610 in treated towns; so suggests this increase does not account for all the increased employment. No effect on fertility rates.	Author suggests timing of effects could be due to time to relax any cultural constraints on women's employment; mothers may have waited until law enacted to ensure preschool would be stable; the second Intifada started in the second year, with political instability that could have discouraged job seeking. Author notes labour force participation of 4.2% for Arab mothers with low education—relates this to their belonging to traditional families.

Study, aim, country	Sample and analysis	Findings	Commentary
(Schweinhart, Barnes, & Weikart, 1993) High Scope/Perry Preschool Study through age 27. 24-year longitudinal study comparing programme and control group on IQ, special education placement, grade retention, social development, parental satisfaction, educational aspiration and expectation, delinquent behaviour, employment, self-confidence, relationship with parents. Blind outcome assessment. Centre-based and home visits, 30 weeks a year, 12.5 hours in centre, 1.5 hours at home, mostly for 2 years. Programme emphasises children as active learners, adults responsive, listening to children, asking open-ended questions. Ypsilanti	123 children from African-American families matched on IQ, age of entry 3 years, randomly assigned, groups matched on mean socioeconomic status, intelligence, performance, and percentage of boys and girls. Younger siblings to same group as older. Experimental design. Compares programme and no-programme group	Age 27 years: significantly higher earnings (29% vs 7% $2,000 or more per month) e.s. = 0.51; significantly higher percentages of home ownership (36% vs 13%; significantly higher levels of schooling completed (71% vs 54% 12th grade plus); more years of schooling (nearly 1 year longer) e.s. = .43, more marked for females (e.s. = 0.85) than for males (e.s. = 0.11); significantly lower percentage receiving social service in the previous 10 years (59% vs 80%) e.s. = 0.44; significantly fewer arrests (7% vs 35% having five or more) e.s. = 0.54 for lifetime arrests, including for crimes of drug making or dealing. **Cognitive outcomes** Significantly higher scores in general literacy at age 19 (e.s. = 0.43), school achievement at age 14, IQ from end of preschool to end of first grade at age 7. Effect sizes increased with age up to 14, e.g. total school achievements e.s. 0.33–0.77 age 7–10, 0.14 at age 11, 0.68 at age 14. Better motivation/attitude/value placed on school work e.s. between 0.3 and 0.4 age 6–9 years; increased to 0.39 for value placed on schooling at age 15; 0.31 if thought of going to college at age 15 and 0.40 for attitude to high school at age 19. Spent fewer years in programmes for mental impairment, had significantly higher proportion at age 15 reporting that school work required preparation at home. **Male:female differences** Females—more married (e.s. = 0.71), births not out of wedlock (e.s. = 0.48), fewer abortions (e.s. = 0.57—4% vs 23% had one), completed 12th grade or higher, and fewer spent time in institutions for mental impairment. Males—more owned own homes at 27 (e.s. = 0.79), fewer received social services at some time 18–27, fewer had five or more lifetime arrests. **Parents more satisfied** Has child done as well in school as you would have liked—51% vs 28% positive (e.s. = 0.43); more ambitious for child (55% vs 32% college degree) e.s. = 0.45. Programme group who had own children more likely to use library regularly (55% vs 32% weekly or more) e.s. = 0.64. LESS likely to use preschool programme (60% vs 74% e.s. = 0.29) and LESS likely to provide childcare (50% vs 71% e.s. = 0.42).	Very long-term follow-up. Estimates returns to public $7.16 for every dollar invested.

Study, aim, country	Sample and analysis	Findings	Commentary
(Sims, Guilfoyle, & Parry, 2005) Examines relationships between levels of quality of ECE and cortisol levels. Australia	16 centres from one city (15 community based and one private). Cross section of different SES suburbs. 117 children—attended 3 days per week, parental permission gained, in the "kindy" group, aged 3–5 years. Quality: Set of Quality Improvement and Accreditation System (QIAS) principles selected to rate quality of service delivery, i.e. relationship dimensions and dimension meeting individual needs, e.g. treating children with respect, developing relationships with families, ensure programmes focus on children feeling safe and on meeting children's individual needs). Written observations in centres over 5 to 10 days. Principles rated as unsatisfactory, satisfactory, and high quality. Cortisol levels: saliva collected before morning and afternoon tea over 3 days in one week. Average am and average pm calculated.	Ratings on majority of principles showed that higher levels of quality in care relate to better cortisol outcomes for children. Children attending high quality centres have lower stress levels across the day than do children attending satisfactory or unsatisfactory programmes.	Reviews evidence that stress impacts on has long-term outcomes for children and adults. "Cortisol is secreted to enable the individual to respond to a threat (thus is triggered by fear or uncertainty). Its role is to mobilise components of the system that facilitate a quick response to threat (such as alertness, increased breathing and heart rate) and minimise other body functions that are not essential to the immediate survival needs of the individual. Functions such as digestion, sexual behaviour, learning and rational thinking amongst others are shut down for the duration of the stress response (Adam, 2003; Gerhardt, 2004)" p.29). Paper provides examples of high-quality environment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Siraj-Blatchford *et al*., 2003) Qualitative data collected for EPPE project of case studies of "effective" preschool settings. Examines pedagogical and other practices that are associated with achieving excellent outcomes compared with those centres with "good" or more average outcomes. UK	Analysed data of 12 "effective" centres with good child outcomes (cognitive and/or social behavioural from quantitative analysis) and two reception classes.	Effective settings: - had strong leadership, especially in curriculum and planning, encouraged staff development, and had long serving staff (3 years plus) - viewed cognitive and social development as complementary and did not prioritise one over the other - provided a strong educational focus with trained teachers working alongside and supporting less qualified staff - provided children with mixture of practitioner—initiated group work and learning through freely chosen play - provided adult–child interactions that encouraged sustained shared thinking and open-ended questioning to extend children's thinking - had practitioners with good curriculum knowledge, and knowledge and understanding of how children learn - had strong parental involvement especially in relation to shared educational aims - provided formative feedback to children during activities and provided regular reporting and discussion with parents about children's progress - ensured behaviour policies in which staff support children in rationalising and talking through conflict - provided differentiated learning experiences that meet the needs of particular individuals and groups of children, e.g. bilingual, special needs, girls/boys, etc.	Compare with Competent Children/Competent Learners study.

Study, aim, country	Sample and analysis	Findings	Commentary
(Spiess, Buchel, & Wagner, 2003) Examines relationship between Kindergarten attendance and seventh grade (age 14) placement of children, comparing German and immigrant children. West Germany	316 children aged 14. Data from German Socio-Economic Panel (SOEP) 1984–1994. Includes information on childcare and schooling. Examined status of children at 7th grade to determine placement into Hauptschule (lowest requirements), Realschule (intermediate), and Gymnasium (university-entry-level). Compared students placed in Hauptschule with two higher level schools by kindergarten attendance. Controlled for SES variables. Multivariate analysis.	Whole sample: after controlling for SES variables, no significant relationship between kindergarten attendance and higher level schools at age 14. German sample: after controlling for SES variables, no significant relationship between kindergarten attendance and higher-level schools at age 14. Non-German sample: after controlling for SES variables, significant relationship between kindergarten attendance and probability of attending a higher-level school (probability of attending higher level school decreases from 71.6% to 45.8% if child attends kindergarten before school versus child who does not).	

Study, aim, country	Sample and analysis	Findings	Commentary
(Starkey, Klein, & Wakeley, 2004) Implemented a pre-kindergarten conceptually broad mathematics curriculum as classroom and home intervention. Compared intervention and comparison group children on mathematical development. Assessed informal mathematical knowledge in pre-kindergarten children. US	163 pre-kindergarten children (88 girls, 75 boys) in public and private preschools. 83 in preschools serving middle income families—41 intervention, 42 control. 80 in preschools serving low income families—37 intervention, 43 control. Ages 3 yrs 9 months to 4 yrs 9 months at beginning of pre-kindergarten year. Info on ethnicity, parental education, teachers' teaching experience, qualifications. Classroom component: Mathematics Curriculum, teacher professional development (5 day summer school and 4 day workshop), on-site training. Home component to enable parents to support mathematical development. Parents and children attended 3 home mathematics classes over a year. Parents given materials and curriculum guide sheets. Outcome measure: Child Math Assessment (number, arithmetic, space/geometry, measurement, patterns and logical knowledge) administered in September/October and May/June. Videotaped. ANOVA	Significant SES-related gap in mathematical knowledge at beginning of pre-kindergarten year, suggesting a gap of at least 7 months prior to 5 years of age. Intervention significantly enhanced mathematical knowledge of children at both levels of SES. Low-income intervention versus comparison group d = 0.931; middle-income group versus comparison d = 0.723. Change in: composite scores; on individual tasks assessing knowledge of number, arithmetic, space, patterns, and measurement; on developmental advances in nature of errors they could not solve correctly. Effect size for change from spring to fall for low income—Cohen's d>2.0; middle-income—d>1.5. Low-income scores increased significantly more relative to starting points than middle-income scores.	Reviewed evidence to show SES-related differences in breadth and frequency of parental practices directed at supporting mathematical development. California survey showing ECE teachers thought preschool more important than home for mathematics development, that general enrichment sufficient, and specific mathematical experiences unnecessary for mathematical school readiness.

Study, aim, country	Sample and analysis	Findings	Commentary
(Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggert, 2004) Also (Siraj-Blatchford, 2004; Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002; Siraj-Blatchford *et al*., 2003) Effective Provision of Preschool Education (EPPE) project. Investigated effects of preschool education and care on children's development for children aged 3–7 years. UK	3000 children recruited at age 3+ and studied longitudinally until end of Key Stage 1 (approx 7 years). 141 settings—range of providers—local authority day nurseries, integrated centres, playgroups, private day nurseries, nursery schools, and nursery classes. **Measures** Standardised child assessments over time—four cognitive tasks (verbal comprehension, naming vocabulary, non verbal comprehension, spatial awareness) at or just after third birthday, and similar tasks as well as knowledge of alphabet, rhyme, and early number concepts at school entry. Further assessments at end Yr 1 and Yr 2,—standardised tests of reading and maths, information on national assessments, attendance data, and special needs status. Child social/behavioural profiles completed by preschool and primary staff, parental interviews, preschool staff interviews, quality rating scales, case study observations, and interviews. Compared group in ECE settings with "home" children with no or minimal ECE experience. Explored characteristics of effective practice through intensive case studies in 12 effective settings. Multi level modelling, taking into account background factors such as birth weight, gender, parental qualifications, and home learning environment. Children assessed at 3–4 years on joining study, school entry, end-of-year 1 and year 2.	Preschool compared with none enhances cognitive development. Effect sizes—strongest for number concepts when children start primary school then reduces over years 1 and 2. Pre-reading effects less strong but less decline. Effects for peer sociability and self-regulation strong at primary entry then decrease. Positive impact for those at risk of special educational needs. Those who started below 3 more positive cognitive outcomes—still there at school entry. (But no more advantaged if started below 2 years.) Early start (before age 3) led to slightly increased behaviour problems for a small group of children when 3 and 5. Longer number of months—greater gains. Number of sessions per week not related to gains. Full-time no better than half-time. Effect sizes for quality and duration at start of primary school are reported. Preschool centres divided into three groups—bottom 20%, average 60%, and top 20%. Within each band children were further divided on basis of duration of attendance in ECE (months) on pre-reading and language. In comparison with "home" group, all levels of quality and duration show significant positive effect compared with none. Overall longer duration shows greater benefit than low duration irrespective of quality. Quality plus long duration (36 months plus) shows a particularly strong effect size (1.01) for language, and fairly strong for pre-reading (0.622). Authors show difference between low-quality high-duration and high quality high duration is 0.481 for language and 0.254 for pre-reading. **Effect sizes by type** Integrated centres highest on early number (0.40) and language (0.28), private nurseries highest on pre-reading (0.26). Note private nurseries—more advantaged children. Significant positive relationship between more highly qualified staff and children's progress in pre-reading. Effect sizes for home learning environment are generally higher than for family measures such as mother's qualification level.	Mother's educational level, SES, parental involvement in home learning activities (e.g. reading, teaching songs, playing with number, visiting library, painting, emphasising alphabet) are important in accounting for differences in child's social/behavioural development—could be a rationale for programmes that promote opportunities for children and parents to engage in together.

Study, aim, country	Sample and analysis	Findings	Commentary
(Taiwo & Tyolo, 2002) Comparison of differences in performance on Botswana Grade 1 students with preschool and without on tasks in English language, mathematics and science.	120 grade one pupils randomly selected from four primary schools. Interviewed individually on study tasks. 20 grade one primary school teachers completed questionnaire about their views of value of preschool and of differences it makes.	Overall performance, and performance in individual subject areas significantly favoured preschool group. Effect sizes 1.5 to more than 2.	Measures were stating own name, identifying body parts, following simple instructions, counting, recognising numbers, matching number of objects with numerals, identifying geometrical shapes, colours, letters of alphabet, sorting, classifying, ordering, comparing. Simplistic analysis—weak. Pupils very different from New Zealand. However, effect sizes very large for these children. Include in broad sweep for rest of world studies.

Study, aim, country	Sample and analysis	Findings	Commentary
(Toroyan *et al*., 2003) Assessed effects of providing daycare facilities for young children on health and welfare of disadvantaged children. Randomised controlled trial. Eligible children from application list were randomly allocated to receive a daycare place or not. Early years daycare in borough of Hackney, London. Designated Early Excellence Centre. Centre provided high-quality flexible daycare. Employed qualified teachers and education and care integrated (unlike nurseries). Health integration encouraged. Control families could use other childcare arranged by them.	120 mothers and 143 eligible children (aged between 6 months and 3.5 years). Outcome measures: maternal paid employment, household income, child health and development.	At 18 months follow-up, 67% of intervention mothers and 60% of control mothers in paid employment (adjusted risk ratio 1.23 (95% confidence interval 0.99–1.52). No more likely to have household income of above 200 pounds sterling. Intervention children more likely to have used health services and have evidence of otitis media with effusion, but estimates imprecise. Imprecise estimates for mental development scores, but children in intervention group had slightly higher mean scores (effect size approximately 0.20).	Small sample size (n=only 64 daycare places available). Children in same family were offered place at same daycare facility. At 18 months follow-up, 63% of control group children using some kind of centre-based care. Mostly at school nursery units—sessional, did not have flexibility for maternal employment.

Study, aim, country	Sample and analysis	Findings	Commentary
(Toroyan *et al*., 2004) Process evaluation data collected in above daycare centre.	Questionnaires from 120 mothers, interviews with 21 mothers, staff questionnaires, and interview with centre head. Assessment of quality using Early Childhood Environment Rating Scale,	Centre of very high quality on ECERS. Places were full- or part-time, to suit parental needs within a 10-hour working day, for 48 weeks a year. Families could change hours of daycare according to their circumstances. Interview data suggested it may be the flexibility of daycare that is especially important in allowing women to return to paid employment, but loss of benefits may have meant no increase in household income. Wages tended to be low.	

Study, aim, country	Sample and analysis	Findings	Commentary
(US Dept. of Health and Human Services, Administration for Children & Families, 2005) Head Start Impact study US	5000 3–4-year-olds applying for Head Start—random assignment to Head Start group (with access to 383 randomly chosen Head Start programme services), or to group that could enrol in available community ECE, parent selected. This meant that control group had wideranging experience, and included over 40% with no centre-based ECE. Participant and control groups were well matched on characteristics. Data collection began in 2002, will conclude in 2006, following children annually to 1st grade year. Data sources are parent interviews, child assessments, surveys of teachers, interviews with ECC directors, observations of ECE quality, and care provider ratings of children. 2005 report provides effect sizes for comparisons of participants cf. control group, for 3- and 4-year-olds, after a year's participation.	Pre-reading: effect sizes of d = 0.19 and 0.24 for 3-year-olds; d = 0.22 and 0.24 for 4-year-olds. Effect sizes around half this for pre-writing; and vocabulary at age 3, but not at age 4. No difference on oral skills and early maths. Reduction in problem behaviours reported by parents at age 3 (d = 0.13 and 0.18), but not at age 4. No difference in parent-reported social skills, competencies, or attitudes to learning. More dental care (d = 0.34 at age 3, and d = 0.32 at age 4), and better overall health status (d = 0.12) at age 3, but not age 4; no difference for having an injury or needing ongoing care (parent reports). Parents were more likely to read to their child (d = 0.18 at age 3, 0.13 at age 4), and provide cultural enrichment activities (d = 0.11 at age 3 only, and more likely for non teenage mothers). They were less likely to spank (d = 0.14 at age 3 only). There was no difference in safety practices (parent reports). Positive outcomes for children (other than health) were limited to those whose first language was English—and not those whose first language was Spanish. Cognitive outcomes were lower in relation to the level of the primary caregiver's baseline depressive symptoms at age 3—but not at age 4 (parent reported social competencies were lower).	Future reports will provide analysis of outcomes in relation to quality, full- cf. part-day programmes, and analysis of teacher measures of outcomes. Comparing control group in ECE centres with Head Start participants, Head Start participants more likely to be in centres that had positive teacher–child interactions, used curriculum and activities to enhance children's skills, and had higher quality ratings.

Study, aim, country	Sample and analysis	Findings	Commentary
(van Wijk *et al*., 2006) Transforming learning at Wilton Playcentre. A 3-year action research project, focusing on pedagogical approaches for enhancing schemas and learning dispositions, continuity and quality across playcentre sessions and between home and playcentre, and parent engagement (sustaining a community of learners). Five cycles of actions research. Wellington, New Zealand	Baseline and final data collection to track change over the 3 years. Data included "Learning and Teaching Stories", observations, ratings of process quality, photographs, video recordings, samples of children's work, questionnaires, interviews, group discussions, anecdotal records of children at home, and parent reflections recorded in notebooks. Data triangulated from different sources.	**Literacy and children's interests** Adding meaningful literacy opportunities enhanced learning experiences for children; children with strong and persistent schema fascinations clearly showed evidence of the schemas in their mark making. Adults as facilitators and co-learners, contributing challenging interactions, helped children's interests to remain sustained. **Social schemas** These were context-specific. Children with similar schema interests played together. **Continuity and progression** Five parents undertaking case studies of their own children. Each case study illustrated progression through actions, symbolic representation, functional dependency, and possibly abstract thought. **Single format for assessment planning and evaluation** These were valuable tools for adults. **Sustaining a community of learners** Three informal processes contributed to this. Parents reported that there were developments and benefits from participation in the playcentre community in eight areas.	A New Zealand early childhood education quality rating scale (NZCER/TKRNT) included items on literacy, mathematical problem solving, adult–child interactions, scaffoding and co-constructed learning. It highlighted those areas where parents wanted to make a difference: early literacy and cognitively challenging interactions. Ratings in these areas were repeated over the 3 years, indicating that the adults could intentionally improve their practice. Learning (and Teaching) Stories can provide data for analysing change over time. Including data from home meant that the documentation included the pedagogy at home as well as at playcentre; the continuity across places was of interest to this project.

Study, aim, country	Sample and analysis	Findings	Commentary
(Vermeer & van IJzendoorn, 2006) Review of nine studies comparing home and daycare cortisol levels and analysing relation of daycare and child characteristics with cortisol levels; five US studies (1998–2003); four European (1983–2004). High cortisol levels can indicate stress; studies growing in this area because cortisol levels rise from increased activity in the HPA system, which is closely linked to the hippocampus in brain, involved in emotions, learning, and memory. "Thus, chronic exposure to stress in early childhood may be a risk for later affective and cognitive functioning". Note 2004 meta-analysis on laboratory studies showing that "tasks containing both uncontrollable and social-evaluative elements were associated with the largest cortisol changes in adults and took the longest time to recover, and cites some studies showing cortisol increases for children rejected by their peers. Cite mixed findings from studies of effect of novelty on cortisol levels. Cortisol levels highest on waking, lowest at bedtime, but variations among individuals and contexts means home-baseline measures compared with daycare measures for the same individuals is most valid in studies looking at effect of daycare.	9 studies, sample sizes 21–113; total 505. 7 studies (n=303 children) used in meta-analysis to gauge effect sizes. 4 studies—children at daycare at least 30 hours.	4/7 studies show significant differences between home and daycare cortisol levels—cortisol levels increased during day at daycare. Two of the four studies finding higher cortisol levels find it for afternoon only. Increased cortisol in centres of reasonably high quality for four studies; in one, higher cortisol levels related to large group sizes >15, large numbers of adults in room (>4), age differences among children (>6 months), and <5m^2 space per child in room. Cautious conclusion of a curvilinear relationship between age and cortisol levels, with a peak for 2–3 years old. No gender relationships; inconclusive for temperament. **Meta-analysis** Combined effect size for all seven studies was *r*=0.18 (confidence interval 0.06–0.29). If omit two urinary sample studies, combined effect size *r*=0.23 (CI = 0.10–0.35). Combined effect size higher for children <36 months: *r*=0.25 (CI = 0.10–0.35); Combined effect size for children >36 months not significant.	Authors note that the two studies showing no differences in cortisol levels home/daycare used urine rather than saliva samples; cortisol in urine has lag effect, so picking up, e.g. morning cortisol levels when tested in afternoon. Authors note that a study of children attending ECE part-day showed no raised cortisol level. Authors note that no longitudinal studies of effects of higher cortisol levels in daycare; some evidence that cortisol levels at daycare do not affect levels at home (comparing levels of children with no ECE experience and others); and some evidence that higher levels may not persist.

Study, aim, country	Sample and analysis	Findings	Commentary
(Votruba-Drzal, Coley, & Chase-Lansdale, 2004) Uses data from Welfare, Children and Families: A three-city study to examine influence of childcare quality and extent of care on low-income children's cognitive and socio-emotional development over time. US: Boston, Chicago, and San Antonio	204 children, low-income (incomes below 200% of the poverty line) from Welfare, Children and Families: A three-city study at age 2 and 4 years (wave 1 and 2). A third of sample spent more than 45 hours a week in ECE **Measures** Childcare quality (ECERS–R and FCDRS), Arnett Scale of Caregiver sensitivity—combined composite score. Extent of childcare: maternal report of number of hours per week in care, and care type. Child outcomes: cognitive achievement (reading and quantitative skills) maternal assessment of socio-emotional functioning. Controls: child age, gender, ethnicity; maternal education work status, age, family structure, household income, home stimulation. Lagged regression analysis.	Settings minimally adequate in meeting basic developmental needs. Centres in general higher quality than regulated homes which in turn were higher than unregulated homes. Cognitive: No significant associations between childcare quality and development of quantitative and reading skills. High-quality childcare did benefit reading development of children from home environments that provided high levels of cognitive stimulation. Modest association between hours of childcare per week and quantitative skills, i.e. an SD increase in the number of hours spent in care was related to nearly 1/5 SD increase in child's cognitive skills over time. Socio-emotional: Childcare quality linked to just less than 1/5 of a standard deviation reduction in internalising behaviour problems and 1/5 th SD reduction in likelihood child would exhibit externalising behaviour problems in borderline or clinical range. Childcare quality associated with child positive behaviours. Greater time in carelinked to reductions in likelihood children's scores on total behaviour problem measure placed them in borderline or clinical range. Increases in number of hours in high-quality care associated with reductions behaviour problems. Increases in hours in low-quality care related to elevated levels of externalising behaviour problems. Low-quality childcare appeared particularly detrimental for boys' serious externalising problems, high-quality more protective for boys' serious externalising behaviour than girls'.	Authors suggest reasons for their findings which differ from other studies. Low-income children need higher-quality ECE than was found in the study; they may also need longer consistent experience to gain cognitively. Study did not collect data on length of ECE experience, and they note other studies, e.g. NICHD showing gains for cognitive performance related to ECE length. No negative effects from long hours a week ECE found in this sample, unless children were in low-quality environments. Authors contrast this with NICHD finding of negative effects, and suggest difference is due to this sample being low-income cf. the more affluent NICHD sample, and long hours in ECE may therefore provide a buffering influence for low-income children. Suggest different gender effect for externalising behaviour may indicate value for boys of structured and supervised environment, given gender differences in play.

Study, aim, country	Sample and analysis	Findings	Commentary
(Wylie, Hodgen, Ferral, & Thompson, 2006) Reports on findings for the Competent Children, Competent Learners study showing how differences in ECE experiences are reflected in differences at age 14. New Zealand	Full information on 307 children collected in 1993–1994 within the last 3 months of a child's final ECE experience. Ratings of centre quality, information on structural quality. Information from parents on child's ECE history, and experiences first and last ECE service. Additional information on 707 children of same age—no information on centre quality. When children aged 8, included 242 children from this database.	After accounting for family income and maternal education: Children who started ECE between the ages of 1 and 2 had higher scores than those starting after age 3, and those who had less than 24 months' ECE experience had lower scores than others for attitudinal competencies (e.g. communication, perseverance, self-management). Children from low-income families attending an ECE service serving mainly peers from middle-class families scored higher for mathematics at age 14 than those who attended an ECE service serving mostly those from low-income homes, and higher for reading than those who attended an ECE service serving mostly those from low-income homes, or from families with a wide range of incomes. Five aspects of ECE quality had the most marked long-term effect. Children who had experienced high quality in these aspects had higher scores for cognitive and attitudinal competencies than others. Most of these aspects were related to the interaction between ECE staff and children, which depends on staff knowledge as well as their approach. These aspects of ECE quality were: - Staff responsive to children (higher scores for those whose final centre scored 4 or more on scale of 5) - Staff guide children in activities (higher scores for those whose final centre scored 4.2 or more on scale of 5) - Staff ask children open-ended questions (Increases with centre score; higher scores for those whose final centre scored 3.33 or more on scale of 5) - Staff join children in their play (higher scores for those whose final centre scored 4 or more on scale of 5) - Children can select activities from a variety of learning areas (higher scores for those whose final centre scored 5 out of 5 (attitudinal)) - Children had lower scores if their final ECE service was lower in quality than others in terms of: provision of "print-saturated" environment (lower scores for those whose final centre scored less than 3 on scale of 5). Children who attended an ECE service where most of the children were from middle-class families had higher mathematics and reading scores. There were no negative contributions to age-14 (or earlier) competency scores from attending two or more ECE services concurrently, or attending one that the parent thought had had some negative aspects for their child.	Overall quality somewhat higher than reported in US studies at time.

Study, aim, country	Sample and analysis	Findings	Commentary
(Wylie, Thompson, & Kerslake Hendricks, 1996) Competent children at 5. First phase of a longitudinal project aimed at discovering what impact children's family resources and ECE experiences have on the development of their cognitive, social, communicative, and problem-solving competencies. New Zealand	307 children attending ECE service, near age 5 years; 87 ECE services; data gathered October 1993–August 1994. Child observation schedule. Centre service rating scale. Adult perceptions of children's competencies. Children's interview and tasks Centre profile. Main caregiver profile. Cross tabulation used to describe data and relationships between competencies, family resources, and quality. Investigation of quality through relating quality ratings with structural ECS variables through exploratory data analysis and modelling.	**Benefits for parents interviewed (first ECE and current ECE)** Support friendship and company (26% first, 41% current). Enjoyment (11% first, 21% current). Sense of achievement (6% first, 20% current). Improvement of own skills (5% first, 31% current). Better understanding of programme (5% first, 19% current). **No benefits/negative** No benefits or decrease confidence (5% first, 7% current). **Use of time** Paid work (41% first, 44% current). Participation in the ECE (30% first, 25% current). House or farm work (18% first, 55% current). Looking after children (31% current). Own interests (15% first, 23% current). Studying (6% first, 7% current). Visiting friends and relatives (a few first, 12% current). Voluntary work (a few first, 6% current). **Type differences** Allowing parents to work: private care and family daycare (64% first, 66% current), childcare (41% first, 50% current), private preschools (59% current). Kindergarten (just over a third), aoga amata (none), playcentre (a quarter). Looking after other children: playcentre (41%), kindergarten (42%), private preschool (24%). Family daycare and childcare (none). Participation in the ECE at same time (95% playgroup, 68% playcentre). Kindergarten and playcentre parents more likely to use time for house and farm work.	Children attending ECE currently. All ECE service types except köhanga reo.

Study, aim, country	Sample and analysis	Findings	Commentary
(Yao & Hearn, 2003) Comparison of academic achievement at first to third grade of children attending high-quality child development programmes as 4-year-olds with those in a comparable group who did not. US	9977 child development participants from 1995–96 year and randomly selected comparable group of 7889 non participants from age 4 through first 3 years of school. Non participants comparable on free or reduced lunch. Child Development Program students were selected as at greatest risk for school failure. Comparison group likely to have students at lesser degrees of risk. Total after 3 years 15,143—85% of original. State-wide achievement test scores, metropolitan achievement tests, assessment of school readiness. T tests, ANOVA, ANCOVA at significance level 0.5.	At first grade: students in child development programme scored higher on first grade school readiness assessment. Male, female, Caucasian, non-caucasian, eligible for free/reduced price lunch Child Development Program participants all did significantly better. At second grade: students in child development programme scored higher on Metropolitan Achievement Tests of reading and maths but not significantly better. Only male participants scored significantly higher—on maths. Others followed same trend as at first grade but not significant. At third grade: child development participants scored significantly higher on statewide achievement tests in ELA ?? and mathematics. All programme participants in subgroups scored higher in both subtests, except maths where difference for free/subsidised lunch was not significant though the trend favoured the programme participants. Asian and Caucasian participants significantly outperformed African American participants from grade 1 to grade 3. Children not eligible for free/reduced lunch demonstrated greater gains. No differences between full-day and half-day participants at grade 1 and grade 3 (analysis not done for grade 2). Estimated overall program effect size 0.2.	No information on features of program or whether non participants had other care.

Study, aim, country	Sample and analysis	Findings	Commentary
(Young-Loveridge, Carr, & Peters, 1995) Ways to enhance mathematical understanding of 4-year-olds New Zealand	154 4-year-olds from four kindergartens in Waikato region. Four “experts” with high levels of numeracy and four “novices” with low levels of numeracy observed in each kindergarten. Analysed area of kindergarten, mathematical purpose, mathematical skill, manipulation of quantity, and social group. Interviews with parents. Professional development: researchers and teachers planned an intervention to enhance mathematical understanding.	High degree of variability among children in numeracy skills and concepts. Relatively little mathematics occurring at kindergarten. Experts and novices virtually indistinguishable in terms of activities in which they engaged and use of mathematical skills and purposes. Concluded experts learnt and practised most of mathematics experiences at home. Experts had richer range of mathematical experiences at home, were exposed to more purposes for using mathematics compared with novices. Experts’ mothers believed mathematical activities should be fun and stimulating (not mentioned by novices’ mothers). Through professional development, teachers constructed new resources and enhanced mathematics experiences of children in kindergarten context. Teachers reported increased awareness about mathematics learning.	Increased awareness of teachers enabled them to pick up on a mathematical idea, building on existing activities and talk, rather than planning a structured programme.

Study, aim, country	Sample and analysis	Findings	Commentary
(Zaslow, Oldham, Moore & Magenheim, 1998) NEWWS child outcomes study (part of evaluation of JOBS program). Study of effects of ECE participation for children from families on welfare. Longitudinal study in three locations of three groups of children whose mothers were randomly assigned to two different JOBs approaches and a control group 2- and 5-year follow up after parents enrolled in the study. Participating in JOBS programme required welfare recipients to participate in educational/job search activities; childcare and Medicaid for children if needed to allow this participation, and for up to a year after the transition to employment. Measures of outcomes include children's health, social relationships, adjustment, and cognitive. Measures of mechanisms through which JOBS programme might affect these outcomes include parent–child relations, ECE participation, maternal wellbeing, education, employment, family economic status, school and neighbourhood context. This report is part of this study, the JOBS Descriptive survey, carried out 3 months after the random assignment. US	182 African American families, with children aged 3–5; the control group in one location. Data sources: interview with mother for information about mother, home environment etc. and child's health and social maturity, and assessment of child's cognitive development outcome measures: school readiness (preschool inventory), personal maturity. Regression analysis of whether current participation in formal ECE (Head Start, preschool, centre) was related to school readiness and social maturity scores, after taking into account child gender and age, and factors found in multivariate analyses of the data to be related to participation in formal ECE (to control for selection effects). Children were more likely to attend formal ECE if their mothers were employed, living in public or subsidised housing, their mothers had higher levels of education, and homes provided more cognitive stimulation and emotional support. Average of 36 hours' formal ECE a week (highest in preschool and centre care); higher rates of maternal employment for preschool and centre care.	Current ECE participation ** (0.24?) of scores on preschool inventory (cf. 0.18 for home cognitive stimulation,—0.16 if living in public/subsidised housing). No effect on personal maturity score (home emotional support was biggest predictor). No difference for Head Start cf. other ECE types.	Note high number of hours attended cf. other studies; hours of attendance not analysed in relation to scores, but might have influenced Head Start/other ECE comparisons, and no difference found there. Authors note that one reason for their finding no effect on personal maturity where other studies have reported some negative effects might be that they used parent report; other studies have used teacher report of child behaviour in school. Public housing in US usually means high-density low-income neighbourhoods. No information on ECE quality, or duration of ECE experience.

Appendix B: Studies measuring the effect of early childhood development programs on cognitive, social, preventive health services, and family outcomes (Anderson, L.M. *et al.* (2003, 42–46)

Appendix A. Studies measuring the effect of early childhood development programs on cognitive, social, preventive health services, and family outcomes.

Author(s), Date	Design suitability, Quality	Intervention	Measure used (Sample size)	Measurement time (in years from intervention)	Effect size
Cognitive as measured by academic achievement tests					
Lazar et al., 1982[1]	Greatest, Good	Various early childhood programs that were center-based, home-based, or combined but all served "at-risk" children	Math & reading achievement tests (range: 185–351, math; 249–447, reading)	Math: 3rd–6th grade; Reading: 3rd–6th grade	Math: .35; .22; .22; .02; Reading: .28; .12; .18; .04
Schweinhart et al., 1993[2]	Greatest, Good	Perry Preschool	California achievement tests (123)	2, 3, 4, 5, 6, 9 years	.33, .34, .37, .33, .14, .68
Ramey et al., 1991[3]	Greatest, Good	Carolina Abecedarian Project (earliest version, through age 8, of Campbell & Ramey 1994[4] & 1995[5])	WJ-R; CAT (96)	1–2 yr	WJ-R: .89, reading; .45, math; CAT: .74, reading; .81, math
Campbell et al. 1994[4]	Greatest, Good	Carolina Abecedarian Project (Study has 4 groups: EE, EC, CE, CC) data reported here are for preschool vs. no preschool only (age 12 follow-up)	WJ-R (96)	6–7 yr	.48 reading; .35 math; .41 writing; .61 knowledge
Campbell et al., 1995[5]	Greatest, Good	Carolina Abecedarian Project (same intervention as Campbell & Ramey, 1994[4]) (age 15 follow-up)	WJ-R (96)	10 yr	.44 reading; .44 math
Schweinhart et al., 1986[6]	Greatest, Good	High/Scope Preschool	CAT (54)	2 yr	.14
Eisenberg et al., 1966[7]	Greatest, Fair	Head Start	PPVT (781)	1 yr	.52
Howard et al., 1967[8]	Greatest, Fair	Head Start	PPVT (66)	1 yr	.48 (no preschool)
Lee et al., 1988[9]	Moderate, Good	Head Start	PPVT (969)	1 yr	.26 (no preschool); .40 (other preschool)
Lee et al., 1990[10]	Moderate, Good	Head Start (follow-up of 1988 study)	Cooperative primary test (969)	2 yr	Insufficient data to compute effect
Copple et al., 1987[11]	Moderate, Fair	Philadelphia Head Start	WRAT; CAT; Metropolitan Achievement test (10,125)	Various, from 1–5 yr	Insufficient data to compute effect size, no significant effects reported
Barnett et al., 1987[12]	Moderate, Fair	S. Carolina implementation of High/Scope preschool curriculum	BSAP (389)	1 yr	Insufficient data to compute effect size, positive effects for black students and boys reported

Appendix continued

Author(s), Date	Design suitability, Quality	Intervention	Measure used (Sample size)	Measurement time (in years from intervention)	Effect size
Bee, 1981[13]	Moderate, Fair	Head Start	Metropolitan Reading Test (120)	1 yr	–.61 (favored control group)
Hebbeler, 1985[14]	Moderate, Limited	Head Start	ITBS or CAT (1393)	Various, from 3–9 yr	Insufficient data to compute effect size, positive effects reported
Cognitive as measured by IQ					
Lazar et al., 1982[1]	Greatest, Good	Various ECD programs	WISC	After 1 yr; after 3–4 yr	.43; .14
Ramey et al., 1991[3]	Greatest, Good	Carolina Abecedarian Project (age 8 follow-up)	WPPSI; WISC-R (96)	From 1–3 yr	.5 WPPSI; .46 WISC at age 6.5; .2 WISC-R
Campbell et al., 1994[4]	Greatest, Good	Carolina Abecedarian Project (age 12 follow-up)	WISC-R (96)	6–7 yr	.44
Campbell et al., 1995[5]	Greatest, Good	Carolina Abecedarian Project (age 15 follow-up)	WISC-R, age 15 (96)	10 yr	.35
Zigleret al., 1982[15]	Greatest, Good	Head Start	Stanford-Binet (84)	1 yr	.54
Schweinhart et al., 1986[6]	Greatest, Good	High/Scope preschool	Stanford-Binet from K–2nd grade; WISC at age 10 (54)	From 1–3 yr	2.2 (1 yr of preschool); 1.4 (2 yr of preschool); .9 (K); .8 1st grade; .36 2nd grade
Howard et al., 1967[8]	Greatest, Fair	Head Start	Stanford-Binet; PTI (66)	1 yr	.34 S-B; .43 PTI
Lee et al., 1990[10]	Moderate, Good	Head Start	Raven's Progressive Matrices (969)	1 yr	–.05 compared with no preschool
Sontag et al., 1969[16]	Moderate, Fair	6 mo of Head Start	Stanford-Binet (86)	1 yr	.32
Cognitive as measured by school readiness tests					
Lee et al., 1990[10]	Moderate, Good	Head Start	California Preschool competency test (969)	1 yr	.34
Barnett et al., 1987[12]	Moderate, Fair	South Carolina preschool	CSAB (389)	1 yr	+6%
Bryant et al., 1998[17]	Moderate, Fair	Smart Start	Kindergarten Teacher Checklist (311)	1 yr	.34 (Smart Start vs no preschool for children in poverty)
Sontag et al., 1969[16]	Moderate, Fair	Head Start	CPSI (86)	1 yr	.62
Handler, 1972[18]	Moderate, Limited	Head Start	CPSI (125)	1 yr	Subtest A: .16; Subtest B: –.14; Subtest C: .02; Subtest D: .14

Appendix continued

Author(s), Date	Design suitability, Quality	Intervention	Measure used (Sample size)	Measurement time (in years from intervention)	Effect size
Cognitive as measured by rate of retention in grade					
Lazar et al., 1982[1]	Greatest, good	Various early childhood programs. Some center-based, others home-based, or combined; all served "at-risk" children	Retention rates (682)	Up to 5 yr	–5%
Schweinhart et al., 1993[2]	Greatest, Good	Perry Preschool program	High school graduation rates (123)	Up to 15 yr	–2%
Ramey et al., 1991[3]	Greatest, Good	Carolina Abecedarian Project (age 8 follow-up)	Retention (96)	Up to 1 yr	–21%
Campbell et al., 1994[4]	Greatest, good	Carolina Abecedarian Project (age 12 follow-up)	Retention rates (96)	Up to 7 yr	–21%
Campbell et al., 1995[5]	Greatest, good	Carolina Abecedarian Project (age 15 follow-up)	Retention rates (96)	Up to 10 yr	–23%
Copple et al., 1987[11]	Moderate, Fair	Philadelphia Head Start & Get Set	Retention rates (10125)	Various	No data to compute
Bee, 1981[13]	Moderate, fair	Head Start	Retention (120)	Various, 1–2 yr	–25%
Hebbeler, 1985[14]	Moderate, Limited	Head Start	Retention rates (1393)	Various	No data to compute, and no significant difference reported
Cognitive as measured by placement in special education					
Lazar et al., 1982[1]	Greatest, Good	Various	Special ed placement (524)	Up to 10 yr	–15%
Berrueta-Clement et al., 1984[19]	Greatest, Good	Perry Preschool program	Special ed placement (123)	Up to 15 yr	–12%
Campbell et al., 1994[4]	Greatest, Good	Carolina Abecedarian Project (age 12 follow-up)	Special ed placement (96)	Up to 7 yr	–36%
Campbell et al., 1995[5]	Greatest, Good	Carolina Abecedarian Project (age 15 follow-up)	Special ed placement (96)	Up to 10 yr	–23%
Barnett et al., 1987[12]	Moderate, Fair	South Carolina preschool	Special ed placement (389)	Up to 2 yr	–6%
Bee, 1981[13]	Moderate, Fair	Head Start	Special ed placement (120)	Up to 2 yr	–20%
Social as measured by behavioral assessment of social interaction					
Malakoff et al., 1998[20]	Greatest, Fair	Head Start	Persistence at challenging task and intrinsic motivation (78)	Immediately following	.38
Lee et al., 1990[10]	Moderate, Good	Head Start	Schaefer Behavior Inventory (646)	1 yr	–.29

Appendix continued

Author(s), Date	Design suitability, Quality	Intervention	Measure used (Sample size)	Measurement time (in years from intervention)	Effect size
Sklerov, 1974[21]	Moderate, Fair	Head Start	Modification of Matching Familiar Figures test to measure latency in response time (32)	Immediately following	1.82
Social as measured by decreases in social risk behaviors					
Schweinhart et al., 1986[6]	Greatest, Good	High/Scope vs DISTAR	APL High (measure of social competence), and self-report of delinquent acts (54)	Through age 15	.35 (APL); .60 for delinquency scale
Berrueta-Clement et al., 1984[19]	Greatest, Good	Perry Preschool program	Employment status; teen arrests; teen pregnancies; welfare payment (123)	Through age 19	+27% –20% –49% –14%
Schweinhart et al., 1993[2]	Greatest, Good	Perry Preschool program	High school graduation; female employed; earnings >$1000/mo; home ownership; use of social services	Through age 27	+17% +25% +30% +23% –21%
Health outcomes as measured by preventive services					
Hale et al., 1990[22]	Greatest, Fair	Head Start	Record review of health screenings; dental exam (78)	 +44% +61%	
Hale et al., 1990[22]	Greatest, Fair	Head Start	Siblings of children in Head Start vs control for health screenings and immunization rates (78)	+11%	
Oyemade et al., 1989[23]	Least, Good	Head Start	Mother H.S. graduate; father H.S. graduate; income above poverty; mother employed; father employed; receiving welfare (205)	+4% +3% +7.4% +21.6% +5.8% –11%	

ECD, early childhood development; S-B, Stanford-Binet;

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Appendix C: Databases searched

Education:

- ERIC
- Proquest Education complete [fulltext articles]
- Ebsco Academic Search Elite
- A+ Education [Australian]
- Australian Education Index
- British Education Index
- Canadian Education Index/CBCA Education
- EdResearch Online (ACER Educational Research database)
- ACER Education Research Theses database (incorporates Australasian Digital Theses database)
- Wiley Interscience Journals
- NZCER Library databases

Psychology:

- PsycINFO
- PsycARTICLES
- Psychology and Behavioural Sciences Collection
- OCLC FirstSearch (database collection including PsycFIRST, Medline)

Social Sciences:

- Social Sciences Citation Index
- Sociological Collection
- Proquest Social Science Journals
- International Bibliography of the Social Sciences
- APA-FT—Australian Public Affairs—Full-Text [fulltext version of APAIS]

Economics and Business:

- EconLit
- NBER Working Papers [National Bureau of Economic Research]
- ABI/INFORM Global
- International Bibliography of the Social Sciences
- APA-FT—Australian Public Affairs—Full-Text [fulltext version of APAIS]

Policy:

- APA-FT—Australian Public Affairs—Full-Text [fulltext version of APAIS]
- PAIS

Family:

- FAMILY
- Proquest Children's Interest [information about or for children]

General:

- Index New Zealand (New Zealand articles)
- Te Puna (New Zealand and international monographs)
- EPIC (full text general database collection, including InfoTrac OneFile, Australian/New Zealand Reference Centre, MasterFile Premier)
- Dialog (collection including Education, Public Affairs, Government and Management databases, such as PAIS, APAIS, Econlit)
- Internet (including Google, education and government sites)
- IngentaConnect (tables of contents)
- British Library database
- Academic Research Library
- Academic Search Premier
- Current Contents Connect
- ISI Journal Citation Reports
- Proquest Dissertations and Theses
- University Library databases on the web (for theses and papers)

Search terms

These included:

Early childhood education terms: Subject headings: Early Childhood Education; Preschool Education; Education, Preschool; Preschools; Child Development Centres, Day Care Centres, Kindergarten; Nursery Schools; Young Children; Kindergarten Children; Kindergarten Teachers; Nursery School Pupils; Nursery School Teachers; Preschool children; Preschool teachers; Pre-kindergarten.

Keywords and alternate spellings of (usually) American database subject headings were also searched.

Outcomes terms: We used the articles we had available and reviews of research evidence to assemble a set of terms of outcomes. We were aware that the selection of outcomes is not value neutral, and we were mindful that in the context of Aotearoa New Zealand, the national curriculum (Te Whāriki) would furnish us with valued outcomes for this review. Outcomes included:

- **Outcomes for children**: cognitive competence; language skills/ development; subject areas e.g. reading, writing, mathematics; academic achievement; IQ; school success; self concept; learning dispositions; communication strategies/dispositions; self-help skills; perseverance; creative and expressive abilities; attitudes; behaviour; social skills; social competence; attachment; aggression; high school graduation; school leaving; qualifications; education attainment; crime; welfare receipt; and more.
- **Outcomes for families and parents**: social cohesion; parenting; parental role; satisfaction; parental stress; isolation; confidence; employment; training; recreation; productivity.

We also searched for broad subject headings to cover this concept (e.g. Outcomes of education, economic outcomes), using keywords in conjunction with the ECE terms e.g. outcome(s); effective(ness); impact(s); negative; positive; etc.

Author names: We searched for research and evaluation by the key authors in this field.

Personal contact

We made personal contact with the following researchers, asking for references about studies that were relevant to our review of outcomes of ECE, including any that were in press. These people are key researchers in their countries.

- Professor Collette Taylor, School of Early Childhood, Queensland University of Techildrenology
- Professor Iram Siraj-Blatchford, Institute of Education, University of London
- Professor Peter Moss, Thomas Coram Research Unit, University of London
- Professor Helen Penn, University of East London
- Dr Margy Whalley, Pen Green Centre for Research and Development, Corby
- Professor Ingrid Pramling Samuelsson, Goteborg University, Sweden
- Professor Alan Pence, University of Toronto, Canada
- Bente Jensen, Danish University of Education, Copenhagen

Judith Loveridge from Victoria University of Wellington, kindly provided information from contacts she made with the following people from whom she had asked for references about outcomes of early childhood education:

- Angela Anning
- Stig Brostrom
- Elizabeth Wood.

Kim Ang Chhim and Karl le Quesne from the Ministry of Education forwarded recent relevant material to us.

Appendix D: Report on robustness and validity of research methodology on contributions of early childhood education in NZCER longitudinal study of children from age 5 to 16

The authors of this longitudinal study have firmly established that some aspects of early childhood education have positive effects on children's competencies, especially in cognitive areas many years later. This effect is most pronounced in the first few years of schooling but persists, albeit in a greatly diminished form, even at age 16. The research is detailed and extensive and in general very sound. The analysis is robust and conclusions valid.

Its only flaw is a concentration in the earliest years on a sample drawn from a region with a higher income level, on average, than the country as a whole. By age 8 this bias was partly rectified but a bias in this direction persists. The authors acknowledge this and conclude that it is likely that positive effects of early childhood education may be slightly overestimated but that these effects nevertheless exist. The study did not include children with no early childhood education as numbers of such children were too low.

A careful, thorough, and exhaustive use of EDA was employed to analyse the data.

A variety of statistical techniques was used in the study: one and two factor analysis; stepwise and non stepwise regression; cross-tabulation and correlation analysis; along with factor analysis and principal components analysis. Effect sizes were only computed in the last two years of the analysis as in earlier analyses the authors felt they were inappropriate for the reason that it does not allow for "...variance between the measures" although they point out that "...this does not matter if the comparison of effect sizes is related for a single population so long as only factors with two levels and no missing values were considered … it would (therefore) be difficult 0..to use effect size to compare the contribution of a particular factor to two different competency measures since the measures have different standard deviations" (NZCER, 2001, p. 262). However, at age 14 (NZCER, 2006) and 16 (NZCER, 2006) they do use effect size while taking care not to compare effect size across competency measures. This makes for some inconsistency in reporting. Further, while the authors of the study make no invalid comparisons they may well be made of the age-14 and age-16 documents by inexpert readers who have not been made aware of this issue.

The researchers carefully draw the distinction between predictive and driving factors that is normally overlooked. The analysis repeats all two factor modelling in order to look at the effect of altering the order of the factors to avoid biasing the analysis towards the factor that was fitted first. This is often neglected and serves to ensure the robustness of any conclusions. The results have been checked for consistency against other New Zealand research in the area (principally that of Jenny Young-Loveridge) which again ensures a very robust set of conclusions.

Considerable care has been taken not to overstate the importance of differences.

It is pleasing to see resistance to the idea of single scale. All conclusions are carefully qualified to ensure no misunderstanding, e.g. it is pointed out that the early childhood education centres that declined to take part in the study may all have been of lower quality and thus the study may overestimate the positive effects of ECE. It is also careful to acknowledge the intertwining of home and ECE influences.

The only disappointment is the lack of data from kōhanga reo—however, as the authors point out, the nature and quality of kōhanga reo then is very different from that of today and thus no meaningful conclusions could have been made. This remains an area to be investigated at some later date.

No results on the impact (if any) of birth order on childhood competencies is given and it was not controlled for in assessing the impact of various ECE properties. While this may mean that no significant contribution was made by this variable it would be helpful to know, especially as it has been implicated in many other studies as a factor in cognitive competencies. This does not invalidate any of the conclusions but may mean they are very slightly overstated.

This document is notable for its clear explanations of statistical terms and techniques in order to make the document accessible to the general reader.

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15 September 2006

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