

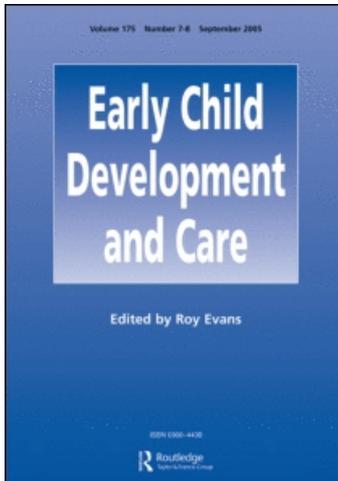
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Early Child Development and Care

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713640830>

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First published on: 16 June 2009

To cite this Article Barnes, Jacqueline , Leach, Penelope , Malmberg, Lars-Erik , Stein, Alan , Sylva, Kathy and the FCCC Team(2009) 'Experiences of childcare in England and socio-emotional development at 36 months', Early Child Development and Care., First published on: 16 June 2009 (iFirst)

To link to this Article: DOI: 10.1080/03004430902943959

URL: <http://dx.doi.org/10.1080/03004430902943959>

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Experiences of childcare in England and socio-emotional development at 36 months

Jacqueline Barnes^{a*}, Penelope Leach^a, Lars-Erik Malmberg^b, Alan Stein^{c,d}, Kathy Sylva^b, and the FCCC Team¹

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(Received 5 March 2009; final version received 2 April 2009)

In an English sample of 1016 families, use of childcare was investigated at 3, 10, 18 and 36 months. Child behaviour problems and social competence were assessed at 36 months by maternal questionnaire. There was no effect of the amount or type of childcare on disruptive behaviour at 36 months, the main predictors being maternal minority ethnic background and previous harsh maternal behaviour. Compliance and expressiveness were predicted by maternal sensitivity. Expressive behaviour was also associated with more childcare from 19 to 36 months, specifically nanny or nursery care. Overall there was no evidence of adverse consequences of childcare in the first three years, and some limited evidence of benefits.

Keywords: childcare; outcomes; quality; parenting; behaviour problems

Introduction

Research from the USA indicating that early childcare increases the likelihood of subsequent behaviour problems concerns policy makers and parents (Freaan, 2008). For several decades, investigations in the UK, the USA and Europe have focussed on the implications for children's socio-emotional development of childcare, either in a home setting or more often in larger groups in nurseries. Studies initially looked for disrupted attachment and then focussed on possible interactions between childcare quality and quantity, including more details about the home environment (Melhuish, 2004). Recent summaries conclude that the most important predictors of subsequent development are parental behaviours (Melhuish et al., 2008; NICHD, 2005).

The USA based National Institutes of Child Health and Development study of early childcare (NICHD, 2005) found that, controlling for quantity and quality, there was no strong evidence that early childcare predicted behavioural problems at two or three years. Similarly a Canadian study found that, for high risk families, aggression in two- and three-year-olds was associated with home but not group care (Borge,

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Rutter, Cote, & Tremblay, 2004). However, taking into account maternal age and education, the reason why childcare was used and the age it started, it was found in the UK that more grandparent care in early childhood was associated with more total problems, more hyperactivity and more peer relationship problems at four years of age (Fergusson, Maughan, & Golding, 2008). That study did not look at formal childcare but more than 35 hours per week in centre-based care was found in another UK study to be associated with more confidence and sociability but also more behaviour problems at age three (Mathers & Sylva, 2007).

Follow-up studies tell a slightly different story. At the age of 12, early experience of more centre care was found in the NICHD study to be consistently linked to problems, especially externalising behaviour (Belsky et al., 2007). In contrast to the NICHD research, the UK Effective Provision of Preschool Education (EPPE) study found negative effects of group childcare on socio-emotional development at five were undetectable by the age of 10, when earlier childcare had a positive effect on social competence (Sammons et al., 2007). Overall it is not clear whether home or centre care poses more risk for behaviour problems, particularly since some studies have not compared the whole range of care being used, both formal and informal.

The quality as well as the quantity of childcare may be a determinant of its impact on children's development. Evidence from the USA and the UK (NICHD, 2005; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004) suggests that good quality childcare can be beneficial for potentially vulnerable children. The current study found that quality of care and specifically caregiver emotional responsiveness and sensitivity provided by grandparents and nannies was higher than that observed in centre care (Leach, Barnes, Malmberg, Sylva, Stein, & the FCCC team, 2008) which suggests that it may particularly be centre-based care that is relevant to the development of behaviour problems, and not home-based care in a familiar setting.

In addition, childcare does not take place in a cultural vacuum and some of the inconsistencies in the findings may relate to differences between countries. The use of childcare is influenced by parental leave policies and issues such as funding and licensing of nursery facilities and cultural views on balancing increased income with the quality of life (Leach, 2009; Sylva et al., 2007). In the USA, where maternity leave is less generous than most European countries, more than 50% of mothers returned to work within three months of birth, with a high percentage of children in non-maternal care (NICHD, 2001). Across Western Europe, just 25% of mothers return to work before their child is a year old and only by the time their child is two are 50% of mothers in work (Pronzato, 2007). If working, legislation allows mothers with young children in the UK to work part-time (Leach, 2009). Therefore, it is important to be aware that research concerned with the impact of early childcare on later development may not generalise from culture to culture. In addition families do not live in a vacuum; both the home environment (Coldwell, Pike, & Dunn, 2006) and that of the surrounding neighbourhood are known to be relevant to parenting and child development (Leventhal & Brooks Gunn, 2000), so investigation of the potential impact of child care on development needs to include neighbourhood factors.

The aim of this study was to examine whether childcare in the first three years of life, for children living in England, is associated with emotional and behavioural problems at age three, taking into account parental and family factors and including in the investigation home-based and centre-based care. The hypotheses are:

- (1) More behavioural problems at 36 months will be predicted by greater use of childcare over the preceding period.
- (2) Group childcare is more likely to be predictive of behaviour problems than home-based care.
- (3) Poor quality childcare will be predictive of more behaviour problems.

The study also aimed to determine whether childcare experience predicted social competence at age three but no specific hypotheses were made, since there was little previous evidence.

Method

Participants

The study was approved by ethics committees of Oxford and London Universities and informed consent was obtained prior to participation.

The recruitment to the Families, Children and Childcare study (FCCC; www.familieschildrenchildcare.org) took place from 1998 to early 2001 in two large hospital antenatal clinics (London, Oxford), each catering for a demographically diverse population and in child health clinics in the same areas. Eligibility criteria were: mother 16 or over; fluent for interview in English; no plan to move in the next two years; and no plan to have their child adopted; singletons; birth weight > 2500 grams, gestation ≥ 37 weeks, no major congenital abnormalities and ≤ 48 hours in a Special Care Baby Unit. Of 1862 mothers approached 217 (11.6%) were ineligible; of the remaining 1645, 444 (27.0%) chose not to participate, making the final sample 1201. These are representative of the areas where the study took place (Malmberg et al., 2005).

Procedure

All participants (1201) were interviewed at three months. At 10 months 1077 were interviewed and observed, 1049 at 18 months and 1016 at 36 months. These data collection points were designed to cover particular developmental stages: at three months the immediate post-birth experiences; at 10 months mounting attachment; at 18 months the emergence of language; and at 36 months the age at which free nursery school places are taken up by many families (Leach, 2009). For those with 12+ hours of childcare per week observations were conducted of the dominant type at 10 months ($n = 320$), 18 months ($n = 345$) (see Leach et al., 2008) and 36 months ($n = 361$). At 36 months this represented 56/94 (60%) of grandparents; 54/78 (69%) of childminders; 33/36 (92%) of nannies; and 218/236 (92%) of nurseries. Some families were reluctant to agree to the grandparent or childminder being approached for quality observations fearing that it would be too intrusive.

Behaviour questionnaires were sent prior to the 36-month interview and collected during the home visit. Of 1016 sent 843 (83%) were completed.

Measures

Demographic characteristics

At three months interviews covered: child gender, birth order, ethnic and linguistic background; three-month and subsequent interviews covered partnership; parental education; family income; mothers and partner's occupational status (socio-economic

classification [SEC] Rose & O'Reilly, 1998). A composite family socio-economic status (SES)/education score was based on z-scored mother's and father's occupational status, mother's and father's education and family income.

Family environment

A six-point adverse living conditions scale (0–5) based on five dichotomous (0,1) indicators: rented accommodation; shared bathroom or kitchen; no garden; 5+ steps up to front door; no car or access to car and overcrowding (1.5 or more per room) was averaged across time points.

Neighbourhood deprivation

The Child Poverty Index (CPI) from the 1998 Indices of Deprivation measures the proportion of families with 0–16-year-old children within an electoral ward (similar to a USA census tract) who claim means-tested welfare benefits (Noble et al., 2000).

Childcare

At each time point the amount and type of concurrent and inter-interview childcare was determined. Average hours per week for all children were calculated from 0 to 36 months in total and for five types: grandparents; childminders; nannies; nurseries; and from 19 to 36 months, preschool playgroups. The average childcare from 0 to 18 months and 19 to 36 months were also calculated (see Table 2). The age of onset of any type of childcare was determined and the number of changes, including changes in carer of the same type, changes in type of childcare and changes back to no childcare.

Quality of care

Maternal care and stimulation

Maternal caregiving was assessed at 10, 18 and 36 months using two sub-scales of the Caregiver Interaction Scale ([CIS] Arnett, 1989): 'Positive Relationship' (eight items) and 'Detachment' (four items). Weighted mean Kappa coefficients of inter-rater agreement were $\kappa = .68-.74$. This scale is more commonly used to describe childcare providers but it was completed for mothers so that some quality measures were used consistently in all childcare settings and the home.

The Home Observation for Measurement of the Environment ([HOME] Caldwell & Bradley, 1988) was also used. At 10 and 18 months the scales included: 'emotional and verbal responsiveness'; 'lack of harshness'; 'organisation of the physical and temporal environment', 'provision of appropriate play materials', and 'opportunities for variety in daily stimulation'. Inter-rater agreement was $\kappa = .70-.74$. At 36 months the scales included: 'pride, affection and warmth', 'language stimulation' and 'physical environment' (inter-rater agreement $\kappa = .85$).

At 36 months the Assessment Profile for Homes with young children (safety scale) (Abbott-Shim & Sibley, 1993) was completed. The Observation Record of the Caregiving Environment ([ORCE] NICHD, 1991) was also used, with eight behaviours rated from one (not at all characteristic) to four (very characteristic): sensitivity to distress; sensitivity to non-distress; intrusiveness; detachment/disengagement;

stimulation of development; positive regard for child; negative regard for child; and flatness of affect. The weighted mean Kappa coefficients were $\kappa = .70-.74$; internal consistencies ranged from $\alpha = .63$ to $\alpha = .97$. The ORCE is not generally used to rate maternal behaviour. Its use in this study made comparisons possible between maternal behaviour and that of other caregivers. The ORCE ratings were completed after the HOME, following an average of 90 minutes in the home. To create a compact set of maternal variables confirmatory factor analysis was conducted and z -scores of HOME 'pride, affection and warmth', 'language stimulation' and total ORCE were combined to form 'maternal sensitivity and warmth'. Similarly z -scores of the HOME 'physical environment' score and the 'profile safety' score were combined to create 'home environment' quality.

Quality of childcare

At 10 and 18 months, after a minimum of 90 minutes in childcare setting, the ORCE rating scales (NICHD, 1991), the (CIS) (Arnett, 1989) and the HOME 'emotional responsiveness' sub-scale (Caldwell & Bradley, 1988) were completed. Use of the HOME sub-scale in childcare settings was designed to allow direct comparisons with maternal behaviour and to provide comparability across all childcare settings. A composite score comprised of HOME 'emotional responsiveness', CIS 'positive relationships' and (reverse coded) CIS 'detachment' and the ORCE mean score. At 36 months a similar childcare sensitivity score was created by averaging three sub-scales: the ORCE, the HOME 'personal warmth' and 'language stimulation' sub-scales. An overall childcare quality aggregate was created by averaging the z -scored 10, 18 and 36 months scores. The composite quality score was available for 480 in total and 426 of those who also completed the Adaptive Social Behaviour Inventory (ASBI).

Socio-emotional development

The ASBI (Hogan, Scott, & Bauer, 1992) describes social competence and behavioural difficulties in three-year-olds. At the time that the 36-month phase of the study began (2001) there was no other well validated measure that included both positive social behaviour and disruptive behaviour for this age group. The 30-item inventory has three scales: Express (13 items, e.g. confident, sympathetic, enjoys talking; $\alpha = .77$); Comply (10 items, e.g. obedient, shares, waits; $\alpha = .80$); and Disrupt (seven items, e.g. resists, bullies, bossy; $\alpha = .64$). Items are scored from 1 (never) to 3 (almost always).

Analysis plan

Bivariate correlations with outcomes were conducted to determine which factors to enter into regressions. In addition family factors identified as relevant to selection and use of childcare (Sylva et al., 2007) were included. Then a series of multiple regression analyses was run with predictors entered in block sequences: block 1 – demographic variables and maternal behaviour; block 2 – average childcare hours from 0 to 18 months and from 19 to 36 months; alternate block 2 – average hours for each type from 0 to 36 months (collinear with average total hours, so could not be entered simultaneously). Finally, for those where quality of childcare measures were available, average quality across 10, 18 and 36 months was added as block 3 after alternate block 2.

Results

Demographic characteristics of those completing the ASBI ($N = 873$) and those who did not ($N = 143$) were compared (see Table 1). Non-respondents were younger, the family had a lower SES/education score, they had more adverse home conditions and more neighbourhood deprivation. They were observed to be less sensitive (10 & 18 months) and less warm and stimulating (36 months) and home environment quality was lower at 36 months.

The average number of hours of childcare per week across the three years for the whole sample, including those who had none and those with 1 to 11 hours per week, was 12.0; 9.2 from 0 to 18 months and 14.7 from 19 to 36 months. Excluding those with no childcare, the average hours per week was 13.5 ($N = 900$), 15.0 from 0 to 18 months ($N = 688$) and 17.2 from 19 to 36 months ($N = 868$). For those with any of a particular type, the highest average hours over the total time period 0 to 36 months was for nannies (13.3, $N = 97$) and the lowest for grandparents (4.3, $N = 384$; see Table 2). Mean childcare hours were greater for those with childcare quality observations (see Table 2).

Behaviour problems

Age of onset of childcare, the number of childcare changes and gender were unrelated to ASBI scores and were not entered into analyses. Regression analyses predicting disruptive behaviour indicated that, taking other factors into account, more was reported for their children by mothers of 'Asian' and 'other or mixed' minority ethnic backgrounds and those whose behaviour was harsher at 10 and 18 months. There was a trend for more disruptive behaviour when adverse living conditions were greater and

Table 1. Demographic characteristics of participants and those not completing the ASBI (percentages or standard deviations in brackets).

	ASBI completed $N = 873$	ASBI not completed $N = 143$	95% CI of significant differences
Lives with partner 3 months (%)	796 (91.2)	124 (86.7)	–
Mother black (%)	71 (8.1)	17 (11.9)	–
Mother Asian (%)	38 (4.4)	6 (4.2)	–
Mother mixed/other ethnic group (%)	49 (5.6)	10 (7.0)	–
Mean number of children (1–4+) (SD)	1.7(.8)	1.8 (.9)	–
Mean maternal age at birth (SD)	31.4(5.1)	30.1 (5.8)*	.3 to 2.3
Mean adverse conditions (range 0–5) (SD)	.4(.5)	.5 (.5)*	.20 to .01
Mean neighbourhood deprivation (SD)	28.0(16.8)	31.7 (16.6)*	6.7 to .7
Mean family SES/education z-score (3–36 months) (SD)	.1(.8)	–.2 (.8)*	.2 to .4
Mean maternal sensitivity 10 and 18 months	2.6(.4)	2.5 (.4)*	.2 to .0
Mean lack of harshness 10 and 18 months	3.2(.7)	3.2 (.8)	–
Mean maternal sensitivity/warmth z-score 36 months	.1(.8)	–.3 (.9)**	.5–.2
Mean home environment z-score 36 months	.0(.8)	–.2 (.9)*	–.3 to –.0

* $p < .05$ difference between groups.

** $p < .01$ difference between groups.

Table 2. Average childcare hours per week from 0 to 36 months.

	Mean 0–18 months (SD)	Mean with any childcare 0–18 (SD) <i>N</i>	Mean 19–36 months (SD)	Mean with any childcare 19–36 (SD) <i>N</i>	Mean 0–36 months (SD)	Mean with any childcare 0–36 (SD) <i>N</i>
Total childcare, whole sample <i>N</i> = 1016	9.2 (11.4)	15.0 (11.1) 622	14.7 (15.1)	17.2 (15.0) 868	12.0 (12.5)	13.5 (12.5) 900
Total childcare, with childcare quality <i>N</i> = 480	18.4 (11.1)	19.2 (10.6) 458	27.1 (14.0)	27.8 (13.5) 467	22.8 (11.1)	22.8 (11.1) 480
Grandparent	3.1 (7.2)	9.6 (9.8) 331	3.6 (9.0)	13.9 (12.9) 268	3.4 (7.6)	4.3 (7.4) 384
Childminder	2.6 (6.6)	10.7 (9.8) 247	3.2 (8.4)	14.9 (12.6) 223	2.9 (7.2)	10.0 (10.3) 296
Nursery	2.3 (6.6)	12.4 (10.4) 190	5.4 (10.4)	15.2 (12.6) 365	3.9 (8.0)	10.2 (10.3) 395
Nanny	1.1 (5.3)	14.3 (12.9) 80	1.4 (6.7)	20.1 (15.8) 78	1.3 (5.6)	13.3 (12.8) 97
Playgroup/preschool	–	–	1.1 (1.9)	2.3 (2.1) 499	–	–

Table 3. Prediction of mother-rated disruptive behaviour at 36 months (ASBI).

Block 1 family characteristics	B	95% CI	p	B	95% CI	p	B	95% CI	p
Number of children	.02	-.00 to .05	.07	.02	-.00 to .05	.08	.00	-.04 to .05	.87
Maternal age	.00	-.01 to .01	.98	.00	-.01 to .01	.99	.00	-.01 to .01	.95
Mother minority, black	-.02	-.10 to .07	.71	-.02	-.10 to .06	.76	-.09	-.19 to .04	.20
<i>Mother minority, Asian</i>	.11	.02 to .21	.02	.11	.02 to .21	.02	.10	-.02 to .23	.10
<i>Mother minority, other</i>	.12	.03 to .20	.01	.12	.03 to .20	.01	.09	-.05 to .22	.22
Mother living with partner	.01	-.08 to .08	.97	.01	-.07 to .09	.91	.03	-.13 to .15	.84
Family SES/education	.02	-.02 to .06	.37	.01	-.03 to .05	.53	.05	-.01 to .11	.13
<i>Adverse home conditions</i>	.04	-.01 to .10	.09	.04	-.01 to .10	.10	.09	.02 to .17	.01
Home environment 36 months	.01	-.02 to .04	.45	.01	-.02 to .04	.44	.02	-.02 to .05	.54
Neighbourhood poverty (CPI)	.00	.00 to .00	.12	.00	.00 to .00	.09	.00	-.00 to .00	.14
Maternal sensitivity 10 and 18 months	-.01	-.06 to .05	.78	-.01	-.06 to .05	.85	-.03	-.11 to .06	.51
Maternal sensitivity/warmth 36 months	-.03	-.06 to .00	.06	-.03	-.06 to .00	.07	.00	-.04 to .05	.85
<i>Maternal lack of harshness 10 and 18 months</i>	-.04	-.07 to -.01	.02	-.04	-.07 to -.01	.02	-.04	-.08 to .01	.15
Block 2, childcare amount									
Average hours 0–18 months	.00	-.00 to .00	.75						
Average hours 19–36 months	.00	-.00 to .00	.78						
Alternate Block 2, childcare amount by type									
Average grandparent hours				.00	-.00 to .00	.95	.00	-.00 to .01	.34
Average childminder hours				.00	-.00 to .01	.63	.00	-.00 to .01	.22
Average nanny hours				.00	-.00 to .01	.43	.00	-.00 to .01	.36
Average nursery hours				.00	-.00 to .01	.30	.00	-.00 to .01	.54
Average playgroup hours				.01	-.00 to .02	.25	.00	-.01 to .02	.82
Block 3, childcare quality									
Mean quality 0–36 months							-.03	-.08 to .02	.21

B = Unstandardised coefficient; disruptive behaviour mean = 1.47, SD = .29; significant predictors in italics.

Family and childcare amount: Adjusted $R^2 = .03$, $F_{[15, 813]} = 2.94$, $p < .000$.

Family and childcare amount by type: Adjusted $R^2 = .04$, $F_{[18, 810]} = 2.55$, $p < .000$.

Family, childcare amount by type and quality: Adjusted $R^2 = .01$, $F_{[19, 381]} = 1.19$, $p = .26$.

for less disruptive behaviour when mothers were more sensitive, warm and stimulating at 36 months (see Table 3). Childcare amount, type and quality were unrelated to disruptive behaviour.

Behavioural competence

Mothers of 'Asian' minority ethnic background reported less expressive child behaviour and mothers who were more sensitive described more. More expressive behaviour was reported for children with more childcare from 19 to 36 months (see Table 4). A second regression grouping mean childcare hours from 19 to 36 months into five bands (0, > 12, 12–24, 25–34, 35+) showed that the effect was limited to those with 35+ hours, compared to none (see Table 5), with an effect size of .36. Children with more hours in nanny or in nursery care were described as more expressive, with a trend in the same direction for more childminder hours (see Table 4). Childcare quality from 0 to 36 months did not add to the variance explained or alter the results except to add one more predictor, greater home environmental quality at 36 months (see Table 4).

Mothers who were observed to be more sensitive, warm and stimulating at 36 months described children as more compliant (see Table 6). Compliance was not related to any childcare indicators with the total group ($N = 869$). When childcare quality was included, for that smaller sample ($N = 400$) there was one additional predictor, more compliance at 36 months if mothers were more sensitive at 10 and 18 months.

Discussion

None of the hypotheses was supported. This study found no relationship between the amount of childcare experienced, more or less for any particular type, or childcare quality and behaviour problems at 36 months. This was true both for the total sample and the subset using childcare for 12 or more hours per week where quality observations had been conducted. The main predictor of parent reported child behaviour problems at 36 months was harsher maternal behaviour when the children were younger. In addition children from some minority ethnic groups were said to have more behaviour problems, in line with another study of English three-year-olds (Sylva et al., 2004). Compliance (negatively associated with disruptive behaviour) was greater when mothers were observed to be more warm and sensitive.

Clearly, since ASBI scores are based on mothers' reports of their children's behaviour the higher disruptive behaviour scores of ethnic minority mothers may reflect different and higher expectations of three-year-olds' obedience and emotional behaviour, identified in other studies (Hackett & Hackett, 1993). It would have been preferable to obtain additional behaviour ratings from the caregivers, and possibly more likely to observe children in groups where much disruptive behaviour occurs. In future reports, with all children in school settings, there will be information from teacher completed questionnaires.

While childcare was not associated with adverse behavioural development, one positive finding was that children who had experienced substantially more childcare from 19 to 36 months (an average of 35 hours or more per week) were reported by mothers to be more confident about expressing themselves, joined in activities and had more sympathy for peers. This was the case particularly if they had spent more time in a nursery or at home with a nanny with a trend in the same direction for more

Table 4. Prediction of mother-rated expressive behaviour at 36 months (ASBD).

Block 1 family characteristics	B	95% CI	p	B	95% CI	p	B	95% CI	p
Number of children	-.01	-.03 to .02	.24	-.01	-.03 to .02	.24	-.01	-.04 to .03	.63
Maternal age	-.00	-.01 to .00	.46	-.00	-.01 to .00	.41	-.00	-.01 to .00	.52
Mother minority, black	.01	-.06 to .07	.85	.02	-.05 to .08	.66	.03	-.06 to .12	.56
Mother minority, Asian	-.12	-.20 to -.04	.01	-.11	-.19 to -.03	.01	-.10	-.20 to -.00	.05
Mother minority, other	-.03	-.10 to .04	.40	-.03	-.10 to .04	.44	.01	-.09 to .12	.78
Mother living with partner	-.00	-.07 to .07	.82	.01	-.06 to .08	.69	-.07	-.17 to .05	.28
Family SES/education	.02	-.01 to .05	.21	.01	-.03 to .04	.64	.03	-.04 to .06	.70
Adverse home conditions	.01	-.04 to .05	.73	.01	-.04 to .05	.77	-.01	-.08 to .04	.55
Home environment 36 months	.01	-.01 to .03	.29	.01	-.01 to .04	.22	.03	.00 to .06	.04
Neighbourhood poverty (CPI)	-.00	-.00 to .00	.17	-.00	-.00 to .00	.23	.00	-.00 to .00	.95
Maternal sensitivity 10 and 18 months	.08	.03 to .12	.001	.08	.03 to .12	.001	.07	.00 to .13	.04
Maternal sensitivity/warmth 36 months	.02	.00 to .05	.05	.03	-.00 to .05	.05	.02	-.02 to .06	.24
Maternal lack of harshness 10 and 18 months	-.01	-.04 to .02	.47	-.01	-.04 to .01	.33	-.03	-.07 to .01	.11
Block 2 childcare amount									
Average hours 0 to 18 months	-.00	-.00 to .00	.63						
Average hours 19 to 36 months	.00	.00 to .00	.01						
Alternate block 2 childcare amount by type									
Average grandparent hours				.00	-.00 to .00	.32	.00	-.00 to .01	.23
Average childminder hours				.00	.00 to .01	.08	.00	.00 to .01	.06
Average nanny hours				.00	.00 to .01	.01	.01	.00 to .01	.01
Average nursery hours				.00	.00 to .01	.01	.01	.00 to .01	.01
Average playgroup hours				.01	-.00 to .01	.28	.00	-.01 to .01	.98
Block 3 childcare quality									
Average quality 0 to 36 months				.03	-.01 to .06	.17			

B = Unstandardised coefficient; expressive behaviour mean = 2.69, SD = .25; significant predictors in italics.
 Family and childcare amount: Adjusted $R^2 = .08$, $F_{[15, 815]} = 5.45$, $p < .000$.
 Family and childcare amount by type: Adjusted $R^2 = .07$, $F_{[18, 812]} = 4.67$, $p < .000$.
 Family, childcare amount by type and quality: Adjusted $R^2 = .06$, $F_{[19, 381]} = 2.34$, $p = .001$.

Table 5. Post-hoc analysis. Prediction of mother-rated expressive behaviour at 36 months (ASBI) with childcare hours from 19 to 36 months grouped.

Block 1 family characteristics	<i>B</i>	95% CI	<i>p</i>
Number of children	-.01	-.03 to .01	.40
Maternal age	-.00	-.01 to .00	.51
Mother minority, black	.01	-.06 to .07	.76
Mother minority, Asian	-.13	-.20 to -.04	.01
Mother minority, other	-.03	-.10 to .04	.44
Mother living with partner	-.01	-.07 to .07	.88
Family SES/education	.03	-.01 to .05	.10
Adverse home conditions	.01	-.04 to .05	.74
Home environment 36 months	.01	-.01 to .03	.24
Neighbourhood poverty (CPI)	-.00	-.00 to .00	.15
Maternal sensitivity 10 and 18 months	.08	.03 to .12	.001
Maternal sensitivity/warmth 36 months	.03	.00 to .05	.04
Maternal lack of harshness 10 and 18 months	-.01	-.04 to .02	.33
Block 2 childcare amount			
Average hours 0–18 months	-.00	-.00 to .00	.87
Average hours >12, 19–36 months	.00	-.06 to .06	.94
Average hours 12–24, 19–36 months	.02	-.05 to .09	.55
Average hours 25–34, 19–36 months	.01	-.06 to .08	.82
<i>Average hours 35+, 19–36 months</i>	<i>.09</i>	<i>.01 to .17</i>	<i>.03</i>

B = Unstandardised coefficient; expressive behaviour mean = 2.69, SD = .25.

Adjusted $R^2 = .07$, $F_{[18, 812]} = 4.61$, $p < .000$.

time with a childminder. Thus, the experience of being with non-family adults and with other children either in a small home-based group or in a nursery appears to have facilitated the development of social skills. This corresponds to the EPPE study, also using the ASBI, which found that any type of preschool experience led to better outcomes, behavioural and cognitive, compared to being exclusively in maternal care (Sylva et al., 2004) and that positive effects on social competence were still detectable at age 10 (Sammons et al., 2007).

The results of this study suggest that, compared with parental characteristics, the impact of childcare is negligible and any potential impact is likely to be beneficial, as long as expressiveness can then be controlled once in a classroom setting. The adverse impact identified by Fergusson et al. (2008) of grandparent care was not replicated though their outcome was at four years, so it is important to follow-up to the point when children are in school settings, and gain behavioural reports from non-family members. The adverse impact of centre care found by Mathers and Sylva (2007) was not replicated either but again that was based on teacher reports.

Nevertheless, the study has limitations that need to be considered when interpreting the conclusions. First, the mothers who did not return questionnaires were younger, the families poorer and with fewer qualifications, all factors that might be risks for more child behaviour difficulties. Thus, their absence may have restricted the variance in the behavioural outcomes in question. Secondly, the sample of childcare settings for which quality assessments were made included almost all the nurseries

Table 6. Prediction of mother-rated compliant behaviour at 36 months (ASBI).

Block 1 family characteristics	B	95% CI	p	B	95% CI	p	B	95% CI	p
Number of children	-.01	-.04 to .02	.46	-.01	-.04 to .02	.33	.02	-.03 to .07	.44
Maternal age	-.00	-.01 to .00	.26	-.00	-.01 to .00	.24	-.01	-.02 to .00	.07
Mother minority, black	-.01	-.12 to .06	.75	-.01	-.12 to .06	.52	.00	-.14 to .11	.77
Mother minority, Asian	.01	-.10 to .10	.87	.01	-.09 to .12	.97	-.04	-.19 to .08	.41
Mother minority, other	-.04	-.13 to .06	.49	-.03	-.12 to .06	.43	.00	-.12 to .16	.77
Mother living with partner	-.00	-.09 to .08	.95	-.00	-.09 to .09	.77	-.09	-.24 to .03	.22
Family SES/education	.04	-.02 to .08	.06	.04	-.01 to .08	.11	.05	-.01 to .12	.10
Adverse home conditions	-.00	-.06 to .05	.90	-.01	-.07 to .05	.36	-.04	-.12 to .04	.36
Home environment 36 months	-.00	-.03 to .03	.92	-.00	-.03 to .03	.88	.01	-.03 to .05	.69
Neighbourhood poverty (CPI)	-.00	-.00 to .00	.16	-.00	-.00 to .00	.13	.00	-.00 to .00	.96
Maternal sensitivity 10 and 18 months	.04	-.02 to .10	.15	.04	-.01 to .10	.15	.11	.03 to .20	.01
Maternal sensitivity/warmth 36 months	.07	.04 to .10	.000	.07	.04 to .10	.000	.05	.01 to .10	.03
Maternal lack of harshness 10 and 18 months	.01	-.02 to .04	.53	.01	-.02 to .04	.62	.01	-.06 to .04	.79
Block 2 childcare amount									
Average hours 0 to 18 months	.00	-.00 to .00	.78						
Average hours 19 to 36 months	-.00	-.00 to .00	.94						
Alternate Block 2, childcare amount by type									
Average grandparent hours				-.00	-.00 to .00	.99	-.00	-.01 to .00	.88
Average childminder hours				-.00	-.00 to .00	.88	.00	-.00 to .00	.72
Average nanny hours				.00	-.00 to .01	.06	.00	-.00 to .01	.08
Average nursery hours				-.00	-.00 to .00	.83	.00	-.00 to .00	.75
Average playgroup hours				-.00	-.01 to .01	.60	-.01	-.02 to .01	.46
Block 3 childcare quality									
Average quality 0 to 36 months				.03	-.02 to .08	.28			

B = Unstandardised coefficient; compliant behaviour mean = 2.40, SD = .32; significant predictors in italics.
 Family and childcare amount: Adjusted $R^2 = .10$, $F_{[15, 815]} = 6.26$, $p < .000$.
 Family and childcare amount by type: Adjusted $R^2 = .10$, $F_{[18, 812]} = 5.42$, $p < .000$.
 Family, childcare amount by type and quality: Adjusted $R^2 = .06$, $F_{[19, 381]} = 2.32$, $p < .000$.

and nannies but not all grandparents and childminders. It is possible that those grandparents and childminders who were observed represent the higher end of quality, or were coping with less difficult children, which would also have restricted the variance in the outcomes. Finally, the amount of time in childcare for these children was generally less than that reported in some other studies. For example, from birth to 18 months only four percent had a weekly average of 35 hours or greater and only 18% from 19 to 36 months. That being said, no adverse relationship was identified between childcare and behaviour problems in the sub-group with quality observations, who had experienced more childcare during the three years. Thus overall, the tentative conclusion is that there will be no adverse behavioural consequences for their child of using childcare in the first three years. However, as noted in several studies (Belsky et al., 2007; Sammons et al., 2007) findings may change as the children mature.

Acknowledgements

We are grateful to the families and carers who participated in the study. We are indebted to the Tedworth Charitable Trust and the Glass-House Trust for funding the study.

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