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Family and Child Factors Related to the Use of Non-Maternal Infant Care: An English Study

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Abstract

This paper explores factors related to the use, amount and type of non-maternal child care infants experience in their first year, reporting on a prospective longitudinal study of 1,201 families recruited from two different regions in England. The selection and timing of non-maternal child care was investigated within a socio-ecological model that took account of child and family characteristics as well as maternal psychological factors. Family socio-demographic background (education, occupation, and income level) was the most consistent predictor of the amount and nature of non-maternal care infants received. Infants who started in non-maternal child care before the age of 3 months were more likely to come from relatively disadvantaged families; in contrast the mothers of infants starting in child care between 4 and 10 months were more advantaged. Disadvantaged families were more likely to use familial care, while more advantaged families were likely to use purchased child care. Children who began non-maternal care earlier (0-3 months) and spent more hours in care were more likely to be from ethnic minorities (Asian) and have mothers who believed that maternal employment had more benefits and fewer risks for their child. First-born children were also more likely to experience non-maternal care by the age of 3 months. Infants rated by their mothers at 3 months as less 'adaptable' in temperament and at 10 months as more 'fussy' spent more hours in child care. Finally, the type of child care selected was related to the families' socio-economic background, maternal beliefs and attitudes, and birth order. Findings are compared with the U.S. large scale NICHD study and considered in the light of national policies.

Key words: infant child care, child care selection

FAMILY AND CHILD FACTORS RELATED TO THE USE OF NON-MATERNAL INFANT CARE: AN ENGLISH STUDY

There has been a dramatic increase in English mothers returning to work and their children starting non-maternal child care in their first year of life (Interdepartmental Child Care Review, 2002; National Audit Office 2004). Because of this, research on the effects of non-maternal child care on children's development is important; its findings are heavily disputed (Belsky, 2001; Belsky & Rovine, 1988; Burchinal & Cryer 2001; National Institute of Child Health & Human Development [NICHD], 1997a, 2003a, 2003b, 2003c, 2003d; Vandell, 2004). Fewer studies have investigated which kinds of children experience early child care and which kinds of parents select it (Early & Burchinal, 2001; Huston, Chang, & Gennetian, 2002; NICHD, 1997a, 1997b; Peyton, Jacobs, O'Brien, & Roy, 2001; Pungello & Kurtz-Costes, 1999; Singer, Fuller, Keiley, & Wolf, 1998). This paper explores factors associated with use, amount and the type of non-maternal child care that English children[1] experience in their first year of life.

The theoretical model of Pungello and Kurtz-Costes (1999, see Figure 1) underpins this study. This model rests on an eco-behavioural model (Bronfrenbrenner & Morris, 1998) that places the selection and timing of child care in a series of nested contexts with the child at the centre and the parents, family, and community all contributing to (and being affected by) the choice of child care. We have adapted Figure 1 to include a 'macro' context, such as governmental policy, in which the 'micro' and 'exo' levels are embedded.

[insert Figure 1]

[1] The United Kingdom (UK) includes England, Northern Ireland, Scotland and Wales. The study was carried out in two regions in England and children were aged birth to 18 months in the period from 1998 to 2002.

Factors Associated With Timing, Amount and Type of Non-Maternal Child Care Use

Starting at the child level, children's age has been shown to be one of the most predictive factors in child care use. In general, child care increases steadily through infancy until school age, a trend that reverses only in later childhood. Younger children are more likely to experience family day care while older children are more likely to experience centre care (Pungello & Kurtz-Costes, 1999). Limited research has been conducted which investigates the influence of infant temperament on child care choices. While it has been shown that mothers who return to work are less likely to report their infants to be fussy (Galambos & Lerner, 1987), most other research has suggested no link between child care choices and infant temperament (Melhuish, Moss, Mooney, & Martin, 1991; Volling & Belsky, 1993). The effects of gender are also unclear; some American studies showed gender to be influential, with girls either being *more* likely (Hiendemann, Joesch , & Rose, 2004) or *less* likely (Fuller, Holloway , & Liang, 1996) to be in non-relative care or child care centres.

Family characteristics, particularly economic factors, have been shown to account for much of the variability in the amount and nature of infants' non-maternal care. Several studies from the US have shown that maternal employment is the primary reason families use non-maternal child care (Atkinson, 1994; Hofferth, Brayfield, Deich, & Holcomb, 1991). Overall, research suggests that the significant predictors of child care use are related to 'human capital', for example families' educational qualifications, their social aspirations or the ease with which they can draw on community resources (Hofferth & Wissoker, 1992; Huston et al., 2002; Zaslow, Oldham, Moore , & Magenheim, 1998). Many research studies have demonstrated that economic circumstances interact with family and child characteristics in a complex way as they influence the use of non-maternal child care (Hofferth & Wissoker, 1992). Family structure has

been shown to influence child care decisions. Single parent families and families with fewer children use more early child care (Hofferth et al., 1991), and families with more children use more in-home and relative care (Johansen, Leibowitz &, Waite, 1996). Research findings on the effect of ethnicity on child care decisions are very much inconsistent and depend on the study samples and contexts; generalisations here should be viewed with caution (Huston et al., 2002).

In addition to family characteristics, psychological factors also contribute to family choice of child care. Mothers who believe that that their employment brings more benefits to their children and fewer costs (Greenberger, Goldberg, Crawford , & Granger, 1988), and those who hold progressive attitudes towards childrearing (Schaefer & Edgerton, 1985), have been shown to be more likely to use non-maternal care. Some researchers have found that depression or personality influences decisions about employment, and thus about child care (Belsky & Rovine, 1988; Jaeger & Weinraub, 1990), but generally findings here are not conclusive.

The NICHD Study of Early Child Care

Inconsistencies in findings in early child care research are often due to the fact that much of it has not taken account of the complexity and diversity of child care arrangements. Child care experiences are not randomly assigned; if 'third variables' such as the socio-economic circumstances of the family, number of siblings or ethnic background are not accounted for, child care influences might be mistakenly assumed when in fact other factors are causal. With the aim to overcome such limitations, a study on early child care was set up in 1987 by the National Institute of Child Health & Human Development (NICHD, 1997a, 1997b, 2001). The NICHD study sampled 1,364 children from different American communities and followed them longitudinally, collecting detailed information on the quality and quantity of early non-maternal

child care and taking into account a wide array of relevant background variables. Today, the NICHD study is the most substantial research on early child care.

The NICHD found that decisions about child care depended on child and family characteristics as well as maternal attitudes and beliefs. On average, children started child care at 3 months of age, at which point the majority of them experienced father or relative care. This pattern changed with age, and by 12 months of age, care by fathers and relatives had decreased and care in centres and child care homes had increased. At 12 months, 68% of children were in some type of care arrangement. On average, children started their care arrangements with 29 hours/week, and the amount of care they received increased slightly until 12 months of age (NICHD, 1997a, 2001). Children's gender was not found to be related to parents' child care choices. Children with more siblings spent less time in care arrangements and were more likely to receive father and in-home care; children from smaller families generally entered non-maternal care at a later stage, with the exception of children starting child care between 3-5 months of age, who came from the smallest families of all (NICHD, 1997b). This group of early starters had mothers with the highest educational level, income and the highest scores on extraversion and agreeableness. Overall, if mothers' educational level was higher, children experienced fewer hours of child care and less care by fathers and relatives, but more in-home care by non-relatives. Economic circumstances were often the driving force behind a family's use and timing of child care. Infants who started child care before the age of 3 months, had families with the lowest non-maternal incomes, infants who started child care between 3 and 5 months had families with the highest incomes. Overall, mothers' income related positively to children's hours in care, while fathers' income did so negatively (NICHD, 1997b, 2001). Low-income families relied most on father and relative care, high income families used more in-home

non-relative care. Hispanic and European American families used fewer hours of child care than African American families, or families from other ethnic backgrounds. If mothers had progressive attitudes about child rearing, their children experienced more hours of non-maternal care. This was also true if mothers believed their children benefited from their employment; furthermore the children of 'progressive' mothers experienced child care earlier. If mothers believed that there were high risks of their employment, children experienced more father and grandparent care; if they believed that there were low risks, their children experienced more centre care and care in a child care home (NICHD, 1997b, 2001).

Government Policies That Influence Child Care Use

As with many other large scale studies on early child care, the NICHD study was carried out in the US. Child care researchers now need to address issues of universality, generalisabilty and interpretability of research findings in the light of *national* contexts and perspectives (Lamb, 1998; Love et al., 2003). The current study was designed to investigate infant child care in England, which has a different policy context from the US.

Current government initiatives in the UK encourage mothers to work (Driver & Martell, 2002). Research in the UK suggests that *poor* mothers in particular will benefit from finding work: first, because unemployed fathers are more likely to obtain work if the mother is working; and second, because a second household income is often essential to lift a household out of poverty (Iacovou & Berthoud, 2000). The U.K. Inter-Departmental Childcare Review (2002) supports initiatives that encourage female employment in concluding that "work is the key long-term route out of poverty for those who can work. Policies to enhance opportunities to work will help close the gender pay gap and boost productivity" (p. 14). Government initiatives seem to

have been effective; recent statistics show that in the last decade: (i) female employment has increased more rapidly than male employment; (ii) increases are higher for women with dependent children than for women without children; (iii) the rise in employment rates has been steepest for women with children under the age of five and for lone parents (HM Treasury, 2004).

In conjunction with the rise of maternal employment, the last decade shows a 68% increase of Government expenditure on the Early Years (Sylva & Pugh, 2005). In the UK, use of child care is believed to be vital, not only to the chances of lone parents finding work, but also to workless couples finding their way out of social exclusion. Surveys of demand and take-up related to early education and care show increasing use of early child care in England (Callender, 2000; La Valle, Finch, Nove , & Lewin, 2000; Stratford, Finch , & Pethwick, 1997), particularly for lone parents (Bradshaw et al., 1996; Bryson, Ford , & White, 1997). However, at the same time, lack of good quality, affordable child care has been shown to be a major barrier to lone parents seeking work (Inter-Departmental Childcare Review, 2002) and to working mothers taking on more hours (Kozak & Coram, 1998; Woodland, Miller , & Tipping, 2002). Furthermore, many mothers feel a tension between work and child care, making policy on maternity leave important, not only to individuals but also to researchers. Maternity leave and allowances influence decisions about returning to work. In the US where maternity leave is traditionally less generous than in the UK, studies have shown that more than 50% of mothers had returned to work within 3 months of the birth, with a high percentage of children in non-maternal care (Baydar & Brooks-Gunn, 1991; NICHD, 2001). In contrast, in the UK where there is traditionally more generous leave, it has been shown that only 8% of mothers have

returned to work at 3 months and 67 % after 11 months, with only 24% working full-time (Callender, Millward, Lissenburgh , & Forth, 1997).

At the time of data collection for this study, statutory leave in the UK was 18 weeks and Statutory Maternity Pay was £100 per week (approximately $175 USD). In 2003 this was increased to 26 weeks, supplemented by an optional 26 weeks of further unpaid leave without risk of employment termination (HM Treasury, 2004). The recent policy document stated the government's aim for the future is to provide choice and flexibility with parents having a greater choice about balancing work and family life, and they hope to achieve this by extending maternity leave up to the end of the first year and by making available affordable, flexible, high quality child care for all families with children aged up to 14 years (see HM Treasury, 2004).

Goals of the Present Study

The present study was designed to investigate factors related to child care in the first year of life in a European country with different policies and practices from those in North America. It builds upon previous studies in the UK on early child care (La Valle et al., 2000; Melhuish et al., 1991; Moss, 1998; National Audit Office, 2004). Data collection procedures were designed to be similar in many respects to those in the NICHD. To investigate the ecological model of child care use (Bronfenbrenner & Morris, 1998), information was collected at the level of child, family and community.

The goal of this paper is to construct explanatory models for *use, hours* and *type* of non-maternal child care with predictors on the levels of child, family and community. The children's ages and the families' socio-economic situation in particular are predicted to be the most relevant predictors of child care use. Because of financial pressures, more disadvantaged families are

predicted to start non-maternal care at 3 months or earlier, while more advantaged families are expected to delay their return to work until later in the first year. Child care use is expected to increase steadily in the first year, with the steepest rise happening after the end of maternity leave, that is after four months. Families' attitudes are predicted to relate to child care choices, with families believing in the benefits of employment for their children's development starting to use non-maternal care earlier and families believing in the risks of maternal employment arranging chid care later and relying more on relative care. Findings will be compared US results recently reported by the NICHD and discussed within the macro-context of institutions and policies. The paper's research questions are:

(1) Which child factors (e.g. gender, temperament, birth order) relate to the use of non-maternal child care, the hours of child care use and the type of child care infants receive?

(2) Which socio-demographic factors (e.g. family structure, language, income, educational level, ethnicity and neighbourhood poverty) relate to the use of non-maternal child care, the hours of child care use and the type of child care infants receive?

(3) Which maternal psychological factors (maternal attitudes about childrearing, beliefs about consequences of maternal employment) relate to the use of non-maternal child care, the hours of child care use and the type of child care infants receive?

Method

Sample

The sample for this study was drawn from the Families, Children and Child Care study (FCCC; www.familieschildrenchildcare.org). Sampling centred on ante-natal clinics held in two

large hospitals in England, one in North London and one in Oxfordshire, each catering for a demographically diverse population. In addition, a number of community post-natal clinics were visited to reach more of the disadvantaged mothers in these areas, ensuring that the social class distribution of the sample reflected the areas as closely as possible (see Malmberg et al., 2005 for full details). Eligibility criteria for mothers were: aged 16 or over at the time of the child's birth, adequately fluent for interview in English, no specific plan to move in the next 2 years, and no plans to have their child adopted or placed in the care of social services. Eligibility criteria for children were: single birth, birth weight 2500 grams or more, gestation of 37 weeks or more, no significant congenital abnormalities, no more than 48 hours in a Special Care Baby Unit.

Researchers approached 1,862 mothers at recruitment (40.8% in hospitals and 59.2% in community clinics) of whom 217 (11.6%) were found to be ineligible for the study, either at the time of recruitment or once their infants had been born. Out of the remaining 1,645, 444 (27.0%) chose not to participate, making the final sample 1,201. Characteristics of the London and Oxford groups are presented in Table 1. Table 2 shows the numbers and characteristics of the families at 3 and 10 months (n=1,201 and 988 respectively).

To test whether attrition had significantly affected the demographic make up of the sample at 10 months, the 3 month and 10 month samples were compared on all characteristics reported in Table 1. For this analysis, the 3 month and 10 month samples were treated as separate groups and compared with independent samples tests. There were no significant differences, indicating that the characteristics of the sample before and after 'attrition' were similar.

To test whether attrition was systematic, a further more detailed analysis of those in the attrition group was conducted. Not surprisingly, this sub-group tended to be more disadvantaged

than the overall sample. For example, mothers who were not contactable at 10 months had lower educational qualifications (3.95 vs. 4.31; $t_{[1098]} = -2.72$; $p < .01$), smaller family income (£26,954 vs. £30,136; $t_{[172.3,\ \text{unequal variances}]} = -2.42$; $p < .05$) and they were more likely to belong to an ethnic minority group (31.9% vs. 19.8%; $\chi^2_{[1]} = 9.10$; $p < .01$). The attrition of more disadvantaged mothers in the FCCC study is similar to that of cohort studies in the UK (e.g. Bynner, Ferri , & Shepherd, 1997) but the low numbers who left the study meant that their absence did not lead to statistically significant differences between the 3 month and 10 month samples.

With regard to the distribution of ethnic groups and educational status, the attained sample was compared with the 2001 U.K. National Census (National Statistics, 2005) (see Table 1). The ethnic distribution in the attained sample slightly overrepresented ethnic minority groups in North London (FCCC 37% vs. 27% in Census) and underrepresented them in Oxfordshire (FCCC 5% vs. 12.9% in Census). The distribution of the mothers' occupational status was roughly equal to the national figures. When the distribution of the partners' occupational status was observed, the managerial and professional group was overrepresented. (Note that (i) 'managerial' includes anyone who manages/supervises others, even one or two clerical workers; and (ii) 116 mothers who were single at 3 months did not report their partners' occupational status).

An index of Neighborhood Poverty (Child Poverty Index [CPI]; Noble et al., 2000) was available for 1,170 mothers. The CPI is a published aggregate measure of the proportion of families with 0-16 year old children within an electoral ward (census tract), who claim means-tested financial benefits (e.g., income support, family credit, and disability working allowance). In the CPI, a higher value indicates more deprivation (Noble et al., 2000; see also Malmberg et

al., 2005). When comparing the FCCC families with the national average-, median-, and quartile-CPI scores (see Table 1), results showed that the North London families lived in more deprived areas than the national figures indicate, while the Oxfordshire families lived in less deprived areas.

[insert Table 1 and Table 2]

Procedures for Data Collection

Mothers and infants were visited at home when the infants were 3 and 10 months old. In addition to a semi-structured interview, the mothers were asked to complete questionnaires about themselves and their infants. (Fathers also completed these questionnaires; they will be reported in later publications.)

Measures

Demographic characteristics. A structured interview was developed for the study with questions covering a range of demographic factors including family structure, ethnic background, languages spoken, employment of mother and father, education, income, housing and neighbourhood poverty. Other questions covered social support, use of child care, child and family health, and infant care practices.

Based on the 2001 U.K. National Census (National Statistics, 2005), mothers' ethnic backgrounds were categorised into three separate variables: Black (Caribbean, African and Other; 9.6%), Asian (Indian, Pakistani, Bangladeshi, Chinese and Other; 4.7%), and Mixed or Other (2.7% 'Mixed' and 4.0% 'Other'). White (79.0%) was used as the baseline category.

Furthermore, whether the mothers spoke English fluently (0 = English spoken fluently, 1 = English not spoken fluently) was coded following the guidelines created by the British Government for use on pupils in schools (4-point Checklist; Hester, 1990). Finally information was collected on whether mothers were in a partnership or single (0 = has named partner, 1 = single).

Based on information provided at the 3 month interview and using categories from the U.K. Department for Education and Skills (DfES), parental education was coded on a 6-point scale: 1 = no qualifications or vocational qualifications at age 16[2] (e.g. qualifications for specific jobs such as clerical work, hairdressing), 2 = academic qualifications at age 16 (General Certificate of Secondary Education), 3 = vocational qualifications at age 18, 4 = academic qualifications at age 18, 5 = undergraduate degree, 6 = higher degree such as MSc or above.

Maternal employment prior to maternity leave (or most recent/current employment) was recorded. Mothers' and partners' occupational status, reported at the 3 month interview, was based on the Socio-Economic Class index (SEC; Elias, Halstead , & Prandy, 1993; Rose & O'Reilly, 1998), and classified into three groups: 1 = working class occupations (e.g. factory work or low level job in service industries), 2 = intermediate occupations (e.g. secretary, data entry), 3 = managerial and professional (e.g. the professions, senior management jobs, supervisory positions). Following the guidelines of the English Socio-Economic Class index, those mothers who had never worked were categorised as 'unemployed' and included in the working class group (n=258). If a parent had left employment less than a year before the birth of the baby, they were coded in the category of the previous job.

The extent of Adverse Living Conditions at 3 months was based on five aspects of home circumstances: living in rented accommodation, having a shared bathroom or kitchen, having no

[2] Note that 16 is the official age for leaving school in the UK.

garden/outdoor space, having more than four stairs to reach the entrance, having no car or access to a car, a living density of 1.5 or more persons per room (0=no, 1=yes). A higher value indicated more adversity.

The mothers' and partners' annual net incomes were established through structured questions.

Britain has a newly developed index of childhood poverty (Child Poverty Index, CPI; Noble et al., 2000) which is based on administrative information collected in all English wards (8,418) and measures the proportion of families with 0-16 year old children within a ward who claim means-tested payments/benefits (income support, job seekers allowance, family credit and disability working allowance). In line with the Pungello and Kurtz-Costes model (1999) the Child Poverty Index enabled us to include an indicator of disadvantage on the community level, called neighbourhood poverty.

Child characteristics. To describe their children's temperament, mothers completed two subscales from the Infant Characteristics Questionnaire (ICQ; Bates, Freeland , & Lounsbury, 1979). The original scale was developed to describe infant temperament at 6 months; however, in this study two of the subscales (fussy temperament, non-adaptable temperament) were used for assessing the children at 3 months. Some vocabulary was adapted to fit the English context (e.g. 'nappies' instead of 'diapers'). 'Fussy temperament' consisted of six items (e.g. "How much does your baby cry and fuss in general?") with the response options: 1 = very little, much less than an average baby; 4 = average amount, about as much as an average baby; 7 = a lot, much more than an average baby. The scale 'non-adaptable temperament' was based on four items (e.g., "How well does your baby adapt to things eventually?") with the response options: 1 = very well, always likes it eventually; 4 = ends up liking it about ½ the time; 7 = almost always

dislikes it in the end. Higher values on the scales indicate higher levels of fussiness and lack of adaptability respectively. The internal consistencies were $\alpha = .80$ for fussiness and $\alpha = .62$ for non-adaptable temperament.

Information was collected on the children's birth order (0 = later born, 1 = first born) and gender (0 = boy, 1= girl). Finally, information on mothers' age was collected and included in all models.

Maternal psychological characteristics. Mothers completed the Parental Modernity Scale (PMS; Schaefer & Edgerton, 1985) which assesses attitudes toward child rearing. The instrument consists of two sub-scales: 'Traditionalism' (e.g. "children should always obey their teacher"; 22 items; $\alpha = .89$) and 'Progressivism' (e.g. "children learn best by doing things themselves rather than listening to others"; 8 items; $\alpha = .84$). Items were scored on a five-point scale (1 = strongly disagree, 5 = strongly agree).

Mothers also completed a shortened form of the attitude scale Beliefs About the Consequences of Maternal Employment for Children (BACMEC; Greenberger et al., 1988). In order to place fewer burdens on respondents, 11 of the complete scale's 24 statements were used. The 11 items selected were deemed to be the most relevant to parents of very young children and could also be completed by first-time parents with no experience of older children. As with the full scale, two scores were derived: 'Benefits of maternal employment for children' (e.g. "children whose mothers work are more independent and able to do things for themselves"; 5 items; $\alpha = .77$) and 'Cost of maternal employment for children' (e.g. "children are less likely to form a warm and secure relationship with a mother who is working full time"; 6 items; $\alpha = .86$). Each item was administered on a six-point response scale (1 = strongly disagree, 6 = strongly agree). Details of the amended scale are available on request.

Dominant form of child care. When the infants were 3 and 10 months old, mothers were asked about the hours of child care and their child care arrangements. Children were classified as receiving non-maternal child care if they spent 12 or more hours a week in any of the seven types of child care: father, grandparent, other relative, friend, childminder, nanny, nursery centre. Father care was defined as father in sole charge of the infant. In order to enable a closer comparison with the NICHD findings, and because the current study was about *non-maternal* care, father care was treated as a separate group of child care, similar to other child care arrangements. Grandparent care or that by other relatives (e.g. the child's aunt) or a friend of the family can take place in the child's or the carer's home. Depending on the personal agreements with the family, it can be rewarded by payment or not. In contrast, childminders (who generally have children of their own) are paid to care for children in their own homes, with limits on the number of children they can care for, depending on the age of each child. They are registered and regularly inspected by the Office for Standards in Education (Ofsted). Nannies on the other hand are not subject to any regulations in the UK (at the time of the study though, this is now being planned); they are employed privately by the family and work in the infant's home, some coming daily and others living on the premises. Nurseries are all subject to registration and inspection by the Office for Standards in Education.

Types of child care at 3 and 10 months were categorised into the *dominant* non-maternal child care according to the following formula: one carer for 12 hours or more = the dominant form; if two or more types together totalling 12 hours or more, the type of care with the most hours (but at least 8) = the dominant type; equal hours for 2 types (each above 8 hours), the care most different from the home care = the dominant type. The percentages of children in each type of non-maternal child care at 3 and 10 months are presented in Table 3a (together with

comparable percentages on use of different types of child care at the end of the 1st year in the NICHD, 2001). The numbers of hours children spend in each type of child care are presented in Table 3b.

[insert Table 3a and Table 3b]

Data Analysis Strategy

All variables were screened for outliers and 'normalised' where appropriate (Tabachnick & Fidell, 2001). Missing values (1.8% of demographic variables and constructs) were replaced through the EM-algorithm available in the SPSS software (SPSS, 1997), using the full range of demographic variables and psychometric constructs available in the 3-month dataset as predictors of the missing data points (not all those variables were included in the analysis here; see also Schafer & Graham, 2002; Table 2).

In a series of pre-analyses of collinearity between the demographic variables, parental education, socio-economic class and income were found to overlap to an unacceptable degree such that including the three constructs simultaneously in a multiple regression analysis altered the tolerance parameters[3]. Hence, an aggregate score was composed of these standardised (z-scored) indicators; the composite variable was named 'family socio-demographic background'.

[3] Several alternative models were tested on the data: Models including (a) maternal educational level and socioeconomic class, and (b) maternal educational level and income were estimated separately and yielded compatible results. Additionally, in separate models educational level, socioeconomic status and income were either dummy-coded, squared and included as interaction effects in conjunction with other variables, but, again, yielded similar results.

Logistic and ordinary least square multiple regression models were applied to investigate whether demographic and maternal characteristics predicted use, quantity and type of child care. Two models were run at each step to compare which factors explain use, amount and type of care for children at 3 months (who entered child care between 0-3 months) and children in care at 10 months (who entered child care between 4-10 months). The predictors were entered in three blocks; they were chosen on the basis of theory and previous literature: (1) socio-demographic characteristics (2) mother and child characteristics, and (3) maternal attitudes. Because of the small number of people using the different types of care, the model predicting type of care at 3 months could only include a restricted number of predictors. Co-variates for the model were therefore chosen on the basis of significant bi-variate correlations with the outcome categories. Previous studies have argued against including variables as predictors of child care which may be *consequences* of child care use (e.g. maternal employment; Singer et al., 1998). In line with this, mothers' employment and children's age when the mother stopped breast feeding were not included in the statistical models as predictors.

Results

Use of Non-Maternal Child Care

At 3 months, only 8.4% of the children were in non-maternal child care. However, there was a large increase in the use of non-maternal child care between 3 and 10 months and at 10 months, 47.1% of children were in some form of child care (Table 3a). The average age of entry among those in child care in their 1st year was 5.3 months (*SD* = 2.24 months).

Logistic regression analysis (Table 4) was carried out to predict use of child care; different models were run to compare the group of children in care at 3 months and the group of

children in care at 10 months, excluding all those already using child care at 3 months. This enabled us to compare the characteristics of infants/families who were 'early' or 'late' starters in the first year.

Amongst the *child characteristics,* only birth order related to use of non-maternal child care: at 10 months, first born children were approximately twice as likely as later borns to experience non-maternal child care. Gender and temperament were not related to the use of non-maternal care in either group.

Socio-demographic characteristics were strongly related to the use of non-maternal child care in both the 0-3 month and the 4-10 month groups. Mothers from a lower socio-demographic background were more likely to use non-maternal care when their infants were 3 months old. For the group starting child care later (4-10 months), the socio-economic pattern had changed; now mothers of higher socio-demographic background, and mothers whose first language was English were more likely to use child care. Finally, for the later starters, Asian mothers were twice as likely as White mothers to use non-maternal care.

Psychological factors were also related to the use of non-maternal child care. At both time points, mothers who believed that maternal employment was beneficial for the child (the BACMEC: benefits) were more likely to use child care, while mothers who believed that maternal employment was costly to their child (the BACMEC: costs) were less likely to use non-maternal child care.

[insert Table 4]

Child Care Hours

The second pair of regression models (Table 5) investigated which child characteristics, socio-demographic factors and psychological factors related to the number of hours in non-maternal care. Again two models were run to compare the group of children who started between 0-3 months with the group of children who started between 4-10 months.

For the children in care at 3 months, only one factor independently predicted their hours in child care: infants whose temperament was judged to be non-adaptable received more hours of non-maternal care.

For the children in care at 10 months, the strongest predictors of more hours of child care were psychological factors; children received more hours of child care if their mothers believed in more benefits and fewer costs of maternal employment. Families with higher scores on their socio-demographic background used non-maternal child care for more hours. Mothers who lived in a *more* disadvantaged neighbourhood also used non-maternal child care for more hours, a puzzling finding which is discussed later. Other predictors of more hours of child care included Asian mothers, and infants judged by their mothers at 3 months to have a fussy temperament.

[insert Table 5]

Types of Non-Maternal Child Care

Finally, child characteristics, socio-demographic factors and psychological factors were investigated as they relate to the type of care selected (Table 6). To address this issue, multinomial regression models were conducted.

Due to the small numbers of children experiencing child care at 3 months (see Table 3), two composite categories of type of care were formed. Childminders, friends, nannies and nurseries were merged into one group called 'non-familial' care (n=37), while grandparents and relatives were merged into one group of 'familial' care (n=34). Fathers were treated as a separate group of non-maternal carers (n=30). This enabled a comparison of factors related to care by fathers with factors related to care by other relatives. It also enabled comparing all non-familial care with care by non-paternal relatives. To reduce the number of co-variates in the model, only variables which had shown significant bi-variate correlations with the outcome categories were included; these were: family socio-demographic background, mother age, child birth order, child temperament (unadaptable), mother parenting attitude (progressivism) and mother beliefs about the costs of childcare.

At 3 months, families were more likely to use care by a family member (grandparent, relative) rather than non-familial care if they were from a lower socio-demographic background and if the mother believed in more costs of maternal employment. If the mother's child rearing attitudes were more progressive, families were more likely to choose grandparent and relative care rather than non-familial or father care. Finally, families were more likely to use care by a family member rather than father care if the children were first borns.

For 10 months, a similar multinomial model was constructed (Table 7). However, at this time point there were sufficient numbers of children in the different types of child care to carry out more detailed comparisons. Because of small numbers, relatives were merged with grandparents and friends with childminders.[4] Childminders and friends were selected as the

[4] During interviews with childminders and friends the possibility emerged that a substantial number of "friends" were actually receiving pay but did not wish to formally acknowledge it to authorities. This allowed for the merging of this category with the category "childminders", bearing in mind that some of the "friends" caring for children may have been doing so without payment.

constant comparison target. Results showed that families from lower socio-demographic backgrounds were more likely to use father or grandparent/relative (familial care). Compared to first borns, later born children were more likely to experience father care than care by childminders and friends. The same was true for children with families who lived in poorer neighbourhoods, and children whose mothers thought that employment was costly for their child. Finally, children whose parents had traditional childrearing attitudes were more likely to experience care by fathers or nannies.

[insert Table 6 and 7]

Discussion

It has been argued that differential use of child care is best explored through a 'social ecological' model that includes measurements at child, family and community level. We will summarise these findings and discuss them in the context of the macro-environment of institutions and policies. Statistical models presented earlier show that factors on all levels are related to choices: (1) *Use* of child care was related to child age, birth order, family socio-demographic background, ethnicity and maternal beliefs about benefits and costs of employment for the child. (2) The numbers of *hours* children spent in child care were related to child temperament, family socio-demographic background, neighbourhood poverty, ethnicity and maternal beliefs. (3) Finally, *type* of child care selected was related to birth order, family socio-demographic background, neighbourhood poverty, and, maternal beliefs and attitudes. The findings will be compared with the U.S. large scale study on early child care (NICHD) and considered in the light of national policies.

Child Factors Related to Use, Hours and Type of Non-Maternal Child Care

Child age. Not surprisingly, the use of child care varied with children's age and this was linked to an increase of maternal employment in the first year. At 3 months, 14.1% of mothers in this study were working and 8.4% of children were in child care; at 10months, 59.5% of mothers were working and 47.1% of children were in child care. (The lower proportion of child care use was partly due to mothers working part time, thus having low hours of child care and failing to reach our 12 hour criterion.) In the US, the infants in the NICHD study were experiencing higher rates of non-maternal care, for more hours and earlier in their first year (NICHD, 2001). While children in the US enter child care on average at the age of 3 months, this English study showed that at this point, only 8.4% of children experienced non-maternal child care. In fact the average age of starting care in England was 5.3 months. By the end of the children's first year, differences in child care use between the U.S. and the English samples are still notable: 47% of children in the English study (at 10 months) and 68% of children in the NICHD study (at 12 months) were in some form of non-maternal child care (NICHD, 2001). In the English sample, infants began their non-maternal care with an average of 30.4 hours per week, which is similar to the NICHD study (28 hours/week; NICHD, 2001) (see Table 3b). Finally, in both the U.S. and the English study, children were more likely to start non-maternal child care in some kind of informal care, often with relatives, including the father.

Differences between the US and England in child care use and age of onset may be related to two features in the English welfare system: national statutory paid maternity leave and assistance from the state for single parents who remain at home. The large increase in the use of child care between 4 and 10 months in England probably reflects the end of statutory maternity leave (which was 18 weeks at the time the study).

Child temperament. Most strikingly, the current study showed that children's temperament related to the number of hours of care they experienced. Infants with a more difficult temperament experienced more hours of non-maternal child care. When mothers described their infants as 'non-adaptable' at 3 months, they had more hours of care during the same period; if their mothers described them as 'fussy' at 3 months, they had more hours of care later on when they were 10 months. Do these results suggest that parents opt for more working hours and the use of more child care as a *consequence* of having more 'difficult' children? While this seems a possible explanation, these findings have to be treated with caution. First, the temperament sub-scale 'infant non-adaptability' had low internal consistency – possibly because it was originally developed for slightly older children. Second, mothers use more child care probably because they work for more hours. This double responsibility of work and child care might lead to increased stress levels which can affect maternal tolerance for certain infant behaviours. Thus it seems possible that mothers' higher scores on child 'fussiness' and 'non-adaptability' reflect mothers' lower tolerance rather than infants' 'difficult' behaviour itself.

Birth order. Birth order was not related to the use of child care for the children in care at 3 months. However, for the families starting child care between 4 and 10 months, first borns were more likely to experience child care than later borns. Birth order related to the types of care in both groups: at 3 months, first borns were more likely to experience care by their grandparents and relatives (rather than their father); at 10 months, they were more likely to experience care by childminders and friends (rather than care by fathers or in nurseries). These results are in line with the NICHD findings, where children from the smallest families (thus earlier born children) were most likely to enter child care in the period between 3 and 5 months, and children with fewer siblings received less father care (NICHD, 1997b).

Socio-Demographic Factors Related to Use, Hours and Type of Non-Maternal care

Socio-demographic characteristics. Socio-demographic characteristics were strongly related to decisions about non-maternal child care. Families opting for non-maternal care at 3 months came from lower socio-demographic backgrounds (lower educational, occupational and income levels). At 10 months, this pattern had reversed and children of more advantaged families were more likely to use child care and to place their children in child care for more hours. Perhaps because maternity leave and Statutory Maternity Pay were available to mothers for at least 4 months following the birth of the baby, only a small minority in this study used non-maternal child care as early as 3 months and those who did had lower income and educational levels. By 10 months, with statutory maternity leave over and many mothers returning to work (59.5%), about half the children were receiving 12 or more hours a week of non-maternal care and these included a substantial number of infants of well-educated parents with high incomes and occupations in the managerial and professional groups. In fact, the families using child care towards the end of the baby's first year were more likely to have household incomes of £25,000 ($45,500) or above.

The NICHD (1997b, 2001) found a similar trend in the US, but in the English study, the shift to child care occurred at a later point in the first year with mothers from higher socio-demographic status more likely to delay placing their infant in child care until (at least) the second half of the first year. It seems likely that the delayed onset of child care in the UK, particularly in the middle classes, is related to government policies of guaranteed return to their job. Only the more affluent families ware able to afford a delayed return to work beyond the period covered by Statutory Maternity Pay.

Comparable with results of the NICHD study (1997b, 2001), the current study found that disadvantage factors are powerful predictors of *type* of care: more advantaged families were more likely to use non-familial care while more disadvantaged families were relying more on care by relatives. In recent years, much has been done in England to provide registered child care for disadvantaged families (Sylva & Pugh, 2005). However, families with lower incomes still rely more on unpaid child care arrangements with their relatives than families with higher incomes, a fact that might reflect disadvantaged families' financial pressures as well as their beliefs in what is good for their children's development (Erdwins & Buffardi, 1994).

Neighbourhood poverty. Interestingly, mothers who lived in a more disadvantaged neighbourhood (as measured by socio-economic factors related to their neighbourhood) used non-maternal child care for more hours, although more hours were positively related to family socio-demographic background (as measured through interview on individual family circumstances). This finding seems puzzling at first but may be explained by some wealthier families who live in middle-class 'pockets' in disadvantaged neighbourhoods. The post codes of these families scores high on the Child Poverty Index for their neighbourhood, while in fact they have higher SES than their poorer neighbours. In terms of child care hours, these more affluent families living in poorer communities act more like their affluent peers in advantaged communities than like their economically disadvantaged neighbours.

Language and ethnicity. To complete the picture of advantaged families starting to use non-maternal care after 3 months, it should be noted that for the English study the Asian ethnic group was more likely to use child care at 10 months than other ethnic minorities or the majority of European families. Furthermore, they experienced more hours of care. This finding is interesting in that in the US as well as in England, research demonstrates more hours in child

care for children from ethnic minority families after controlling for language, poverty, education and family size.

Mother age and family structure. Similar to the NICHD study, this study showed that mothers' age did not influence their child care decisions, and single motherhood did not relate to mothers' decisions on child care entry or on the amount of care children experienced.

Maternal Psychological Factors Related to Use, Hours and Type of Non-Maternal Child Care

Beliefs in risks and costs of employment. Attitudes to the consequences of maternal employment on the child's development accounted for much of the variability in the use and amount of specific types of child care in both the US and in England. In both countries, mothers who believe their employment benefits their children and has fewer negative consequences ('costs') for them, are more likely to choose child care and to use it for more hours. Beliefs about costs of child care also relate to the type of child care selected. In both the U.S. and the English study, mothers who thought maternal employment was costly for the child were more likely to use care by fathers, grandparents, and other relatives.

Child-rearing attitudes. In contrast to the U.S. study, where more traditional attitudes were related to more hours of non-maternal child care (NICHD, 1997b), this study found that attitudes towards child rearing were unrelated to use or hours of child care. However, in the English study, attitudes towards child-rearing related to the type of child care selected and mothers who held more progressive child-rearing attitudes were more likely to use care by grandparents and other relatives (3 months) and father care (10 months).

Conclusions and National Contexts

Factors related to the use and choice of child care type in England requires an analysis at micro (individual), exo (family) and macro (community) levels. Non-maternal child care in an English context tends to begin later than the NICHD reports (1997a), probably because of different policies on maternity leave and better government support in the UK for mothers to remain at home. Government plans to lengthen maternity leave in the UK will almost certainly delay the start of child care in this country. This will demonstrate how sensitive the onset of child care is to social/economic policy which may override other factors such as child's age or maternal attitudes. The many similarities between this study and the NICHD were also interesting, especially as they relate to child characteristics (e.g. birth order) and maternal factors (e.g. attitudes). What varies most between countries, are employment and welfare policies. There may also be variations according to the types of care available in different countries. A similarity between the NICHD and the English study is the relative distribution of types of purchased care with nursery and childminders being used far more than nannies in both countries. However, in the English study the percentage of children being cared for by childminders is smaller than in the US and this pattern is reversed for nursery care, with English families using more care of this type than families in the US. Furthermore, in non-purchased care, the NICHD reports a higher percentage of father care and a lower percentage of grandparent and relative care as compared with England. The greater geographic mobility of U.S. families may explain these differences.

A limitation of the study is that the sample was not fully representative of the U.K. population; in terms of paternal socio-economic status it overrepresented the higher groups. A second limitation of this study is that factors related to use, amount and type of child care were

only investigated cross-sectionally at two time points: at 3 months for the group of children starting non-maternal care very early, and at 10 months for the group of children starting non-maternal care later. Third, the paper does not include any information on availability and quality of the child care provisions chosen by families. Fourth, the correlational nature of the study makes it impossible to infer directional or causal mechanisms. While in the analyses presented here variables such as child temperament or maternal beliefs and attitudes at 3 months were used to predict decisions on child care use, amount, or type (at 3 and 10 months), these relationships may not be causal. Finally, the analysis could be further strengthened by statistical models which predict onset of non-maternal care (survival analysis) and further papers will explore this.

Overall, the large scale of the study allowed a comprehensive investigation into the use of child care, including a wide array of family and child variables. Complex statistical models estimated the contribution of child, family and community variables on family decisions. Also, the current study included formal as well as informal care arrangements. In line with ecological theory, variations in families' child care decisions were shown to be related particularly to the children's ages, the families' socio-economic circumstances, and maternal attitudes and beliefs about childrearing and the risks and costs of employment. In sum, child, family, and psychological factors contributed independently to explanatory models for use, amount, and type of care children experience in their first year of life.

The study has expanded our knowledge of factors relating to differences in English children's experiences of child care in their first year. Knowledge on this issue is important, because parents shape their children's development not only through direct interaction and stimulation in the home, but also in their decisions about non-maternal care (Singer et al., 1998). An increasing number of children experience non-maternal care in their first year of life and, in

terms of decision in family and child care policy, it is crucial not only to learn how child-care factors relate to children's development, but also how parents' take their decisions on care arrangements. In a next step, the longitudinal design of the study will allow an investigation of how non-maternal care factors and the home environment interact in affecting children's development.

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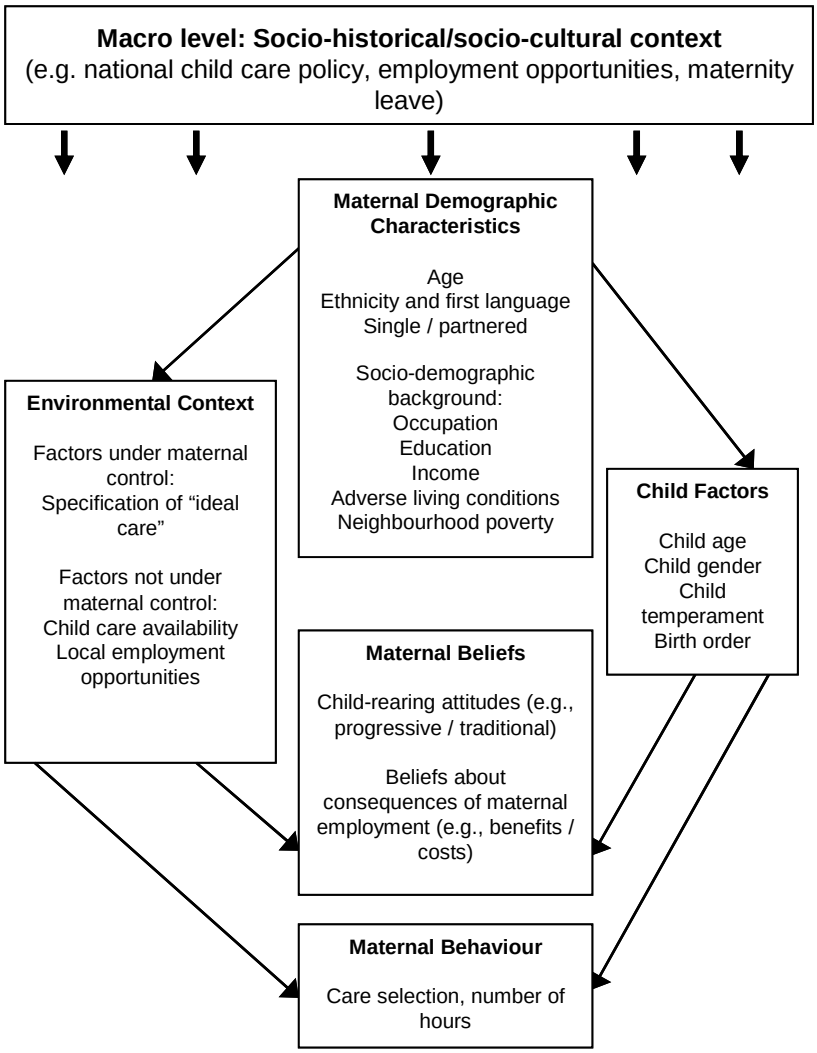

Figure 1. Contextual model of child care use (adapted from 'Influences on child care selection' in Pungello & Kurtz-Costes, 1999).

Table 1.

Sample Characteristics of the Families, Children and Child Care (FCCC) Study (n = 1,201)

	North London			Oxfordshire			All FCCC		England[f]
	FCCC		Census[d]	FCCC		Census[e]			
Ethnic group[a]	*N*	*%*	*%*	*N*	*%*	*%*	*N*	*%*	*%*
White	378	63.0	73.0	571	95.0	95.1	949	79.0	90.9
Black	110	18.3	12.6	5	0.8	0.8	115	9.6	2.3
Asian	41	6.9	8.9	16	2.7	2.4	57	4.7	5.0
Mixed/Other	71	11.8	5.5	9	1.5	1.7	80	6.7	1.8
Total	600			601			1201		
Socio-Economic class[b] *of Mothers*									
Working class	232	38.7	34.7	249	41.4	34.3	481	40.0	42.2
Intermediate	116	19.3	20.6	105	17.5	24.8	221	18.4	24.5
Managerial and professional	252	42.0	44.7	247	41.1	40.9	499	41.5	33.3
Total	600			601			1201		

Socio-economic class[b] *of*									
Fathers									
Working	162	30.9	32.9	165	29.5	34.4	327	30.1	41.5
Intermediate	90	17.1	18.3	76	13.6	17.9	166	15.3	19.3
Managerial and professional	273	52.0	48.8	319	57.0	47.7	592	54.6	39.2
Total	525			560			1,085		
Neighbourhood poverty[c]									
Mean	38.6			20.9			29.5		26.7
Median	38.7			17.5			26.6		22.5
SD	16.4			13.3			17.3		17.0
25%-ile	24.0			10.1			14.7		13.1
50%-ile	38.7			17.5			26.6		22.5
75%-ile	51.1			30.2			45.0		37.4

Note: [a] = The National Census Classification (National Statistics, 2005) of ethnic group is: White (including White-British, White-Irish, White-Other), Black (including Black or Black British African, Black or Black British Caribbean, Black or Black British Other),

Asian (including Asian or Asian British Indian, Asian or Asian British Pakistani, Asian or Asian British Bangladeshi, Chinese, Asian or Asian British Other) and Mixed / Other (including White and Black Caribbean, White and Black African, White and Asian, Other Mixed, Other ethnic group). [b] = The Socio-Economic Classes (SEC; Elias, Halstead & Prandy, 1993; Rose & O'Reilly, 1998), was used: Working class includes unskilled labour, semi-routine and routine occupations and long-term unemployed; Intermediate class includes clerical, service, small scale employers and own account workers; and Managerial and professional class including large employers and managers, professionals, associate professionals (ancillaries to professionals), small managers and higher supervisors. [c] = The Child Poverty Index (CPI; Noble et al., 2000) is based on administrative information from all 8,414 wards in England and was used as a neighbourhood poverty index, measuring the proportion of families with 0-16 year old children within a ward who claim means tested benefits, a higher value indicating more deprivation (see also www.FamiliesChildrenChildCare.org). [d] = Census information was derived for four North London recruitment areas. [e] = Census information is for Oxfordshire county. [f] = Census information for England (i.e., excluding information for Wales, Scotland and North Ireland).

Table 2.

FCCC Sample at 3 and 10 Months

	3 months (*n*=1,201)		10 months (*n*=1,077)	
	M / %	SD	M / %	SD
Socio-demographic characteristics (3 months)				
Adverse living conditions	0.67	0.97	0.63	0.93
Neighbourhood poverty	29.5	17.1	29.2	16.9
Two-parent household (% two-parent)	90.3		90.5	
Mother's educational level	4.2	1.3	4.3	1.3
Partner's educational level	4.3	1.4	4.3	1.4
Mother's socio-economic class	2.0	0.9	2.0	0.9
Partner's socio-economic class	2.2	0.9	2.3	0.9
Family income at 3m (£)	29,466	17,491	29,714	17,734
Family socio-demographic background (z-score)	-0.04	0.76	-0.02	0.77
Ethnic group: Minority (%)	21.0		19.9	
Ethnic group: Black (%)	9.6		9.1	
Ethnic group: Asian (%)	4.7		4.5	
Ethnic group: Mixed and Other (%)	6.7		6.2	
First language (% not English)	13.7		12.3	
Maternal and child characteristics				
Mother's age	31.0	5.27	31.1	5.26
Child's birth order (% first born)	51.3		51.3	

Child gender (% girl)	50.1		49.9	
Child temperament: Fussy	3.10	0.95	3.11	0.95
Child temperament: Unadaptable	2.45	0.93	2.43	0.93
Maternal attitudes: Progressivism	3.94	0.74	3.94	0.74
Maternal attitudes: Traditionalism	2.91	0.69	2.89	0.69
BACMEC: Benefits	3.70	0.72	3.70	0.72
BACMEC: Costs	2.99	0.96	2.99	0.95

Table 3a.

Dominant Forms of Non-Maternal Child Care at 3 and 10 Months, by Care Type

	FCCC 3 months		FCCC 10 months		FCCC and NICHD End of 1st year	
Care type	*N*	% of all children	*N*	% of all children	FCCC % of children in child care (*N*=507)	NICHD % of children in child care (NICHD, 2001)
Sole maternal care	1,100	91.6	570	52.9		
Non-maternal care						
Father	30	2.5	75	7.0	14.7	23
Grandparent	29	2.4	117	10.9	23.5	21
Relative	5	0.4	28	2.6	5.5	(Grandparents/Relatives)
Friend	6	0.5	12	1.1	2.4	-

Childminder	16	1.3	119	11.0	23.5	27
Nanny	10	0.8	45	4.2	8.8	12
Nursery	5	0.4	111	10.3	21.9	17
Total non-maternal care	101	8.4	507	47.1		
Total children	1,201	100.0	1077	100.0		

Note: Types of child care at 3 and 10 months were categorised into the dominant non-maternal child care according to the following formula: one carer for 12 hours or more = the dominant form; if two or more types together totalling 12 hours or more, the child care with the most hours, but at least 8 = the dominant type; equal hours for 2 types (each above 8 hours), the care most different from the home care = the dominant type.

Table 3b.

Child Care Hours at 3 and 10 Months, by Care Type

	3 months			10 months		
Care type	*N*	*M*	*SD*	*N*	*M*	*SD*
Sole maternal care	1,100			570		
Non-maternal care						
Father	30	22.8	12.3	75	25.8	10.0
Grandparent	29	31.8	19.1	117	28.4	12.6
Relative	5	33.8	11.0	28	30.4	12.5
Friend	6	17.3	5.4	12	24.4	7.1
Childminder	16	28.9	9.1	119	28.3	11.3
Nanny	10	35.2	15.8	45	35.3	13.4
Nursery	5	30.6	9.7	111	30.5	10.8
Total non-maternal care	101	30.4	15.3	507	30.6	11.6
Total	1,201			1,077		

Note: Types of child care at 3 and 10 months were categorised into the dominant non-maternal child care according to the following formula: one carer for 12 hours or more = the dominant form; if two or more types together totalling 12 hours or more, the child care with the most hours, but at least 8 = the dominant type; equal hours for 2 types (each above 8 hours), the care most different from the home care = the dominant type.

Table 4.

Predictors of Use of Non-Maternal Child Care, for the Children in Care at 3 Months and the Children in Care at 10 Months (who Started Care After the Age of 3 Months) Using Odds Ratios (OR)

	3 months		10 months	
Variables	*n*=1201		*n*=988[a]	
Socio-demographic characteristics (3 months)	*OR*	*p*	*OR*	*p*
Adverse living conditions	0.90		0.85	
Neighbourhood poverty	0.99		1.00	
Two-parent household	1.20		1.21	
Socio-demographic background (higher z more advanced)	0.58	**	1.59	***
Ethnic group: Black (African, Caribbean, Other)	1.00		1.02	
Ethnic group: Asian	0.68		2.40	*
Ethnic group: Mixed and Other	0.96		1.56	
First language (0=English, 1=not English)	0.85		0.59	*
Maternal and child characteristics (3 months)				
Mother age	0.97		1.02	
Child birth order (0=later born, 1=first born)	1.29		2.00	***
Child gender (0=boy, 1=girl)	1.52		0.97	
Child temperament: Fussy	0.83		1.18	
Child temperament: Unadaptable	1.00		1.08	

Maternal attitudes (3 months)				
Progressivism	1.30		0.98	
Traditionalism	1.03		1.01	
BACMEC: Benefits	1.79	***	2.16	***
BACMEC: Costs	0.74	*	0.51	***
Cox & Snell *R* Square	0.04		0.23	
Nagelkerke *R* Square	0.09		0.31	
-2*LL* ($\square^2$)	50.59	***	1100.49	***

Note: Last step of logistic regression model presented in the table. For variable description see footnotes in Table 1. *OR*=Odds-Ratio. Odds-ratios below 1 indicate that the likelihood of belonging to the response category (1) is lower, and odds-ratios above 1 indicate that the likelihood is higher.

[a] reduced 10 month sample (excluding children starting care between 0-3 months)

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table 5.

Predictors of Use of Hours of Non-Maternal Child Care for the Children in Care at 3 Months and the Children in Care at 10 Months (who Started Care After the Age of 3 Months) Using Multiple Regressions

	3 months		10 months	
Variables	*n*=1,201		*n*=988[a]	
Socio-demographic characteristics (3 months)	β	*p*	β	*p*
Adverse living conditions	0.09		-0.03	
Neighbourhood poverty	0.03		0.12	**
Two-parent household	0.16		-0.04	
Socio-demographic background (higher z more advantaged)	0.07		0.15	*
Ethnic group: Black	0.13		0.07	
Ethnic group: Asian	0.20		0.12	*
Ethnic group: Mixed and Other	-0.01		-0.01	
First language (0=English, 1=not English)	0.19		0.06	
Maternal and child characteristics (3 months)				
Mother age	0.09		0.04	
Child birth order (0=later born, 1=first born)	0.15		0.02	
Child gender (0=boy, 1=girl)	-0.12		-0.05	
Child temperament: Fussy	-0.17		0.13	*
Child temperament: Unadaptable	0.37	**	-0.07	

Maternal attitudes (3 months)			
Progressivism	0.18	-0.02	
Traditionalism	0.02	0.07	
BACMEC: Benefits	0.13	0.16	***
BACMEC: Costs	-0.14	-0.24	***
Adjusted R^2	0.22	0.16	

Note: Last step of regression model presented in the table. Beta (β) is the standardized coefficient.

[a] reduced 10 month sample (excluding children starting care between 0-3 months)

* = p<.05; ** = p<.01; *** = p<.001.

Table 6.

Predictors of Non-Maternal Child Care Types at 3 Months, Among 101 Children in Care using Multinomial Regression (Grandparental and Relative Care as Comparison Group)

Variables	Fathers (*n*=30) vs Grandparents & Relatives (*n*=34)		Non-familial (*n*=37) vs. Grandparents & Relatives (*n*=34)	
Socio-demographic characteristics (3 months)	*OR*	*p*	*OR*	*p*
Socio-demographic background (higher z more advantaged)	0.82		3.73	*
Maternal and child characteristics (3 months)				
Mother age	1.10		1.07	
Child birth order (0=later born, 1 = first born)	0.13	**	0.46	
Child temperament: Unadaptable = higher score	0.89		0.99	
Maternal attitudes (3 months)				
Progressivism	0.05	***	0.14	*
BACMEC: Costs	0.92		0.49	*
Cox & Snell *R* Square	0.43			
Nagelkerke *R* Square	0.48			
-2*LL* (c2)	56.23	***		

Note: *OR* = Odds-Ratio. The overall model predicted 68.3% correct category, and 63.3% of fathers, 70.3% of grandparents and relatives, and 70.6% of non-familial care.

[a] = Many of the cells were empty when entering the separate ethnic minority categories into the regression model; hence a cruder dummy variable was used (1 = Ethnic Minority).

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table 7.

Predictors of Non-Maternal Child Care Types at 10 Months, Among 443 Children Starting Care Between 4 and 10 Months Using Multinomial Regression (Childminder and Friend Care as Comparison Group)

Variables	Fathers (62) vs. Childminders and Friends (*n*=116)		Grandparents & Relatives (123) vs. Childminders and Friends (*n*=116)		Nannies (37) vs. Childminders and Friends (*n*=116)		Nursery (105) vs. Childminders and Friends (*n*=116)	
Socio-demographic characteristics (3 months)	*OR*	*p*	*OR*	*p*	*OR*	*p*	*OR*	*p*
Adverse living conditions	1.34		0.94		1.11		1.43	
Neighbourhood poverty	1.03	*	1.02		1.01		1.01	
Two-parent household	2.71		1.89		1.08		0.52	
Socio-demographic background (higher z more advantaged)	0.13	***	0.13	***	0.45	*	2.62	
Ethnic group: Black	0.34		0.86		0.92		0.49	
Ethnic group: Asian	0.22		1.64		1.24		0.43	
Ethnic group: Mixed and Other	0.59		0.40		0.85		0.29	

First language (0 = English, 1 = not English)	1.02		1.51		1.16		2.56	
Maternal and child characteristics (3 months)								
Mother age	0.96		0.97		1.00		0.96	
Child birth order (0=later born, 1 = first born)	0.26	**	0.96		0.65		0.18	***
Child gender (0=boy, 1 = girl)	0.83		0.81		1.07		0.44	
Child temperament: Fussy	0.68		0.79		0.94		1.88	
Child temperament: Unadaptable	1.34		1.39		1.22		1.22	
Maternal attitudes (3 months)								
Progressivism	1.01		1.40		0.91		1.21	
Traditionalism	2.18	*	2.05		1.73	*	1.97	
BACMEC: Benefits	0.75		0.91		0.86		1.03	
BACMEC: Costs	1.45	*	1.09		1.08		1.26	
Cox & Snell *R* Square	0.41							
Nagelkerke *R* Square	0.43							
-2*LL* (c2)	235.68	***						

Note: Note: *OR* = Odds-Ratio. In total, the multinomial regression predicted 45.1% of cases in correct categories; correct for the following care types were: 24.2% of the fathers, 65.9% of the grandparents and relatives, 32.8% of childminders and friends, 24.3% of the nannies, and 54.3% of nursery care.

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table Legends

Table 1.

Note: [a] = The National Census Classification (National Statistics, 2005) of ethnic group is: White (including White-British, White-Irish, White-Other), Black (including Black or Black British African, Black or Black British Caribbean, Black or Black British Other), Asian (including Asian or Asian British Indian, Asian or Asian British Pakistani, Asian or Asian British Bangladeshi, Chinese, Asian or Asian British Other) and Mixed / Other (including White and Black Caribbean, White and Black African, White and Asian, Other Mixed, Other ethnic group). [b] = The Socio-Economic Classes (SEC; Elias, Halstead & Prandy, 1993; Rose & O'Reilly, 1998), was used: Working class includes unskilled labour, semi-routine and routine occupations and long-term unemployed; Intermediate class includes clerical, service, small scale employers and own account workers; and Managerial and professional class including large employers and managers, professionals, associate professionals (ancillaries to professionals), small managers and higher supervisors. [c] = The Child Poverty Index (CPI; Noble et al., 2000) is based on administrative information from all 8,414 wards in England and was used as a neighbourhood poverty index, measuring the proportion of families with 0-16 year old children within a ward who claim means tested benefits, a higher value indicating more deprivation (see also www.FamiliesChildrenChildCare.org). [d] = Census information was derived for four North London recruitment areas. [e] = Census information is for Oxfordshire county. [f] = Census information for England (i.e., excluding information for Wales, Scotland and North Ireland).

Table 3a.

Note: Types of child care at 3 and 10 months were categorised into the dominant non-maternal child care according to the following formula: one carer for 12 hours or more = the dominant form; if two or more types together totalling 12 hours or more, the child care with the most hours, but at least 8 = the dominant type; equal hours for 2 types (each above 8 hours), the care most different from the home care = the dominant type.

Table 3b.

Note: Types of child care at 3 and 10 months were categorised into the dominant non-maternal child care according to the following formula: one carer for 12 hours or more = the dominant form; if two or more types together totalling 12 hours or more, the child care with the most hours, but at least 8 = the dominant type; equal hours for 2 types (each above 8 hours), the care most different from the home care = the dominant type.

Table 4.

Note: Last step of logistic regression model presented in the table. For variable description see footnotes in Table 1. *OR*=Odds-Ratio. Odds-ratios below 1 indicate that the likelihood of belonging to the response category (1) is lower, and odds-ratios above 1 indicate that the likelihood is higher.

[a] reduced 10 month sample (excluding children starting care between 0-3 months)

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table 5.

Note: Last step of regression model presented in the table. Beta (β) is the standardized coefficient.

[a] reduced 10 month sample (excluding children starting care between 0-3 months)

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table 6.

Note: *OR* = Odds-Ratio. The overall model predicted 68.3% correct category, and 63.3% of fathers, 70.3% of grandparents and relatives, and 70.6% of non-familial care.

[a] = Many of the cells were empty when entering the separate ethnic minority categories into the regression model; hence a cruder dummy variable was used (1 = Ethnic Minority).

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.

Table 7.

Note: Note: *OR* = Odds-Ratio. In total, the multinomial regression predicted 45.1% of cases in correct categories; correct for the following care types were: 24.2% of the fathers, 65.9% of the grandparents and relatives, 32.8% of childminders and friends, 24.3% of the nannies, and 54.3% of nursery care.

* = $p<.05$; ** = $p<.01$; *** = $p<.001$.