

The quality of group childcare settings used by 3-4 year old children in Sure Start Local Programme areas and the relationship with child outcomes

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The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

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The Quality of Group Childcare Settings Used by 3-4 Year Old Children in Sure Start Local Programme Areas and the Relationship with Child Outcomes

Executive Summary

Background

Influenced by research indicating long-term benefits of early childhood programmes for disadvantaged children, the Government of the time set up Sure Start Local Programmes (SSLPs) from 1998 to reduce child poverty and social exclusion. By 2004, 524 SSLPs targeted families with children 0-4 years of age in the 20% most deprived communities. In 2005 it was decided to develop SSLPs further by turning them into children's centres and roll out the programme nationally, ensuring that comprehensive early education and family support services are available for every community. The National Evaluation of Sure Start has been undertaking research relevant to the development of SSLPs since 2001. This part of the study focuses on 150 SSLP areas from the first four rounds of SSLPs, which are all in deprived areas.

Methods

This report presents new information, collected as part of the National Evaluation of Sure Start (NESS) and is in two parts; Part A considers the characteristics and quality of group childcare settings used by children in areas served by SSLPs, and was conducted from 2006 to 2008. Part B uses data on 5-year-old child outcomes collected in the NESS Impact Study between 2007 and 2009 to examine relationships between pre-school childcare quality and child outcomes.

Part A: Data in Sure Start Local Programme areas were collected through interviews with childcare staff and observations made in 229 group childcare settings (childminders were not included) used by children in 150 Sure Start Local Programme areas. The data provide a picture of the current provision, including measures of the quality of care and education provided, for 3-4 year olds in Sure Start and non-Sure Start led settings in these SSLP areas. The non-Sure Start area comparison data come from a study of group childcare settings used by children in the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) (Mathers, Sylva, & Joshi, 2007). Quality in this context refers to how the environment provides conditions likely to foster children's development, such as caregivers being attentive, responsive and stimulating. Quality is measured using three well established observation tools:

- ECERS-R: Early Childhood Environment Rating Scale Revised – measures the quality of the setting environment
- ECERS-E: Early Childhood Environment Rating Scale Extended – measures the quality of educational provision
- CIS: The Caregiver Interaction Scale – records the nature of the interactions

between the caregiver and the child¹.

Part B: Analyses were undertaken to explore how the setting characteristics presented in Part A may have influenced the outcomes for 5-year-old children as measured in the NESS Impact Study. The issue addressed is whether or not there are relationships between pre-school group childcare setting quality and outcomes for children attending the group childcare settings studied, once the background characteristics of children have been taken into account.

Key Findings

Part A: Childcare Setting Characteristics and Quality

- There is a wide range of pre-school formal group childcare provision used in SSLP areas including private day nurseries, nursery schools, nursery classes, playgroups, as well as children's centres.
- The qualifications of staff in these settings is primarily at level 3 (e.g. Diploma in Childcare & Education) or below. The most senior member of staff has a degree or higher qualifications in 43% of settings.
- On average nursery classes in primary schools employ staff with the highest level of qualifications and the voluntary sector the lowest. The level of staff qualifications is similar amongst the other types of settings (e.g. private day nursery, children's centre, nursery school).
- In comparison with a nationally representative survey (the QSMCS study of group childcare settings), it emerged that group childcare settings used by children in SSLP areas show a broadly similar pattern in terms of characteristics such as staff qualifications, child numbers and group size to that seen in group childcare settings across the country. However, the qualification level of SSLP setting managers is slightly lower than that found in the QSMCS study in settings in England overall.
- Observations reveal that the quality of provision in group childcare settings used by children in SSLP areas is generally good, as measured by means of ratings of overall quality of care and interactions experienced by children (ECERS-R). However, ratings of educational opportunities offered in settings (as measured by ECERS-E) are mostly scored only adequate, as was also found in most settings studied in the QSMCS study.
- Comparisons with the QSMCS survey indicate that the quality of provision in group childcare settings may be slightly better in SSLP areas than in England overall. However, these findings need to be treated with caution as the data were collected by different teams at different times (although using the same standardised instruments and similar training) and in areas not comparable demographically, in that SSLP areas were all deprived and QSMCS areas were representative of the whole country, and hence the comparison may not be completely comparable.
- There are some modest links between the quality of provision and adult-child ratio: the fewer children per adult, the better the quality of care.

¹ Further information about these three measures of quality can be found in section 2.2.2 of this report

- Of the settings studied in SSLP areas, only 59% are directly funded by SSLPs. Comparisons of settings directly funded by SSLPs with others not funded by SSLPs reveal that SSLP funded settings had more children and were open for more weeks a year and more hours a week than other settings. SSLP-funded settings also have a slightly lower (better) adult-child ratio.
- Settings funded by SSLPs have similar overall levels of staff qualifications to other settings, but they have more staff at both the highest and the lowest qualification levels. They also had on average setting managers with slightly lower qualification levels.

Part B: The Impact of Childcare Quality on Child Outcomes

- In SSLP areas, the relationships between pre-school group childcare setting quality and a range of child outcomes were examined. The child outcomes included measures of child physical health, cognitive and language development, Foundation Stage Profile (FSP) results and social and emotional development.
- After taking into consideration pre-existing family and area background characteristics, the analyses indicated that *the higher the pre-school childcare quality, the higher the child's attainment in language development as measured by the BAS 'Naming Vocabulary' scale*. In addition, for one measure of quality (ECERS-R), higher pre-school childcare quality was associated with higher FSP scores for communication and language and total FSP score. Higher pre-school childcare quality was also associated with greater progress in language development for children from 3 to 5 years of age. Hence higher childcare quality is associated with improved language development as measured by two independent sources: performance on standardised tests and teacher ratings through FSP scores. No other child outcomes show significant effects associated with overall pre-school childcare quality. These effects of pre-school childcare quality appeared to apply to all sections of the population studied, as they did not vary in their size across select policy-relevant population subgroups (e.g. lone parents, workless households).
- Other evidence from the NESS Impact Study Report (NESS, 2010) indicates that children in SSLP areas overall were not showing greater language development by age 5 than children in comparable areas elsewhere. If SSLPs are to produce greater long term effects upon child outcomes for children in deprived areas, particularly for literacy and academic outcomes, an important step would be to improve childcare quality across all settings.
- Research (e.g. Melhuish et al., 1990; NICHD, 2005) suggests that it is particularly important to improve the aspects of setting quality that will improve children's language development. This is because i) early language development is highly predictive of later literacy and academic performance (Young et al., 2002; Sénéchal, Ouellette, & Rodney, 2006) and ii) language development is susceptible to environmental influence (Melhuish et al., 1991; Hart & Risley, 1995; Tamis-LeMonda & Rodriguez, 2009). The results of this study indicate that one way for SSLPs to improve language development for children in deprived areas is through optimising the quality of the childcare setting they attend. Another option identified through other research (see Melhuish, 2004) indicates that improving staff training can improve the quality of childcare provision. The Children's Workforce Development Council (www.cwdcouncil.org.uk) is currently looking at ways to produce improvements to

the training of the early years childcare workforce. Further research on improving pre-school childcare quality may be needed to develop policy on this issue.

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1 INTRODUCTION

1.1 Background

The past 13 years have seen increasing emphasis on childcare and early learning in the UK. In 1997 the incoming Labour Government was interested in evidence-based policy and in addressing child poverty and equal opportunity issues. Parental leave and childcare became central to the political agenda. In 2004 a publicly-funded, part-time pre-school place was made a statutory right for all 3 and 4 year old children. As a result of regulations in 2004 free part-time pre-school provision became available to every child from three years of age, and 95% of eligible children take up this offer (Statistical First Release, DCSF June 2010²). Ministers in the former Administration and documents published by the Department at that time made frequent reference to the influence of the Effective Provision of Pre-school Education (EPPE) research (e.g. Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2004, 2010), which showed that just two years of part-time pre-school education can lead to the development of a child being four to six months ahead at the start of school in comparison to peers with no pre-school experience. Also the then Government commissioned a research review on the impact of early years provision upon young children, with emphasis given to children from disadvantaged backgrounds to inform policy (Melhuish, 2004).

After reviewing the evidence available, the then Government produced a Ten Year Childcare Strategy (HM Treasury, 2004) driven by three principles:

1. The importance of ensuring every child has the best possible start in life;
2. Ensuring that parents, particularly mothers, can work and progress in their careers; and
3. The need for families to choose in balancing work and family life.

Statutes to deliver the Ten Year Strategy began with the Childcare Act (2006) that put a duty on local authorities to improve outcomes of all children under 5 years old, secure sufficient childcare to meet community needs and ensure that parents have access to the full range of information they may need. It also provided for Early Years curriculum guidance on delivering quality integrated education and care for children from birth to age 6, along with a reformed regulatory framework to raise quality. The Childcare Act illustrated how improving childcare and reducing social exclusion were inter-woven in much of the then Government's thinking. The key policy developments illustrating this are outlined below:

Childcare Provision

In addition to government actions to increase the availability of free part-time pre-school, increases in rates of maternal employment over recent decades mean that the norm for women with a young child has changed from non-employment to employment in the last 25 years, resulting in increased demand for all childcare. The proportion of

² DCSF, Statistical First Release 10th June 2010:
<http://www.dcsf.gov.uk/rsgateway/DB/SFR/s000935/SFR16-2010.pdf>

women in paid work 8 to 11 months after childbirth rose from 24 per cent in 1979 to 67 per cent in 1996 (Dench et al., 2002). The National Childcare Strategy, launched in 1998 in England to improve the availability of affordable, good quality childcare had created 1.2 million childcare places by 2006 (an increase of 525,000)³. Many are in disadvantaged areas that previously offered few childcare options. The Neighbourhood Nursery Initiative was introduced in 2000 to expand childcare in the 20% most disadvantaged areas and reduce child poverty through increasing childcare so parents could take paid employment. By 2004, 1,279 Neighbourhood Nurseries were open, providing over 45,000 new childcare places in disadvantaged areas.

Financial support for childcare

Help towards childcare costs was originally introduced in 1994, and enhanced in 1999 and 2003 under the Working Tax Credit scheme. In 2005 the contribution towards childcare costs was a maximum of 70% of the cost of childcare for parents on low incomes, up to £175 per week for one child and up to £300 per week for two or more children, dependent on household income. The scheme tapers off as household income increases. In 2006 the maximum proportion of costs covered increased from 70% to 80%.

Parental Leave

Statutory maternity leave was extended to 52 weeks effective from April 2007 with 39 of these weeks being paid. Paid paternity leave was introduced in 2003, with fathers eligible for two weeks paid leave after their child's birth. These changes built on 13 weeks of unpaid parental leave introduced in 1999 for parents of children up to age six. In addition to these pay and leave entitlements, from 2003 parents acquired rights to request flexible working arrangements.

Sure Start Local Programmes and Children's Centres

Influenced by research indicating long-term benefits of early childhood programmes for disadvantaged children, the then Government set up Sure Start Local Programmes (SSLPs) from 1998 to reduce child poverty and social exclusion (see Melhuish & Hall, 2007, for a summary). By 2004, 524 SSLPs targeted families with children 0-4 years of age in the 20% most deprived communities. In 2005 it was decided to develop SSLPs further by turning them into children's centres and roll out the programme nationally, ensuring that comprehensive early education and family support services are available for every community. The target to have a children's centre for every community (3,500 by 2010) has been met.

1.2 NESS Study of Childcare Quality and Child Development

To support the ongoing development of effective early years education and childcare and in particular the future development of children's centres the National Evaluation of Sure Start team was commissioned to undertake a study that would:

1. Review pre-school group childcare setting characteristics and quality in SSLP and non-SSLP areas. Note childminders were not included.
2. Explore the impact variations in pre-school childcare quality might have on child outcomes in SSLP areas.

³ Source: Chancellor of the Exchequer (2006). Budget Speech to Parliament. 21st March, 2007.

This report deals with two separate but related studies.

Part A of this report addresses the aim of reviewing pre-school childcare setting characteristics and quality in SSLP and non-SSLP areas. It considers the characteristics and quality of group childcare settings used by children in areas served by SSLPs and was conducted from 2006 to 2008. It also contains a comparison with group childcare settings representative of those used by the general population in England using data from the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) (Mathers, Sylva, & Joshi, 2007). In addition, the relationships between setting characteristics and quality are examined for settings in SSLP areas.

Part B addresses the aim to explore the impact variations in pre-school childcare quality might have on child outcomes in SSLP areas. It uses data on 5-year-old child outcomes from the NESS Impact Study collected between 2007 and 2009 together with data on quality collected in Part A to examine relationships between pre-school childcare quality and child outcomes.

2 PART A: GROUP CHILDCARE CHARACTERISTICS AND QUALITY: METHODS

The aim of Part A of this study was to establish the characteristics and quality of group childcare settings used by children in areas served by SSLPs. The data were collected between the latter half of 2006 and early 2008.

2.1 Sample Selection

The group childcare settings included in this study were identified during the interviews with parents of three year olds conducted as part of the Impact Study of the National Evaluation of Sure Start (NESS, 2008). Families (N=9,192) participating in the interview were asked about the types of childcare provision they were currently using or had accessed in the past. If the current arrangement included group childcare settings (not that provided by family members (e.g. grandparents) or childminders), consent was sought for permission to contact the setting. The fieldwork interviewers explained that not every setting would be contacted, only those that were frequently used in that area. The NESS sample was randomly chosen from child benefit records and the settings used by them can be regarded as representative of group childcare settings used by children in SSLP areas generally in England. Note childminders were not included in this study.

In each of the 150 Sure Start Local Programme areas where the NESS Impact interviews were taking place, the most frequently used group childcare setting for 3-year-olds was identified. If this setting had no affiliation with the SSLP, a SSLP setting was also identified in that area. Therefore, in some areas more than one care setting was included in this NESS childcare study.

A total of 347 settings were approached for involvement and of the 347 approached, 229 participated in the study. Of these 229 settings, 140 were childcare settings run by a SSLP.

For the settings that did not participate, there were a variety of reasons for not taking part. These included not responding to contact (N=45, 41.3%), already in the sample under a different name (7, 6.4%), and 'spare' as two settings (SSLP and most frequently used) in that area were already taking part (9, 8.3%). Also, three (2.8%) settings were no longer in operation by the time of contact, ten (9.2%) offered only drop-in crèche facilities rather than regular childcare, and nearly one third (35, 32.1%) did not want to take part. Those not wanting to take part cited reasons such as recent Ofsted inspections or too few staff to cope with visitors.

2.2 Data Collection

The data collected for this study derive from interviews with setting managers and direct observations of childcare settings using standardised observational measures.

Data collection procedures were coordinated to be compatible, where possible, with those used in the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) (Mathers, Sylva, & Joshi, 2007).

2.2.1 Interviews with setting managers in SSLP areas

The manager interview included the following topics:

- **General Setting Information**
(Name of setting, contact details, date setting opened, date when current director came to setting, weeks in year open, daily hours, days of week open, scheduled closures, funding source)
- **Staff Characteristics**
(age, qualification, position in setting, hours per week, time in setting, other staff who work with children, any volunteers, student, parents or others who help supervise children)
- **Staff Turnover**
(staff leaving in last 12 months and reasons why, length of vacancy of post, problems retaining staff, finding subs, filling vacancies, finding trained staff, securing resources)
- **The Children**
(number of children in each age group by part-time or full-time)
- **Parent Involvement**
(parent involvement, visiting setting before enrolled, dealing with difficulties, involved in setting decisions)
- **Meeting Staff Needs**
(space for parent/teacher conferences, office space, requirements for staff with less than NVQ 2 to continue education)

2.2.2 Quality Measures

The study aims to provide a picture of the current provision, including measures of the quality of care and education provided, for 3-4 year olds. Quality in this context refers to how the environment provides conditions likely to foster children's development, such as caregivers being attentive, responsive and stimulating. Measurements of quality of care were carried out in each setting using three well-established observation tools:

- The Early Childhood Environment Rating Scale Revised (ECERS-R) (Harms, Clifford & Cryer, 1998)
- The Early Childhood Environment Rating Scale Extended (ECERS-E) (Sylva, Siraj-Blatchford & Taggart, 2003, 2010)
- The Caregiver Interaction Scale (CIS) (Arnett, 1989).

Early Childhood Environment Rating Scales (ECERS-R and ECERS-E)

The ECERS-R is made up of seven subscales, each focusing on a particular aspect of quality of provision (see Appendix B for a description of each subscale). The total score is an overall rating of the quality of the care environment.

This observational scale consists of 42 items across seven subscales and has been shown to possess good psychometric properties and good predictive validity in

significantly relating to children's developmental outcomes (de Kruif et al., 2000; Peisner-Feinberg and Burchinal, 1997; Phillips, McCartney, and Scarr, 1987). Its subscales are:

Items 1–8	Space and furnishings
Items 9–13	Personal care routines
Items 14–17	Language-reasoning
Items 18–27	Activities
Items 28–32	Interaction
Items 33–36	Programme structure
Items 37–42	Parents and staff

Each item is rated on a 7-point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent). Completion of the ECERS usually involves approximately one day of observation, as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or outings).

ECERS-E was originally developed for the EPPE project as a means to provide further measures to the ECERS-R of the educational aspects of childcare (Sylva et al., 1999; 2006, 2010), and was found to be predictive of later child development (Sammons et al., 2002, 2003; Sylva et al., 2004; Hall et al., 2009). It consists of 18 items on four subscales:

Items 1–6	Literacy
Items 7–10	Mathematics
Items 11–15	Science and environment
Items 16–18	Diversity

The subscales and items that make up ECERS-R are shown in Appendix B and those for ECERS-E are in Appendix C. These appendices also contain the distributions for these measures. The ECERS-R and ECERS-E total scores are calculated as the mean of the subscale scores.

Training, Reliability and Quality Control: The items are completed by observing the activities and routines in a care setting for a minimum of two hours. Fieldworkers for this study received training (in 5 seminars and in the field several times) and reliability testing, which had to reach acceptable levels, before conducting observations on their own. Training was supplemented by meetings addressing coding and procedural queries and a coding booklet was produced for the fieldwork team. Inter-rater reliability was established with the lead of the MCS team (ECERS-R, $k=0.85$, ECERS-E, $k=1.00$) to ensure comparability between the studies. Reliability was also established within the NESS team on ECERS-R ($kappa=0.85$, range 0.77 to 0.97) and ECERS-E ($kappa=0.88$, range 0.75 to 1.00).

The Caregiver Interaction Scale

The Caregiver Interaction Scale (CIS) was used to gain another perspective on the quality of the caregiver-child interactions within the settings being observed. The CIS is a rating scale made up of 26 items each describing a characteristic of an interaction (see Appendix D). The observer completes the scale by indicating how much the item relates to the observed interaction (1= not at all, 2= somewhat, 3= quite a bit, 4=very much). The items form four subscales: Positive Relationship, Punitiveness, Permissiveness and Detachment.

This scale was completed for each staff member interacting with the children in the observed room, and for up to four caregivers per room.

Where possible, comparisons are made with equivalent data collected by the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS). This latter study has undertaken a survey of the quality of group childcare settings used by a subsample of 3-5 year-old children from the Millennium Cohort Study (MCS). These QCSMCS data were collected approximately 2 years before the NESS data. In order to facilitate comparisons, the data collection methods have been standardised between the QCSMCS and NESS studies of childcare

2.2.3 Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS)

The Quality of Childcare Settings in the Millennium Cohort Study (Mathers, Sylva, & Joshi, 2007) was established to assess the quality of provision attended by a sample of the 10,000 Millennium Cohort Study (MCS) children living in England. The MCS children had been randomly sampled from child benefit records. The starting point for the QCSMCS study was a sub-sample of 1,217 MCS families in England who had reported using a group childcare setting at age 3 and given consent for that setting to be approached. A further sub-sample of families – and the childcare settings they attended - was selected with the aim of identifying a total of 300 group care settings attended by MCS children.

The final sample comprised 301 settings attended by 632 MCS children. Visits to the sample MCS settings took place between March 2005 and October 2005. Observations of up to a day were conducted in one of the rooms providing for preschool children between the ages of 3 and 5 years. Information was gathered using three observational instruments:

- Early Childhood Environment Rating Scale –Revised Edition (ECERS-R).
- Early Childhood Environment Rating Scale – Extension (ECERS-E).
- The Caregiver Interaction Scale (CIS, Arnett, 1989).

Note that only three ECERS-R subscales were included in the QCSMCS survey: 'Personal Care Routines' (without item 11, Nap and Rest), 'Language-Reasoning' and 'Interaction'.

Finally, information on a number of additional setting characteristics (e.g. sector, qualifications of staff, setting size) was collected.

The purpose of Part A of this report is to outline the characteristics and quality of childcare settings used by children 3-4 years of age who live in SSLP areas and are participating in the NESS longitudinal study of children and families.

3 PART A: GROUP CHILDCARE CHARACTERISTICS AND QUALITY: FINDINGS

Data collected on group childcare settings characteristics and quality are analysed to provide a picture of the current characteristics of group childcare settings, including the quality of care and education, used by 3-4 year olds in SSLP areas and to compare the SSLP settings with settings representative of England generally. The non-Sure Start data of settings in England come from a study of group childcare settings used by children in the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) (Mathers, Sylva, & Joshi, 2007). Also within SSLP areas the relationship between various setting characteristics and quality of provision is investigated.

3.1 Characteristics of Settings

3.1.1 Types of settings in sample

Fifty nine per cent of the childcare settings participating in the Sure Start area study were funded by SSLPs. Some of those with SSLP funding were part of a children's centre (N=77, 33.6% of sample), and others were separate but funded by the SSLP (59, 25.8%). With the sampling procedure identifying the group childcare most frequently used by children in the NESS Impact Study at 3 years of age, a number of nursery classes in primary schools were included (31, 13.5%). Private nurseries (30, 13.1%) and nursery schools (20, 8.7%) were represented in almost equal numbers. Finally, the sample also included group childcare care settings in the voluntary sector (12, 5.3%). Voluntary sector includes playgroups and pre-schools. Table 3.1.1.1 summarises the types of group childcare settings in which observations were conducted.

Table 3.1.1.1: Type of setting (N=229)

	Frequency	Percent
Private nursery	30	13.1
Nursery school	20	8.7
Nursery class in primary school	31	13.5
Voluntary sector (playgroups)	12	5.3
Setting in children's centre	77	33.6
Setting funded by SSLP (not in children's centre)	59	25.8

3.1.2 Age range in settings

The settings provided care for children of different ages. Table 3.1.2.1 shows the number of settings with provision broken down by age groups. Not surprisingly, as the settings were sampled through the NESS Impact interviews at 3 years, the largest number of settings catered for 3 to 4 year olds. The smallest included those children under 1 year old. (NB: missing data from three settings, due to incomplete staff interview through illness.)

Table 3.1.2.1: Provision for age ranges in settings observed (n=226)

	Frequency	Percent
Children under 1 year	101	44.7
1 to under 2 year olds	108	47.8
2 to under 3 year olds	149	65.9
3 to under 4 year olds	206	91.2
4 to under 5 year olds	128	56.6

Table 3.1.2.2 further describes the provision for the various age groups by type of setting. The percentage of provision within the type of setting is also given.

Table 3.1.2.2: Provision for age ranges in settings observed (n=226)

	Provision for under 1 year		Provision for 1 to 2 year olds		Provision for 2 to 3 year olds		Provision for 3 to 4 year olds		Provision for 4 to 5 year olds	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Private nursery (N=30)	15	14.9	20	18.6	24	16.1	25	12.2	14	10.9
Nursery school (N=20)	0	0	0	0	6	4.0	18	8.7	11	8.6
Nursery class (N=31)	0	0	0	0	1	0.7	30	14.6	12	9.4
Voluntary sector (N=12) playgroups	0	0	1	0.9	10	6.7	12	5.8	6	4.7
Setting in children's centre (N=75)*	53	52.5	51	47.2	61	40.9	66	32.0	52	40.6
Setting funded by SSLP (not in children's centre) (N=58)*	33	32.6	36	33.3	47	31.6	55	26.7	33	25.8
Total (N=231)	101	(100)	108	(100)	149	(100)	206	(100)	128	(100)

* details about provision for age ranges not available for 3 settings.

3.1.3 Setting size

Table 3.1.3.1 details the size of the settings as a whole and then the size of the group included in the observation. The size of the settings varied considerably, ranging from 7 to 191 children registered. This reflects the various types of settings included in the study (e.g. playgroups, private day nurseries, children's centres). There was also a large range in the numbers of children present in the rooms in which the observations assessing quality of care were conducted (4 to 55).

Children's centres had the highest average number of children registered overall for childcare (mean 66.3, sd 32.53), but nursery schools had the highest number of children enrolled in the room observed (mean 38.1, sd 19.28). Nursery classes had the most children present during the observation (mean 24.7, sd 9.21) and the highest (i.e. poorest) children to staff ratio (mean 7.8, sd 1.98).

Table 3.1.3.1: Setting size, group size, staff-child ratios

	Type of setting	N	Minimum	Maximum	Mean (SD)
Total children registered in setting (full & part time)	Private nursery	27	12	113	57.8 (26.63)
	Nursery school	20	9	108	49.8 (25.79)
	Nursery class	30	20	112	58.7 (24.47)
	Voluntary sector	12	12	71	41.3 (17.84)
	Setting in children's centre	71	7	176	66.3 (32.53)
	Setting funded by SSLP (not in children's centre)	57	8	191	63.7 (38.00)
	Total		217	7	191
Total children registered in room observed	Private nursery	30	11	78	26.3 (13.64)
	Nursery school	19	15	86	38.1 (19.25)
	Nursery class	31	12	77	37.2 (18.66)
	Voluntary sector	12	12	71	32.1 (16.74)
	Setting in children's centre	75	7	150	32.8 (25.52)
	Setting funded by SSLP (not in children's centre)	59	8	120	33.5 (22.77)
	Total		226	7	150
Total children present in room for observation	Private nursery	30	6	47	15.4 (8.65)
	Nursery school	20	10	44	21.5 (9.85)
	Nursery class	31	12	49	24.7 (9.21)
	Voluntary sector	12	11	27	20.8 (4.45)
	Setting in children's centre	76	4	55	16.9 (10.44)
	Setting funded by SSLP (not in children's centre)	59	4	52	17.7 (9.44)
	Total		228	4	55
Ratio of children to staff present in room observed. i.e. average number of children for 1 member of staff	Private nursery	30	2	12	4.5 (1.93)
	Nursery school	20	3	13	5.8 (2.57)
	Nursery class	31	4	12	7.8 (1.98)
	Voluntary sector	12	3	7	4.4 (1.05)
	Setting in children's centre	76	1	16	4.4 (2.18)
	Setting funded by SSLP (not in children's centre)	59	1	12	4.3 (2.08)
	Total		228	1	16

3.1.4 Availability of provision

In terms of the opening hours of the settings, on average childcare was available for 44 weeks per year. This is slightly more than the number of weeks in term-time, most likely reflecting the childcare offered by day nurseries (e.g. those offering care year round). Table 3.1.4.1 shows the continuous data on the number of weeks per year and hours per day in which childcare is provided in the sample. It also shows that the mean number of hours of available care (8.3 hours) is higher than school hours (9am to 3pm, or 6 hours). Again, this reflects the opening hours for settings providing full day care.

Table 3.1.4.1: Setting provision in hours and weeks

	Type of setting	N	Minimum	Maximum	Mean (SD)
Weeks (per year)	Private nursery	27	39	52	47.7 (5.28)
	Nursery school	20	39	52	42.5 (5.35)
	Nursery class	29	39	50	40.2 (3.73)
	Voluntary sector	12	39	48	39.8 (2.60)
	Setting in children's centre	71	20	52	47.3 (5.99)
	Setting funded by SSLP (not in children's centre)	57	39	52	46.0 (5.70)
	Total	216	20	52	45.2 (6.02)
Hours (per day)	Private nursery	27	5	13	9.7 (1.40)
	Nursery school	20	3	10	6.4 (1.90)
	Nursery class	30	2	11	5.7 (1.94)
	Voluntary sector	12	2	7	4.1 (1.87)
	Setting in children's centre	71	2	18	9.6 (2.10)
	Setting funded by SSLP (not in children's centre)	57	3	18	8.9 (2.92)
	Total	217	2	18	8.3 (2.84)

Table 3.1.4.2 groups the data into categories. Many settings offer childcare up to 50-52 weeks of the year. This is closely followed by typically open 39 weeks or more, which is roughly equivalent to school term-time. In terms of the number of hours per day, the majority of the settings were open for 8 or more hours. Nursery schools, nursery classes, and the voluntary sector (usually playgroups) offer shorter hours.

Table 3.1.4.2: Setting provision in hours and weeks

	Category	Frequency	Percent
Weeks of year (N=216)	1-29 weeks	1	0.5
	30-39 weeks	96	44.4
	40-49 weeks	17	7.9
	50-52 weeks	102	47.2
Hours per day (N=217)	2-6 hours	73	33.6
	7-8 hours	13	6.0
	9 + hours	131	60.4

3.1.5 Staff qualifications

Information on staff qualifications was provided by the setting manager for all staff. These data are analysed in relation to the most senior member of staff in each setting and then by the qualifications of all staff.

Staff were organised in a management hierarchy. In circumstances where there were two or more members of staff at the highest level (e.g. two managers), the member of staff with the higher qualification was identified and coded accordingly.

The most frequent type of qualification for the most senior members of staff was "a Degree", reflecting the inclusion of nursery classes in primary schools, where the senior members of staff were teachers and typically had degrees. The next most frequent qualification was the National Nursery Examination Board (NNEB) qualifications (now Diploma in Childcare & Education). This reflects the more traditional day care settings (e.g. day nurseries), which often employ staff with NNEB qualifications.

The qualifications of the most senior member of staff were coded into levels 0-5, with level 5 being the most advanced qualifications relevant to childcare and level 0 being unqualified or low level qualifications unrelated to childcare. Table 3.1.5.1 displays the results, showing that the majority of senior members of staff had Level 3 or 4 qualifications. Details of the specific qualifications in each level can be found in Appendix A.

Table 3.1.5.1 Qualification level of most senior member of staff in each setting

Level	Frequency	Percent
Level 5	19	8.3
Level 4	80	34.9
Level 3	97	42.4
Level 2	16	7.0
Level 0	1	0.4
'Other' or 'Not known'	16	7.0
Total	229	100

The qualification levels were further broken down by type of setting in Table 3.1.5.2. Nursery classes had the greatest percentage of staff with level 4 and 5 qualifications.

Table 3.1.5.2: Qualification level of most senior member of staff by type of setting

	Level 5		Level 4		Level 3		Level 2		Level 0		'Other' or 'Unknown'	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Private nursery (N=30)	0	0	9	30.0	14	46.7	4	13.3	0	0	3	10.0
Nursery school (N=20)	4	20.0	9	45.0	5	25.0	2	10.0	0	0	0	0
Nursery class (N=31)	9	29.0	19	61.3	2	6.5	0	0	0	0	1	3.2
Voluntary sector (N=12)	0	0	1	8.3	7	58.3	4	33.3	0	0	0	0
Setting in children's centre (N=77)	5	6.5	24	31.2	36	46.8	3	3.9	1	1.3	8	10.4
Setting funded by SSLP (not in children's centre) (N=55)	1	1.7	18	30.5	33	55.9	3	5.1	0	0	4	6.8

Having analysed the qualifications of the most senior member of staff in each setting, we turn to the qualifications of the staff as a whole, including the most senior member. The most frequent staff qualification level was Level 3 (see Table 3.1.5.3).

Table 3.1.5.3: Numbers of staff at each qualification level

Level	Frequency	Percent
Level 5	49	2.2
Level 4	228	10.3
Level 3	1094	49.1
Level 2	445	20.0
Level 0	337	15.1
'Other' or 'Not known'	74	3.3
Total	2227	100

Table 3.1.5.4 presents the information about staff numbers at each qualification level, organised by numbers of staff within the qualification hierarchy. Those within the category of 'other' or 'not known' are not included in this table.

Table 3.1.5.4: Qualification hierarchy

Level	Frequency	Percent
Level 5	49	2.2
Level 4 and above	277	12.4
Level 3 and above	1371	61.6
Level 2 and above	1816	81.5
Total: Level 0 and above	2227	100

Using the qualification levels 0-5 an average qualification level for each setting was calculated. The average qualification level for all staff members was then analysed by type of setting. Echoing the results relating to the qualifications for the most senior members of staff, the average qualification level across all staff in nursery classes was the highest (Table 3.1.5.5).

Table 3.1.5.5: Mean qualification of staff by type of provision

	Type of setting	N	Minimum	Maximum	Mean (SD)
Mean qualification of all staff	Private nursery	27	1.8	3.3	2.4 (0.35)
	Nursery school	20	1.3	3.6	2.5 (0.68)
	Nursery class	30	1.1	4.0	3.0 (0.67)
	Voluntary sector playgroup	12	1.0	3.0	2.1 (0.67)
	Setting in children's centre	69	1.1	3.3	2.6 (0.44)
	Setting funded by SSLP (not in children's centre)	55	1.3	3.3	2.4 (0.47)
	Total	213	1.0	4.0	2.5 (0.56)

Finally, the mean qualification level of settings that provided the relevant information (N=213) in the study were compared to those of the MCS sample (N=301). The mean NESS qualification levels were not significantly different⁴ to the mean MCS qualification levels.

⁴ The means were compared using an Independent Samples t-test (t=0.63, 512df, p>0.05).

3.2 Observations of Quality in Childcare Settings

As outlined in section 2.2.2 quality in childcare settings was measured using three well-established observational scales:

- Early Childhood Environment Rating Scale –Revised Edition (ECERS-R).
- Early Childhood Environment Rating Scale – Extension (ECERS-E).
- The Caregiver Interaction Scale (CIS, Arnett, 1989).

For the ECERS-R and ECERS-E scales the scoring was on a 1-7 scale anchored as follows: 1-inadequate, 3- minimally adequate, 5-good, and 7-excellent.

For the Caregiver Interaction scale (CIS) the items were scored on a 1-4 scale: 1= not at all, 2= somewhat, 3= quite a bit, 4=very much. The items were combined into four summary dimensions: positive relationships, permissiveness, punitiveness and detachment and a total CIS score was also computed. Further details of the CIS are in Appendix D.

3.2.1 Early Childhood Environment Rating Scales (ECERS-R and ECERS-E)

A mean score was calculated for each subscale as well as a total score. Table 3.2.1.1 summarises the results for both ECERS-R and ECERS-E.

Table 3.2.1.1: Mean scores on ECERS-R and ECERS-E

Measure	Subscale	N	Minimum	Maximum	Mean (SD)
ECERS-R	Space and Furnishings	229	2.1	7.0	5.2 (0.96)
	Personal Care Routines	229	1.4	7.0	5.2 (1.42)
	Language-Reasoning	229	1.8	7.0	4.7 (1.15)
	Activities	229	2.3	6.9	4.4 (1.08)
	Interaction	229	1.8	7.0	5.6 (1.07)
	Programme Structure	229	1.3	7.0	5.7 (1.24)
	Parents and Staff	229	2.8	7.0	5.5 (0.94)
	<i>Total</i>	<i>229</i>	<i>3.1</i>	<i>7.0</i>	<i>5.2 (0.88)</i>
ECERS-E	Literacy	229	2.2	7.0	4.4 (1.04)
	Mathematics	229	1.0	7.0	3.3 (1.45)
	Science & Environment	229	1.0	7.0	3.2 (1.52)
	Diversity	229	1.0	7.0	3.2 (1.21)
	<i>Total</i>	<i>229</i>	<i>1.5</i>	<i>6.8</i>	<i>3.5 (1.10)</i>

Each item is rated on a 7-point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent).

Given that a score of 5 reflects 'good' provision, overall the settings are achieving a reasonably high quality of provision in the ECERS-R subscales. The subscale with the

highest mean score is 'Programme Structure', followed closely by the 'Interaction' subscale, then 'Parents and Staff'. Even the lowest scores ('Activities' and 'Language-Reasoning' subscales) were above a 4, indicating that the quality was adequate in these areas.

For ECERS-E, the scores on the four subscales and the total were lower than those of the ECERS-R. Of the four curricular areas, the highest score was in 'Literacy' with a mean score of 4.4, reflecting adequate quality. The remaining subscales and total score show that the educational provision related to mathematics, science and environment and diversity, as measured by ECERS-E, within the settings was of minimal quality.

3.2.2 Caregiver Interaction Scale (CIS)

A mean subscale score was calculated for each setting and an overall mean from the subscales calculated for each setting (see Table 3.2.2.1).

Table 3.2.2.1: Mean scores on CIS

Measure	Subscale	N	Minimum	Maximum	Mean (SD)
Caregiver Interaction Scale	Positive Relationship	229	1.8	4.0	3.1 (0.44)
	Punitiveness	229	1.0	2.1	1.2 (0.20)
	Permissiveness	229	1.0	2.9	1.7 (0.37)
	Detachment	229	1.0	2.6	1.3 (0.30)
	Total CIS Score	229	1.6	2.3	1.8 (0.12)

Scores on the CIS should be considered in relation to the subscales. For example, a score of 3.1 on the 'Positive Relationship' subscale (out of maximum of 4) shows that caregivers exhibited these positive interactions 'quite a bit'. In the other three subscales, the lower mean scores indicate less negative interactions (e.g. a mean score of 1.2 on 'Punitiveness' means that the carers were 'not at all' punitive). Overall, the CIS scores indicate constructive interactions.

3.3 Comparison Between NESS and QCSMCS

3.3.1 Comparison of ECERS-R and ECERS-E scores

Comparisons were made using QCSMCS data for the three ECERS-R subscales that were included in the QCSMCS survey: 'Personal Care Routines' (without item 11, Nap and Rest), 'Language-Reasoning' and 'Interaction'. A total score based on these three subscales was also compared. Independent samples t-tests were used to analyse the mean scores (displayed in Table 3.3.1.1) and showed significant differences in all but one subscale for ECERS-R. Where there were significant differences ('Personal Care

Routines', 'Interaction' and 'Total'), the NESS scores were higher than those of QCSMCS, showing that generally speaking settings in SSLPs were performing at a slightly higher level than settings in England as a whole.

The full ECERS-E was compared and revealed significant differences in two subscales ('Literacy' and 'Diversity'). For both of these subscales, the NESS sample had higher scores than the QCSMCS sample. Note that SSLP areas are all deprived areas, whereas the settings in the MCS study serve a sample across the whole spectrum of deprivation. The QCSMCS study settings can be regarded as reasonably representative of group childcare settings in England overall. Therefore these comparisons are not comparing settings used by similar populations, and the nature of the client populations is clearly very different, with those in SSLP areas being substantially more deprived than the QCSMCS population, which reflects the overall population structure of the country.

Table 3.3.1.1: Comparison of NESS and QCSMCS mean ECERS scores

Measure	Subscale	NESS		MCS		Significant differences
		N	Mean (SD)	N	Mean (SD)	
ECERS-R	Personal Care Routines (not including item 11)	229	5.2 (1.42)	301	4.0 (1.34)	<i>p<0.001</i>
	Language-Reasoning	229	4.7 (1.15)	301	4.6 (1.18)	ns
	Interaction	229	5.6 (1.07)	301	5.3 (1.25)	<i>p<0.01</i>
	Total score for subscales 2, 3 and 5	229	5.2 (1.03)	301	4.6 (1.02)	<i>p<0.001</i>
ECERS-E	Literacy	229	4.4 (1.04)	301	4.0 (0.88)	<i>p<0.001</i>
	Mathematics	229	3.3 (1.44)	301	3.2 (1.28)	ns
	Science & Environment	229	3.2 (1.52)	301	3.2 (1.54)	ns
	Diversity	229	3.2 (1.21)	301	2.6 (1.17)	<i>p<0.001</i>
	Total score for ECERS-E	229	3.5 (1.10)	301	3.4 (0.92)	ns

ns – not significant

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***.

3.3.2 Comparison of CIS scores

The mean scores on the CIS for both studies are significantly different in all subscales (see Table 3.3.2.1). Scores from the MCS sample indicated more 'Positive Relationship' interactions and less 'Permissiveness', but more negative interactions in the 'Punitiveness' and 'Detachment' subscales. Overall there was little to distinguish NESS and QCSMCS settings in quality of adult-child interactions measured by the CIS.

Table 3.3.2.1: Comparison of NESS and QCSMCS mean CIS scores

Measure	Subscale	NESS		MCS		Significant differences
		N	Mean (SD)	N	Mean (SD)	
CIS	Positive Relationship	224	3.1 (0.44)	301	3.4 (0.48)	<i>p<0.001</i>
	Punitiveness	224	1.2 (0.20)	301	1.4 (0.28)	<i>p<0.001</i>
	Permissiveness	224	1.7 (0.37)	301	1.4 (0.43)	<i>p<0.001</i>
	Detachment	224	1.3 (0.30)	301	1.4 (0.46)	<i>p<0.05</i>

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***.

3.4 Within Group Comparisons

The next set of comparisons was undertaken within the NESS sample (N=229), to investigate the differences between the settings with and without direct SSLP funding in terms of setting characteristics and quality of care provided, with the latter indexed using the observational measures.

3.4.1 Within group comparisons: SSLP-funded or not

Comparisons were made between the two types of childcare settings, those with and without SSLP funding; univariate analyses (independent t-tests and Pearson's chi-square tests) were used for this purpose.

Table 3.4.1.1 summarises the results of comparisons. With regard to quality ratings:

- There were few significant differences between the mean scores on the quality measurements (i.e., ECERS-R, ECERS-E and CIS).
- There was a borderline significant difference between the groups on the 'Language-Reasoning' subscale of the ECERS-R, with the non-SSLP group achieving higher scores.
- Within ECERS-R, the SSLP group had higher scores for provision for 'Parents and Staff'.
- In the more curricular areas as measured by ECERS-E, the non-SSLP settings had higher scores for 'Literacy' and 'Mathematics'.
- There were no differences in the observed interactions by caregivers (CIS).

With regard to structural differences:

- SSLP settings had more children enrolled and a lower (i.e. better) ratio of children to staff than non-SSLP settings.
- SSLP settings provided care for more weeks and for longer daily hours.

- However, there were no differences between SSLP-funded and non-SSLP-funded settings in the mean qualification levels for all staff.
- Qualifications of the setting manager (or most senior member of staff) were different between groups, with the non-SSLP setting having higher percentages of the very lowest (Levels 0&2) and the highest qualifications (Levels 4&5).
- The SSLP settings had higher percentages around the middle qualifications (Level 3).

Table 3.4.1.1: Comparisons of settings: Sure Start-funded or not

Measure	Subscale	Sure Start		Non-Sure Start		Significant differences
		N	Mean (SD)	N	Mean (SD)	
ECERS-R	Space and Furnishings	136	5.3 (0.92)	93	5.2 (1.03)	ns
	Personal Care Routines	136	5.2 (1.40)	93	5.2 (1.44)	ns
	Language-Reasoning	136	4.6 (1.07)	93	4.9 (1.25)	<i>p=0.05</i>
	Activities	136	4.4 (1.04)	93	4.4 (1.03)	ns
	Interaction	136	5.6 (1.06)	93	5.7 (1.09)	ns
	Programme Structure	136	5.7 (1.11)	93	5.6 (1.41)	ns
	Parents and Staff	136	5.7 (0.91)	93	5.3 (0.96)	<i>p<0.01</i>
ECERS-E	Literacy	136	4.2 (0.93)	93	4.5 (1.16)	<i>p<0.05</i>
	Mathematics	136	3.1 (1.35)	93	3.7 (1.51)	<i>p<0.01</i>
	Science & Environment	136	3.1 (1.41)	93	3.3 (1.65)	ns
	Diversity	136	3.3 (1.11)	93	3.1 (1.35)	ns
CIS	Positive Relationship	136	3.1 (0.42)	93	3.1 (0.47)	ns
	Punitiveness	136	1.2 (0.18)	93	1.2 (0.22)	ns
	Permissiveness	136	1.7 (0.35)	93	1.7 (0.39)	ns
	Detachment	136	1.3 (0.31)	93	1.3 (0.28)	ns
Setting characteristics (continuous)	Total number of children registered in setting	128	65.1 (35.0)	89	54.1 (25.07)	<i>p<0.05</i>
	Ratio of children to staff in room observed	135	4.4 (2.13)	93	5.9 (2.48)	<i>p<0.001</i>
	Weeks per year setting is open	128	45.3 (9.88)	88	42.1 (8.37)	<i>p<0.05</i>
	Hours per day setting is open	128	9.3 (2.52)	89	6.9 (2.67)	<i>p<0.001</i>
	Mean qualification level for all setting staff	124	2.5 (0.46)	89	2.6 (0.67)	ns
		N	%	N	%	
Setting characteristics (categorical)	Qualification level for most senior member of staff: Levels 0 & 2	7	5.6	10	11.2	<i>p<0.01</i>
	Qualification level for most senior member of staff: Level 3	69	55.6	28	31.5	
	Qualification level for most senior member of staff: Level 4	42	33.9	38	42.7	
	Qualification level for most senior member of staff: Level 5	6	4.8	13	14.6	
	Total	124	100	89	100	

ns – not significant

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the

predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***

3.4.2 Within NESS comparisons: Staff qualifications

Further comparisons were made within the NESS sample to explore the relationship between staff qualifications and performance on measures of quality. Two qualification variables were used: the mean qualification level of the most senior member of staff (e.g. setting manager) in each setting and the mean qualification level of all staff in each setting (N=213). These variables were compared for each mean subscale and total score for ECERS-R, ECERS-E and CIS.

Mean qualification level of senior staff member

For the purpose of comparison the qualification levels of the most senior member of staff in each setting (N=213) were split into two groups: those with low qualifications (Levels 0-3; N=114, 53.5%) and those with high qualifications (Levels 4-5; N=99, 46.5%).

The two groups were compared (with independent t-tests, estimating the likelihood of observed differences occurring by chance). The results are given in table 3.4.2.1.

To summarise the results, in settings where the most senior member of staff had a high qualification, scores on the ECERS-R 'Language-Reasoning' and 'Activities' subscales were higher than settings whose senior staff member had a low qualification. For three of the four ECERS-E subscales ('Literacy', 'Mathematics' and 'Science & Environment'), settings with more highly qualified senior staff also performed better. With the CIS, the results showed that higher senior staff qualification levels resulted in lower observed detachment, i.e. less of an undesirable aspect of interaction.

Table 3.4.2.1: Comparing quality: Low vs. High qualifications of most senior staff within the NESS sample

Measure	Subscale	Low qualifications (Levels 0-3)		High qualifications (Levels 4-5)		Significant differences
		N	Mean (SD)	N	Mean (SD)	
ECERS-R	Space and Furnishings	114	5.1 (0.92)	99	5.4 (1.02)	ns
	Personal Care Routines	114	5.3 (1.33)	99	5.1 (1.57)	ns
	Language-Reasoning	114	4.6 (1.09)	99	5.0 (1.18)	<i>p<0.01</i>
	Activities	114	4.3 (1.00)	99	4.6 (1.13)	<i>p<0.05</i>
	Interaction	114	5.5 (1.07)	99	5.8 (1.04)	ns
	Programme Structure	114	5.7 (1.19)	99	5.8 (1.04)	ns
	Parents and Staff	114	5.4 (0.94)	99	5.6 (0.93)	ns
	Total	114	5.1 (0.82)	99	5.3 (0.95)	ns
ECERS-E	Literacy	114	4.2 (0.92)	99	4.6 (1.11)	<i>p<0.01</i>
	Mathematics	114	3.1 (1.20)	99	3.8 (1.57)	<i>p<0.001</i>
	Science & Environment	114	2.9 (1.33)	99	3.6 (1.64)	<i>p<0.001</i>
	Diversity	114	3.2 (1.19)	99	3.3 (1.28)	ns
	Total	114	3.3 (0.94)	99	3.8 (1.20)	<i>p=0.001</i>
CIS	Positive Relationship	114	3.1 (0.43)	99	3.2 (0.45)	ns
	Punitiveness	114	1.2 (0.21)	99	1.2 (0.19)	ns
	Permissiveness	114	1.7 (0.36)	99	1.7 (0.37)	ns
	Detachment	114	1.33 (0.31)	99	1.25 (0.27)	<i>p<0.05</i>
	Total	114	1.8 (0.12)	99	1.8 (0.13)	ns

ns – not significant

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***.

Mean qualification level of setting

Using the mean qualification levels of all staff, two groups were formed. The 'low' group (N=105, 49.3%) were those at or below the mean, and the 'high' group (N=108, 50.7%) were those above the mean. The 'high' and 'low' qualification groups were compared using independent t-tests (which estimated the likelihood of observed differences occurring by chance).

These comparisons resonated with the previous comparisons of qualification of senior staff member (see table 3.4.2.2). Like the previous comparison, scores on ECERS-R 'Language-Reasoning' and 'Activities' were also higher for settings with overall higher

qualifications. In addition, the ‘Space and Furnishings’ also showed a significant difference (higher qualifications related to higher results in this subscale). The ECERS-E results also showed the same pattern, with three of four subscales significantly higher for settings with more highly qualified staff. However, the difference seen before with the CIS Detachment subscale disappeared when comparing qualifications for all staff. There were no significant relationships between results on the CIS for overall staff qualifications.

Table 3.4.2.2: Comparing quality: Low vs. High overall staff qualifications within NESS sample.

Measure	Subscale	Low qualifications (at or below mean)		High qualifications (above mean)		Significant differences
		N	Mean (SD)	N	Mean (SD)	
ECERS-R	Space and Furnishings	105	5.1 (0.92)	108	5.4 (1.02)	<i>p<0.05</i>
	Personal Care Routines	105	5.2 (1.36)	108	5.2 (1.52)	ns
	Language-Reasoning	105	4.6 (1.13)	108	5.0 (1.16)	<i>p<0.05</i>
	Activities	105	4.2 (1.08)	108	4.6 (1.02)	<i>p<0.01</i>
	Interaction	105	5.6 (1.13)	108	5.7 (0.99)	ns
	Programme Structure	105	5.6 (1.27)	108	5.8 (1.24)	ns
	Parents and Staff	105	5.4 (0.93)	108	5.6 (0.95)	ns
	Total	105	5.1 (0.89)	108	5.3 (0.88)	ns
ECERS-E	Literacy	105	4.2 (1.01)	108	4.6 (1.02)	<i>p<0.01</i>
	Mathematics	105	3.2 (1.35)	108	3.6 (1.47)	<i>p<0.05</i>
	Science & Environment	105	3.0 (1.42)	108	3.4 (1.59)	<i>p<0.05</i>
	Diversity	105	3.1 (1.16)	108	3.4 (1.28)	ns
	Total	105	3.4 (1.02)	108	3.8 (1.14)	<i>p<0.01</i>
CIS	Positive Relationship	105	3.1 (0.41)	108	3.2 (0.46)	ns
	Punitiveness	105	1.2 (0.22)	108	1.2 (0.18)	ns
	Permissiveness	105	1.7 (0.36)	108	1.7 (0.38)	ns
	Detachment	105	1.3 (0.31)	108	1.3 (0.28)	ns
	Total	105	1.8 (0.12)	108	1.8 (0.12)	ns

ns – not significant

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***.

3.5 Influences on Quality (ECERS-R, ECERS-E, and CIS)

Statistical analyses investigated influences on the total scores for the quality measures ECERS-R, ECERS-E and CIS within settings in SSLP areas. Multiple regression was the statistical method used to explore the predictive power of the characteristics of childcare settings described in section 3.1 (type of setting, setting size, availability and staff qualifications).

The results from the regression models for each measure are summarised in Table 3.5.1.1. For ECERS-R, ratio of children to staff (in room observed) was the only structural factor to have a significant association with quality as measured by total score on ECERS-R, i.e., quality is higher when there are fewer children and more staff, and this effect was weak only just reaching significance.

Several factors influenced quality measured by ECERS-E, with qualifications (qualification level of most senior staff member) and size of setting (total number of children enrolled in setting) and ratio of children to staff in room observed initially associated with quality. When all variables are entered into the model, these initial relationships still remain significant, with ratio as the strongest predictor of quality as measured by ECERS-E total score.

For the CIS we examined the variables (qualifications, type, size) and found no effect on quality of caregiver-child interaction. The models were run with various types of method (forward entry and backward entry) with each showing no predictive relationship of the characteristics of the settings on quality of the caregiver interaction.

Table 3.5.1.1: Multiple regression: influences on quality of childcare provision

Measure	Qualification level of most senior staff member	Type of setting: public or private	Availability of provision: Weeks per year	Availability of provision: Hours per day	Size of setting: total number of children registered	Ratio of children to staff in room observed
ECERS-R total score	ns	ns	ns	ns	ns	<i>p>0.05</i>
ECERS-E total score	<i>p>0.05</i>	ns	ns	ns	<i>p=0.01</i>	<i>p>0.001</i>
CIS total score	ns	ns	ns	ns	ns	ns

ns – not significant

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the outcome (quality measure), and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in ***bold italics***.

3.6 Summary of Setting Characteristics and Quality

The data collected through interviews with and observations of 229 group childcare settings used by children in SSLP areas provides a picture of the provision for 3-4 year olds in these areas. There is a wide range of setting provision used in some SSLP areas including private day nurseries, nursery schools, nursery classes, playgroups, as well as children’s centres. Note childminders were not included in this study.

The qualifications of staff in these settings are primarily at level 3 (e.g. NNEB) or below. The most senior member of staff in settings has a degree or higher qualifications in 43% of settings. Nursery classes overall have the highest staff qualifications and the voluntary sector the lowest. Amongst the other types of settings (e.g. private day nursery, children’s centre, nursery school) the level of staff qualifications appears to be very similar. In comparing staff qualifications with those found in the QCSMCS study of group childcare settings, there is a broadly similar pattern in SSLP areas to that seen in group childcare settings across the country (QCSMCS study) although the qualification level of setting managers in SSLP areas is slightly less than in settings used by similar age children in England overall.

In looking at observational data on the quality of provision, the group childcare settings used by children in SSLP areas are of good quality as shown on one overall measure, of quality (ECERS-R), and also on a measure of staff-child interaction (CIS). The exception to this is the educational opportunities offered in settings (i.e. as measured by ECERS-E), which are mostly only adequate, reflecting the situation found in the QCSMCS study, which is indicative of the situation in the country overall.

The comparisons with data from observations of children in the QCSMCS indicate that the quality of childcare may be slightly better in SSLP areas than in the country overall despite the fact that there is more deprivation in SSLP areas. However these findings

need to be treated with caution as the data were collected by different teams at different times (although using the same standardised instruments and similar training) and in areas not comparable demographically, in that SSLP areas were all deprived and QCSMCS areas were representative of the whole country and hence the comparison may not be completely valid.

In looking at the 229 settings used by children in SSLP areas, there appear to be some links between the quality of provision and staff qualifications. Using simple correlations a significant relationship was identified between staff qualifications and quality as measured by both ECERS-R and ECERS-E, but not for the CIS interaction measure. However, when analyses also include other predictors such as size of setting and adult-child ratio, the relationship between staff qualifications and quality remains significant only for the ECERS-E measure. This study has found that the strongest predictor of setting quality (measured as outlined in section 2.2.2) is adult-child ratio: the fewer the children per caregiver, the better the quality of care provided. Two other studies; the Effective Provision of Pre-school Education (EPPE) (Sylva et al., 1999) and the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) (Mathers, Sylva, & Joshi, 2007), looked at group childcare settings as used by samples representative of the whole population of England. In those studies there were no significant findings relating quality of childcare to adult-child ratio. However given the pattern of childcare provision in England overall it is difficult to separate adult-child ratio from type of setting and staff qualifications, as noted by Sylva et al., (1999) and these two studies (EPPE and QCSMCS) found it difficult to separate out effects related to adult-child ratio, type of setting and staff qualifications. In the analyses of predictors of childcare quality reported here only group childcare settings used by children living in deprived SSLP areas are considered, and hence a more restricted range of settings is being dealt with than in the EPPE and QCSMCS studies. It is possible that this difference accounts for the discrepancies between studies in findings relating to adult-child ratio.

While all the settings studied in SSLP areas are used by children in SSLP areas, not all are directly funded by SSLPs. In comparing those settings directly funded by SSLPs with others, it is apparent that the SSLP funded settings had more children, and were open for more weeks a year and more hours a week than other settings. SSLP-funded settings also have a slightly lower (better) adult-child ratio.

Although the SSLP funded settings had similar overall levels of staff qualifications to other settings, they had more staff in both the highest and the lowest qualification levels. Also SSLP-funded settings had slightly poorer qualifications for setting managers. SSLP-funded settings did not have such good provision of mathematical learning opportunities (ECERS-E subscale).

4 PART B: CHILDCARE QUALITY AND CHILD OUTCOMES: METHODS

In this section data on 5-year-old child outcomes collected in the NESS Impact Study between 2007 and 2009 are used to examine relationships between pre-school childcare quality and child outcomes. Data on childcare quality comes from the study described in Part A.

4.1 Data Collection in the NESS Impact Study

The families participating in the NESS longitudinal Impact Study provided extensive information on child and family functioning during the course of a single home visit conducted by a specially trained fieldworker. Typically lasting around 90 minutes, visits were completed when children were 9 months of age and then again at 3 and 5 years of age. In the case of home visits to families with 9-month-olds, a survey research workforce under subcontract from the Office of National Statistics carried out data collection. Home visits to families with 3-year-olds and 5-year-olds that involved child assessments as well as parental interviews, were carried out by a field staff specially hired and trained for this purpose by the Institute for the Study of Children, Families and Social Issues, Birkbeck University of London (which houses NESS).

During home visits, several sets of data were gathered in order to be able to assess the effects of SSLPs on child development and family functioning. In addition to these dependent-variable outcome measures, demographic and background information were collected from each family, as well as area characteristics on each community, to serve principally as control variables in the analyses to be presented. Additionally, centrally-collected government data on children's Foundation Stage Profiles were obtained from the National Pupil Database. FSPs were included because they provided a picture of the child's school functioning as rated by the child's teacher. Teachers differ from parents who supplied all of the other data on child and family functioning (beyond that obtained via standardised cognitive testing) in that they have extensive experience with lots of different children and thus a wider basis for comparison. Thus, there are grounds for suspecting that teacher evaluations could be more objective and thus informative than parent reports (but not necessarily than data secured via testing).

The measures used are delineated below.

4.1.1 Child/Family Dependent/Outcome Variables

The outcome variables for children and families seen at 5 years of age and used in analyses are summarised below, with further detail in Appendix G:

Child Educational Development:

Foundation Stage Profile (FSP):

1. Personal, Social and Emotional Development (PSE)
2. Communication, Language and Literacy (CLL)
3. Problem-solving, reasoning and numeracy (MAT)
4. Knowledge and Understanding of the World (KUW)

5. Physical Development (PD)
6. Creative Development (CD)
7. Total FSP score

The Foundation Stage Profile (FSP) records the child's achievement as reported by their teacher at the end of the first year of school for children in state schools in England. The assessments are made on the basis of the accumulated observations and knowledge of the whole child. A handbook for teachers describing the criteria to be used in the FSP is available at <http://nationalstrategies.standards.dcsf.gov.uk/node/113520>.

The FSP covers six areas of learning, covering children's physical, intellectual, emotional and social development. The first 3 areas are made up of several subscales, and the last 3 areas have only one rating scale.

1. Personal, Social and Emotional Development (PSE):
 - Dispositions and Attitudes
 - Social Development
 - Emotional Development
2. Communication, Language and Literacy (CLL):
 - Language for Communication and Thinking
 - Linking Sounds and Letters
 - Reading
 - Writing
3. Problem-solving, reasoning and numeracy (Mathematical development) (MAT):
 - Numbers as Labels for Counting
 - Calculating
 - Shape, Space and Measures
4. Knowledge and Understanding of the World (KUW)
5. Physical Development (PD)
6. Creative Development (CD)

Each assessment scale is rated 0-9 as follows:

- **0 points** – assigned to a child for whom it has not been possible to record an assessment, because of the nature of their individual needs, at this stage of their development.
- **1-3 points ('Stepping Stones')** – these describe a child who is still progressing towards the achievements described in the Early Learning Goals. Most children will achieve all of these 3 points before achieving any of the Early Learning Goals, but there may be exceptions to this pattern. A child who fails to score on any of these stepping stones is suffering from significant developmental delay.
- **4-8 points (Early Learning Goals)** – these are drawn from the Early Learning Goals themselves, presented in order of difficulty, according to evidence from trials. However, the points are not necessarily hierarchical and a child may achieve a later point without having achieved some or all of the earlier points.
- **9 points** – this describes a child who has received all the points from 1-8 on that scale, has developed further in both depth and breadth and is working consistently beyond the level of the Early Learning Goals.

Children who achieve a scale score of 6 points or more for any assessment scale are classified as *working securely* within the Early Learning Goals for that assessment scale. They are deemed to have achieved a good level of development by the end of the foundation stage.

If a child achieves a total score of 78 points or more across all 13 assessment scales then they will have achieved an average of 6 points per scale (although in practice could have scored higher or lower than this for each scale). A child who achieves an overall score of 78 points, alongside a score of 6 or more in each of the PSE and CLL scales, is deemed to be reaching a good level of development.

Child social and emotional development: emotional dysregulation, positive social behaviour, internalising behaviour, self-regulation. These were all obtained by means of parental report.

Child Language Development: The child was assessed on the British Ability Scales (BAS) 'Naming Vocabulary' scale (Elliott et al., 1998) as a measure of the child's level of language development.

Child Physical Health: general physical health based on detailed reports by parents of the child's health history; and body mass index (BMI), based upon height and weight measurements by a researcher.

4.1.2 Child/Family, Community and Study Design Control Variables

A variety of child/family and community variables functioned (principally) as control variables in the analyses to be described (see Appendix E for fuller description of variables). These included the following:

- *Child Characteristics:* age (in months), age in school year, gender, and ethnicity.
- *Demographic, Socioeconomic and Parental Characteristics:* English as only household language (yes, no), maternal age at child's birth (<20 vs. \geq 20), lone parent (yes/no), maternal self-reported cognitive difficulties (some vs. none), household income, highest individual occupational status in household, highest educational level of household, household work status (workless household vs. adult employed).
- *Area characteristics:* Area data, derived from the Index of Multiple Deprivation (IMD, ODPM, 2004) and the 2001 census (for details see Appendix F), were subject to a principal components analysis that yielded seven area-level factors. For purposes of the current evaluation of SSLP effects, the resulting area-level factor scores function as covariates. The eight area factors were identified as: economic deprivation, large non-Asian ethnic minority present, many children, large Asian/Pakistani population, large transient population with children, large Asian/Bangladeshi population, and large Asian/Indian and student population. In addition the IMD 2004 and an index of urban/rurality were included as area level variables.

4.2 Quality of Childcare and Education

Data on quality of childcare comes from the study described in Part A of this report. Quality in this context refers to how the environment provides conditions likely to foster children's development, such as caregivers being attentive, responsive and stimulating. Quality is measured using three well established observation tools:

- ECERS-R: Early Childhood Environment Rating Scale Revised – measures the quality of the setting environment
- ECERS-E: Early Childhood Environment Rating Scale Extended – measures the quality of educational provision
- CIS: The Caregiver Interaction Scale – records the nature of the interactions between the caregiver and the child.

These measures have been previously described in section 2.2.2 with further details in Appendices B, C and D.

5 PART B: CHILDCARE QUALITY AND CHILD OUTCOMES: FINDINGS

Analyses were undertaken to explore how the setting characteristics presented in Part A may have influenced the outcomes for 5-year-old children as measured in the NESS Impact Study. The issue addressed is whether or not there are relationships between pre-school group childcare setting quality and outcomes for children attending the group childcare settings studied, once the background characteristics of children have been taken into account.

5.1 Analysis

Three stages of analysis address:

1. The issue of whether there were overall effects of pre-school setting (3-5 years) childcare quality on child functioning in terms of attainment in child outcomes at 5 years of age.
2. The issue of whether there were overall effects of pre-school (3-5 years) childcare quality on *change* in child functioning between 3 and 5 years of age (i.e. progress).
3. Whether any detected effects of pre-school (3-5 years) childcare quality varied across demographically-defined sub-populations of particular policy interest (e.g. workless households, lone-parent families).

All analyses were carried out twice, with complete cases and imputed data:

1. Complete cases:- using only those cases with no missing data at age 5;
2. Imputed data: - using all cases seen at age 3 for whom childcare quality data were available, with any missing data imputed multiple times before being subject to analysis.

For imputed data sets, missing values on all independent and dependent variables were estimated based on standard multiple-imputation procedures (Rubin, 1987). The imputation approach represents an attempt to counteract the possibility that cases with missing data differ in some way from cases with complete data and the biasing effects that their exclusion from the analysis could have on the results. Ten imputed data sets were created, which ensured that all model estimates will be over 90% efficient. For more detail of the imputation procedure see Appendix H. *Only significant effects that emerged in both sets of analyses are regarded as reliable and meaningful and are presented and interpreted in this report. This conservative procedure maximises confidence in the results.*

5.1.1 First stage: Overall Effects of childcare quality on attainment at age 5

The first stage of data analysis was designed to assess the main effects of pre-school (3-5 years) childcare quality on attainment in child outcomes at 5 years of age, after taking into account pre-existing differences in demographic characteristics. Initially correlations between each of the quality scales ECERS-R, ECERS-E and CIS and child

outcomes were examined. The CIS did not show significant correlations with child outcomes and was dropped from subsequent analyses.

In order to determine whether any main effects of pre-school group childcare setting quality on child development were detectable, the data were analysed using multilevel models. These are statistical models that take into account the hierarchical structure of data, with children nested within group childcare settings. Linear models are used for the continuous measures and logistic models for binary outcomes. Summary statistics (i.e. means, standard deviations) for outcome variables are presented in Appendix I.

The estimated effects of pre-school childcare quality upon child outcomes are displayed in Table 5.1.1.1 for the results emanating from the analysis of imputed data. Statistically significant effects are in bold italics.

Table 5.1.1.1: Estimated Effects of childcare at 5 years – Imputed data (all seen at 3 years)

Child Outcome Measures	Childcare Quality Main Effects [#]					
	Estimated effects					
	ECERS-R Total			ECERS-E Total		
	Mean Diff	95% CI	p	Mean Diff	95% CI	p
Child Educational Development						
Personal, social and emotional (PSE)	0.06	-0.01 to 0.13	0.07	0.04	-0.04 to 0.11	0.33
Communication and language (CLL)	0.07	0.01 to 0.13	0.03	0.04	-0.02 to 0.11	0.20
Problem-solving, reasoning and numeracy (MAT)	0.06	-0.00 to 0.13	0.06	0.03	-0.05 to 0.10	0.47
Knowledge and understanding of the world (KUW)	0.05	-0.02 to 0.11	0.16	0.03	-0.04 to 0.09	0.37
Physical development (PD)	0.03	-0.04 to 0.09	0.43	0.01	-0.06 to 0.08	0.72
Creative development (CD)	0.03	-0.03 to 0.09	0.35	0.01	-0.05 to 0.08	0.72
Foundation Stage Profile score total	0.06	0.00 to 0.13	0.04	0.04	-0.03 to 0.10	0.31
Child Social & Emotional Development						
Emotional dysregulation	-0.01	-0.04 to 0.01	0.25	-0.02	-0.04 to 0.01	0.15
Positive social behaviour	-0.01	-0.03 to 0.02	0.47	0.00	-0.02 to 0.02	0.79
Internalising	-0.01	-0.03 to 0.01	0.36	-0.01	-0.03 to 0.01	0.49
Self regulation	-0.00	-0.02 to 0.02	0.94	0.01	-0.01 to 0.03	0.41
Child Cognitive Development						
BAS Naming Vocabulary	0.10	0.03 to 0.17	0.01	0.13	0.06 to 0.20	0.0003
BAS Non-verbal	-0.00	-0.51 to 0.50	0.99	0.24	-0.26 to 0.74	0.35
Child Physical Health						
BMI (standardized)	-0.02	-0.09 to 0.06	0.69	0.03	-0.04 to 0.11	0.38
General health	0.00	-0.04 to 0.05	0.92	0.01	-0.04 to 0.05	0.68

The analyses estimated the probability (p) of the observed differences occurring by chance. Where this probability was less than .05 then the explanation of a chance effect was rejected and the predictor was regarded as having a statistically significant effect upon the child outcome, and the lower the probability, the more statistically significant the result. This is the standard criterion of statistical significance. Statistically significant results are highlighted in **bold italics**.

After taking into consideration pre-existing family and area background characteristics, both sets of analyses indicate that *the higher the pre-school childcare quality, as measured by ECERS-R or ECERS-E, the higher the child's attainment in language development as measured by the BAS Naming Vocabulary scale*. In addition for ECERS-R only, *higher pre-school childcare quality is associated with higher FSP scores for communication and language and total FSP score*. No other child outcomes show significant effects associated with pre-school childcare quality as measured by ECERS-R or ECERS-E total scores.

Where there were statistically significant effects associated with the childcare quality measures of ECERS-R or ECERS-E, further analyses explored the nature of the relationship, i.e. whether this was a straight-line relationship or a curvilinear relationship. These further analyses indicated that the assumption of a linear relationship (straight line) between childcare quality measures and child outcomes provided the best fit with the data. That is, it was principally the case that as quality increased (or decreased) so did child functioning rather than the benefits of good quality care (or the costs of poor quality care) being most pronounced when care was especially good (or especially bad).

Further analyses explored whether specific subscales of ECERS-R or ECERS-E were predictive of child outcomes. The results of these analyses are shown in Appendix J. The key findings were that:

- Several ECERS-R subscales showed significant effects upon BAS Naming Vocabulary: (a) 'Space & furnishings', (b) 'Personal care routines', (c) 'Language-reasoning', (d) 'Activities' and (e) 'Interaction'; and ECERS-E subscales (a) 'Literacy', (b) 'Mathematics' and (c) 'Diversity'.
- The strongest effects were for the ECERS-R subscales 'Language-reasoning', and 'Activities' and the ECERS-E subscales 'Literacy' and 'Mathematics'.
- The ECERS-R subscales 'Interaction' showed significant effects for FSP subscales 'Communication and language' (CLL), and 'Problem-solving', 'Reasoning' and 'Numeracy' (MAT)
- The ECERS-R subscale 'Programme Structure' showed significant effects for FSP subscale 'Communication and Language' (CLL), and FSP total score.

The results clearly indicate relationships between quality of childcare and child language development. This further suggests that one way to improve children's language development in SSLP areas is to improve the quality of childcare provided.

5.1.2 Second stage: Overall effects of childcare setting quality upon *change* in child outcomes 3-5 years.

For several child outcomes there are equivalent measures taken at both 3 and 5 years of age. For these repeatedly-measured outcomes it is possible to undertake an analysis of change - or progress/growth - between 3 and 5 years. In these analyses the same covariates are used as in the attainment models just described, but in addition the appropriate 3 year-old measure is also included as a covariate. The latter feature turns the 5-year outcome into a measure of change over time, that is, of performance at age 5

that is not predicted by functioning at age 3. Again, such analyses test for main effects on an outcome and do not take into consideration the possibility that subpopulations might be differentially affected.

The estimated effects for pre-school childcare quality upon change in child outcomes from 3 to 5 years are displayed in Table 5.1.2.1 for the results emanating from the analysis of imputed data.

Table 5.1.2.1: Estimated Effects of childcare upon change 3 to 5 years - Imputed data (all children seen at 3 years).

Child Outcome Measures	Childcare Quality Main Effects [#]					
	Estimated effects					
	ECERS- R Total			ECERS-E Total		
	Mean Diff	95% CI	p	Mean Diff	95% CI	p
Child Social & Emotional Development						
Emotional dysregulation	-0.01	-0.03 to 0.01	0.32	-0.01	-0.03 to 0.01	0.28
Positive social behaviour	-0.01	-0.03 to 0.01	0.22	0.00	-0.02 to 0.01	0.70
Internalising	-0.01	-0.03 to 0.01	0.42	0.00	-0.02 to 0.02	0.72
Self regulation	0.00	-0.02 to 0.01	0.63	0.00	-0.02 to 0.02	0.66
Child Cognitive Development						
BAS Naming Vocabulary	0.08	0.01 to 0.14	0.02	0.11	0.04 to 0.18	0.002
BAS Non-verbal	-0.24	-0.75 to 0.27	0.36	-0.08	-0.64 to 0.48	0.75

[#] Effects are adjusted for child, family and area characteristics and strata. These models also include **equivalent age 3 outcomes as predictors**.
CI=Confidence interval

After taking into consideration pre-existing family and area background characteristics, as well as child functioning at age 3, both sets of analyses indicate that the higher the pre-school group childcare setting quality, as measured by ECERS-R or ECERS-E, the greater the child's functioning at age 5 and thus the greater the progress the child makes in language development as measured by the BAS Naming Vocabulary scale. Only the measure of child language development of the six child outcomes measured for change between 3-5 years showed an effect for quality of childcare.

5.1.3 Third Stage: Do the effects vary by population subgroup?

The main effects on an outcome just discussed do not take into consideration the possibility that subpopulations might be affected differently. Therefore having evaluated the effects of group childcare setting quality on child outcomes at 5 years of age and on change from 3 to 5 years, the next stage of analysis was designed to determine whether these effects were the same across various population sub-groups.

In order to examine possible differential effects across sub-populations, five demographic variables were chosen because of their policy relevance to address the issue of sub-population-specific effects. More specifically, 2-way interactions involving

childcare quality and each of the following factors were tested for each outcome measure after controlling for the child, family and area characteristics

- child gender
- teenage parenthood (i.e. <20 years at delivery)
- lone parenthood (i.e. no partner living in home)
- workless household (i.e. no adult employed in home), and
- household income.

The interaction analyses were undertaken for both data sets-cases with complete data at 5 years, and imputed data for all seen at 3 years for whom measures of childcare setting quality were available.

There were no interaction effects that replicated across both data sets. Therefore it would appear that the main effects of group childcare setting quality on attainment and progress previously described apply across all subgroups in the population studied.

5.2 Summary and discussion

Insofar as can be determined in non-experimental work that does not randomly assign children to better and poorer quality childcare settings, thereby allowing strong causal inference, the results indicate that childcare quality has an effect upon children's language development after allowing for background factors. Where such effects emerge, they indicate that better quality of childcare is associated with better functioning, whereas poorer quality is related to poorer functioning - and in a linear, dose-response manner (i.e. the better/worse the quality, the better/worse child functioning). The quality-of-childcare effects in question are seen for both ECERS-R and ECERS-E measures for the BAS Naming Vocabulary measures. In addition, childcare quality as measured by ECERS-R also shows an effect upon the FSP subscale, 'Communication and Language' and the FSP total score. Importantly, these results indicate that quite independent sources of information on child language development - tested performance on the BAS administered by a researcher (i.e., Naming Vocabulary) and teacher ratings (of FSP Communication and Language) - show similar effects of childcare quality. Such independent documentation of effects upon child language development affords great confidence in the results.

These findings of effects of childcare quality upon child language development appear to apply across all subgroups in the population of the generally deprived SSLP areas studied. There were no replicated significant interactions by population subgroup. Thus, it was not demonstrably the case that one subgroup or another (e.g. lone parents, workless households) benefited more from good quality care or suffered more from poor quality care.

Other research has found similar results. An early study by Melhuish et al., (1990) on childcare and child development in London in the 1980s found that childcare quality predicted language development. More recently similar results have emerged in England (Sammons et al., 2002) in Northern Ireland (Melhuish et al., 2006) and in the USA (Belsky et al., 2007; NICHD, 2005; 2006; Vandell, Belsky et al., 2010). These effects appear to be more than short-term in that the effects of childcare quality are still

present in terms of cognitive – academic attainment at 11 years old in England and Northern Ireland (Sammons et al., 2008; Melhuish et al., 2010) and at 15 years old in the USA (Vandell, Belsky et al., 2010).

The 2010 NESS Impact Study report (Melhuish et al, 2010) published alongside this study concludes that there were no effects of SSLPs for various measures of children’s cognitive and social development, including language development, although SSLPs were associated with some benefits for child health. If SSLPs are to produce long term effects upon child outcomes for children in deprived areas, particularly for literacy and academic outcomes, an essential step would be to improve childcare quality across all settings. Research (e.g. Melhuish et al., 1990; NICHD, 2005) suggests that it is particularly important to improve the aspects of setting quality that will improve children’s language development. This is because i) early language development is highly predictive of later literacy and academic performance (Young et al., 2002; Sénéchal, Ouellette, & Rodney, 2006) and ii) language development is susceptible to environmental influence (Melhuish et al., 1990; Hart & Risley, 1995; Tamis-LeMonda & Rodriguez, 2009) . The results of this study indicate that one way for SSLPs to improve language development for children in deprived areas is through optimising the quality of the childcare setting they attend. Another option identified through other research (see Melhuish, 2004) indicates that improving staff training can improve the quality of childcare provision. The Children’s Workforce Development Council (www.cwdcouncil.org.uk) is currently looking at ways to improve the training of the early years childcare workforce. Further research on improving pre-school childcare quality may be needed to support policy development regarding this issue.

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APPENDICES

Appendix A: Staff highest qualification levels

Qualification	Level
PGCE	5
Certificate in Education	5
Higher Degree	4
Degree	4
NVQ4	4
BSW Grad Diploma	4
Foundation Degree	4
NVQ3	3
CCE	3
NNEB	3
BTEC Diploma	3
HND	3
PSLA Level 3	3
Advance Diploma in Childcare	3
NVQ1	2
NVQ 2	2
CACHE Level 2 Teaching assistant	2
CACHE Level 3 Teaching assistant	2
CACHE Certificate	2
CACHE Diploma	2
BTEC Certificate	2
Certificate in Early Years Practice	2
OTS	2
CCP	2
FAECT	2
HNC	2
First Aid	0
Food Hygiene	0
C&G Admin	0
BISC Domestic	0
none	0

Highest qualification of most senior member of staff in each setting

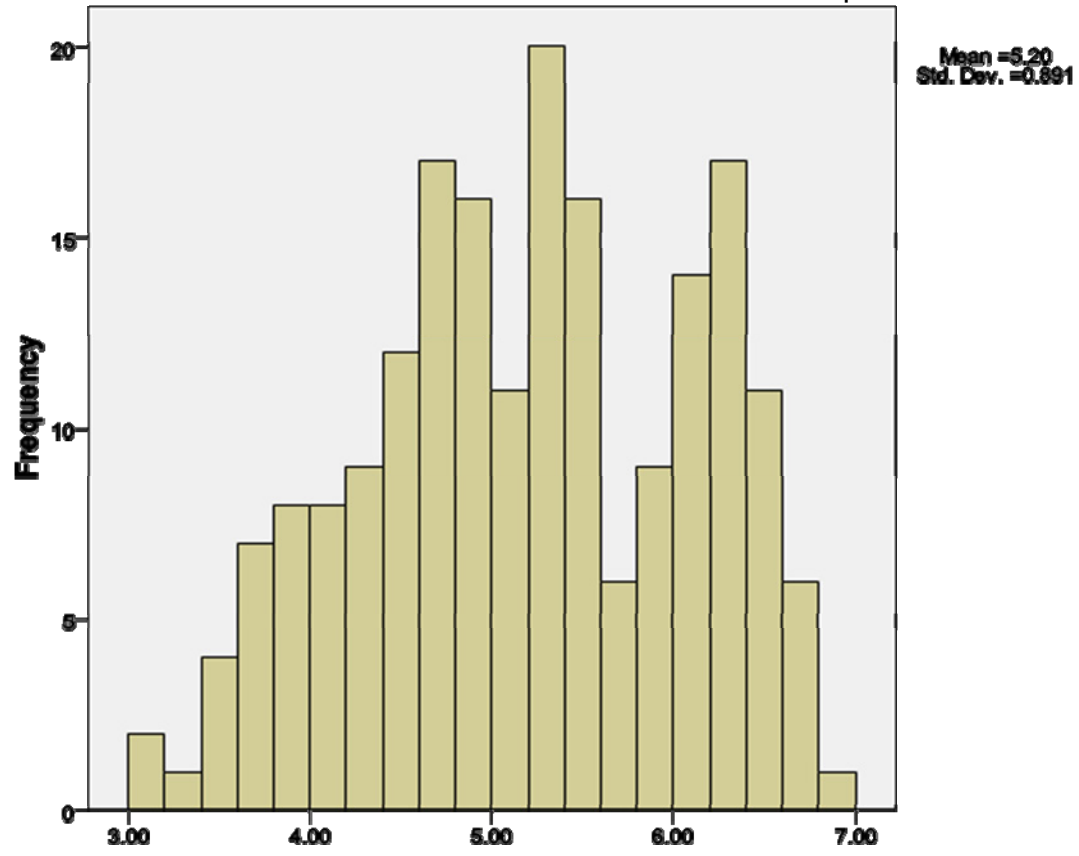
Qualification	Frequency	Percent
PGCE	10	4.4
Certificate in Education	9	3.9
Higher Degree	3	1.3
Degree	63	27.5
NVQ4	11	4.8
Foundation Degree	3	1.3
NVQ3	35	15.3
NNEB	47	20.5
BTEC Diploma	10	4.4
HND	2	0.9
Advance Diploma in Childcare	1	0.4
NVQ 2	3	1.3
CACHE Diploma	1	0.4
CACHE Level 3 Teaching assistant	3	1.3
BTEC Certificate	4	1.7
Certificate in Early Years Practice	2	0.9
CCP	2	0.9
HNC	1	0.4
Other	2	0.9
None	1	0.4
Missing information	16	7.0
Total	229	100

Appendix B: ECERS-R Subscales and items
(Harms, Cryer & Clifford, 2004)

Subscale	Item number	Item description
Space and Furnishings	1	Indoor space
	2	Furniture for routine care, play & learning
	3	Furnishings for relaxation and comfort
	4	Room arrangement for play
	5	Space for privacy
	6	Child-related display
	7	Space for gross motor play
	8	Gross motor equipment
Personal Care Routines	9	Greeting/departing
	10	Meals/snacks
	11	Nap/rest
	12	Toileting/ diapering
	13	Health practices
Language-reasoning	14	Books and pictures
	15	Encouraging children to communicate
	16	Using language to develop reasoning skills
	17	Informal use of language
Activities	18	Fine motor
	19	Art
	20	Music/movement
	21	Blocks
	22	Sand/water
	23	Dramatic play
	24	Nature/science
	25	Math/number
	26	Use of TV, video and/or computer
	27	Promoting acceptance of diversity
Interaction	28	Supervision of gross motor activities
	29	General supervision of children (other than gross motor)
	30	Discipline
	31	Staff-child interaction
	32	Interactions among children
Programme Structure	33	Schedule
	34	Free play
	35	Group time
	36	Provision for children with disabilities
Parents and Staff	37	Provision for parents
	38	Provision for personal needs of staff
	39	Provision for professional needs of staff
	40	Staff interaction and cooperation
	41	Supervision and evaluation of staff
	42	Opportunities for professional growth

Each item is rated on a 7 point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent).

Distribution of the ECERS-R total score for the NESS sample

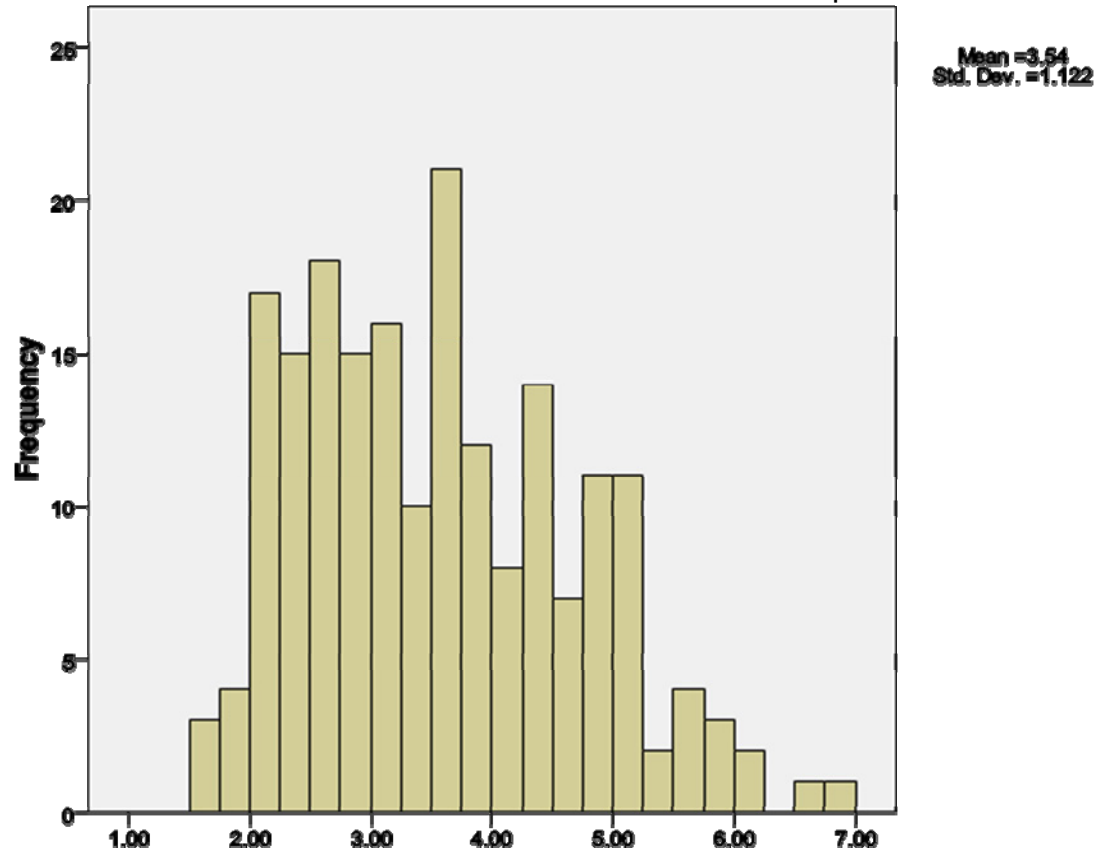


Appendix C: ECERS-E Subscales and items
 (Sylva et al, Revised Edition 2006, 2010)

Subscale	Item number	Item description
Literacy	1	Environmental print: letters and words
	2	Book and literacy areas
	3	Adults reading with children
	4	Sounds in words
	5	Emergent writing/mark making
	6	Talking and listening
Mathematics	7	Counting and the application of counting
	8	Reading and writing simple number
	9	Mathematical activities: shape and space (select either 3 or 4)
	10	Mathematical activities: sorting, matching and comparing (select either 3 or 4)
Science and Environment	11	Natural materials
	12	Areas featuring science/ science resources
	13	Science activities: non-living processes (select either 3, 4 or 5)
	14	Science activities: living processes and the world around us (select either 3, 4 or 5)
	15	Science activities: food preparation (select either 3, 4 or 5)
Diversity	16	Planning for individual learning needs
	17	Gender equality and awareness
	18	Race equality and awareness

Each item is rated on a 7 point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent).

Distribution of the ECERS-E total score for the NESS sample



Appendix D: Caregiver Interaction Scale

Observer: To what extent is each of the following statements characteristic of this caregiver? For each item, circle one of the numbers indicated: 1= not at all, 2= somewhat, 3= quite a bit, 4=very much.

- | | | | | |
|---|---|---|---|---|
| 1. Speaks warmly to the children | 1 | 2 | 3 | 4 |
| 2. Seems critical of the children | 1 | 2 | 3 | 4 |
| 3. Listens attentively when children speak to her | 1 | 2 | 3 | 4 |
| 4. Places high value on obedience | 1 | 2 | 3 | 4 |
| 5. Seems distant or detached from the children | 1 | 2 | 3 | 4 |
| 6. Seems to enjoy the children | 1 | 2 | 3 | 4 |
| 7. When children misbehave, explains the reason for the rule they are breaking | 1 | 2 | 3 | 4 |
| 8. Encourages the children to try new experiences | 1 | 2 | 3 | 4 |
| 9. Doesn't try to exercise much control over the children | 1 | 2 | 3 | 4 |
| 10. Speaks with irritation or hostility to the children | 1 | 2 | 3 | 4 |
| 11. Seems enthusiastic about the children's activities and efforts | 1 | 2 | 3 | 4 |
| 12. Threatens children in trying to control them | 1 | 2 | 3 | 4 |
| 13. Spends considerable time in activity not involving interaction with children | 1 | 2 | 3 | 4 |
| 14. Pays positive attention to the children as individuals | 1 | 2 | 3 | 4 |
| 15. Doesn't reprimand children when misbehave | 1 | 2 | 3 | 4 |
| 16. Talks to the children on a level they can understand | 1 | 2 | 3 | 4 |
| 17. Punishes the children without explanation | 1 | 2 | 3 | 4 |
| 18. Exercises firmness when necessary | 1 | 2 | 3 | 4 |
| 19. Encourages children to exhibit prosocial behaviour, e.g., sharing, cooperating | 1 | 2 | 3 | 4 |
| 20. Finds fault easily with the children | 1 | 2 | 3 | 4 |
| 21. Doesn't seem interested in the children's activities | 1 | 2 | 3 | 4 |
| 22. Seems to prohibit many of the things the children want to do | 1 | 2 | 3 | 4 |
| 23. Doesn't supervise the children very closely | 1 | 2 | 3 | 4 |
| 24. Expects the children to exercise self-control, e.g. to be undisruptive
for group, teacher-led activities, to be able to stand in line calmly | 1 | 2 | 3 | 4 |
| 25. When talking to the children, kneels, bends, or sits at their
level to establish better eye contact | 1 | 2 | 3 | 4 |
| 26. Seems unnecessarily harsh when scolding or prohibiting children | 1 | 2 | 3 | 4 |

Subscale

Positive Relationship: Items 1, 3, 6, 7, 8, 11, 14, 16, 19, 25

Punitiveness: Items 2, 4, 10, 12, 17, 20, 22, 26

Permissiveness: Items 9, 15, (- reversed)18, (-reversed)24

Detachment: Items 5, 13, 21, 23

Appendix E : Summary of Demographic Characteristics: Age 3 imputed Childcare sampled children (1318 cases)

Characteristic		Percentage	n
Child's Gender	Male	50	659
	Female	50	659
Child's Ethnicity	White	79.8	1052
	Mixed	5.4	71
	Indian	1.0	13
	Pakistani	5.6	74
	Bangladeshi	1.7	23
	Black Caribbean	1.4	18
	Black Other	2.8	37
	Other	2.4	31
Language in Home	English Home Language	85.4	1126
	Other Languages	14.6	193
Maternal Cognitive Difficulties	None	89.4	1179
	Has Some Difficulties	10.6	140
Highest Occupation	Management/Professional	17.4	229
	Intermediate	8.5	112
	Small Employer	6.4	85
	Lower Supervisory/Technical	8.9	118
	Semi-Routine	12.2	161
	Routine	8.3	109
	Unemployed	38.3	505
Lone Parent	Not Lone Parent	67.3	888
	Lone Parent	32.7	431
Work Status	Working Household	61.7	814
	Workless Household	38.3	505
Highest Education	Degrees/Higher Education	23.5	310
	A level	27.8	367
	O level / GCSE	23.1	305
	Other	6.8	90
	None	18.7	247
Child's Age (Months)	Mean	62.29	SD =2.93
Household income (£ per week)	Mean	262.2	SD = 174.40
Mother' age at birth of child (Years)	Mean	27.34	SD = 6.10

Appendix F : Producing measures of area characteristics

Area characteristics: a variety of census variables for each community (e.g. ethnicity, age distribution, employment status) and the 2004 IMD score were subjected to data-reduction-oriented factor analysis. Results were used to create composite factor scores reflecting dimensions of the community that could potentially influence the outcome measures. The labels of identified factors are listed in the left-hand column of Table F.1, with associated component variables defining each factor listed in the right-hand column.

Table F.1: Variables in area level composite factors

Composite	Variables in Composite
Economically deprived	High % lone parent families High % non working parents with children High % unemployed Low % all managerial Low % intermediate employment Low % small employers High % employment not classified Low % of all households owned High % all households social and council rented High % no qualifications High % people in households with no car or van High % household income < 60% national median High % of all people LLTI High IMD score 2004
Non Asian ethnic minority	High % Black African High % Black Caribbean High % Chinese High % mixed Low % white British High % white other Low % lower supervisory and technical Low % all routine employment Low % unshared of all occupied household spaces High % over 1.5 persons per room
Many children	Low % of all households with no dependent children High % of all people aged 0-4 Low % of all people aged 65+
Asian Pakistani	High % Asian Pakistani High % vacant household spaces
Transient population with children	High % inflow of all households with children High % outflow of all households with children
Asian Bangladeshi	High % Asian Bangladeshi
Asian Indian and students	High % Asian Indian High % economically active fulltime student

Appendix G : Description of Outcome Variables

Child Cognitive and Language Development	
British Ability Scales (BAS) (Elliot, Smith & McCulloch, 1996). Age standardised scores (mean=50, SD=10 for population)	
BAS naming vocabulary	a measure of language development
BAS pattern construction & picture similarities combined to give	a measure of non-verbal cognitive ability
Child Educational Development - All teacher ratings – see also section 2.6	
Personal, social and emotional development	Sum of ratings on :Dispositions and Attitudes, Social Development, Emotional Development
Communication language and literacy	Sum of ratings on : Language for Communication and Thinking Linking Sounds and Letters, Reading, Writing
Mathematical development	Sum of ratings on: Numbers as Labels for Counting, Calculating, Shape, Space and Measures
Knowledge and understanding of the world	Single rating
Physical development	Single rating
Creative development	Single rating
FSP total score	Total of the 6 FSP scales above
Child Social and Emotional Development	
Emotional dysregulation	A construct of items related to: temper tantrums, fighting, bullying, lies, cheating, restlessness, distractability, mood swings, overexcitement, frustration.
Positive social behaviour	A construct of items related to: having friends, being liked, considerate, sharing, helpful, kind, plays easily with others, cooperative.
Internalisation	A construct of items related to: often has headaches, worried, unhappy, nervous, fearful, solitary, picked on, gets on better with adults than children.
Self-regulation	A construct of items related to: works things out for self, does not need much help, seeks things through, chooses activities on their own, persists even when something is difficult, and can move to a new game after playing with a toy or game.
Physical Health	
BMI	Body Mass Index: weight in kgs. divided by square of height in meters, and then standardised by age and gender
General health	Respondent's rating of the child's general health

Appendix H: Imputation procedure

There is a strategy to overcome the problem that data may be missing in non-random ways and hence bias results. This involves the “imputation” of missing data. Imputation is based on the premise that tolerably accurate estimates of what a missing value would have been had the information been supplied can be determined using all the data that has been collected. Taking an over-simplified example, knowing a person’s age, education level, gender, work status and occupation enables a reasonably accurate prediction of salary, should salary data be missing, using data on all these variables. In the current evaluation, statistically sophisticated and widely used multiple-imputation techniques were employed to overcome the possibility of bias in results caused by non-random missing data. This takes into account that, in the above example, we can predict not just one value for the missing salary, but a range of plausible values.

Multiple imputation (Rubin, 1987; Schafer, 1997) was used to estimate missing data values using the statistical package IVEware (<http://www.isr.umich.edu/src/smp/ive/>). Multiple imputation is the process of generating several data sets, analysing these and combining the results. This ensures that we have sufficient variability between imputed values to be able to draw correct inferences. Compared to the SSLP data, the MCS study data had higher rates of missing data for household deprivation, highest occupation in household, household work status and the highest education in the household.

Rubin, D.B. (1987) *Multiple Imputation for Nonresponse in Surveys*. London: Wiley.

Schafer, J.L. (1997) *Analysis of Incomplete Multivariate Data*. London: Chapman & Hall.

Appendix I: Summary of Child Outcome Measures: - Imputed data for all seen at 3 years in SSLP areas (1319 cases)

Child Outcome Measures	Summary
	Mean (SD)
Child Educational Development: Foundation Stage Profile (FSP) scores	
Personal, social and emotional development (PSE)	-0.20 (0.95)
Communication language and literacy (CLL)	-0.16 (0.92)
Mathematical development (MAT)	-0.14 (0.92)
Knowledge and understanding of the world (KUW)	-0.22 (0.95)
Physical development (PD)	-0.20 (0.98)
Creative development (CD)	-0.20 (0.97)
Foundation Stage Profile score total	-0.19 (0.91)
Child Social & Emotional Development: questionnaire ratings by mother	
Emotional dysregulation	1.75 (0.42)
Positive social behaviour	2.64 (0.30)
Internalisation	1.38 (0.32)
Self regulation	2.40 (0.35)
Child Cognitive Development: standardised assessments	
BAS Naming Vocabulary score	47.98 (10.13)
BAS non-verbal ability	49.28 (7.91)
Child Physical Health	
BMI (standardised assessment)	0.59 (1.16)
General health (parent report)	4.21 (0.85)

Appendix J: ECERS-R and ECERS-E subscale effects upon child outcomes

ECERS-R subscale effects upon child outcomes

Child Outcome	Space & furnishings	Personal Care Routines	Language - reasoning	Activities	Interaction	Programme structure	Parents & Staff
Child Educational Development	-----	-----	-----	-----	-----	-----	-----
Personal, social and emotional (PSE)	-----	-----	-----	-----	-----	-----	-----
Communication and language (CLL)	-----	-----	-----	-----	*	*	-----
Problem-solving, reasoning and numeracy (MAT)	-----	-----	-----	-----	*	-----	-----
Knowledge and understanding of the world (KUW)	-----	-----	-----	-----	-----	-----	-----
Physical development (PD)	-----	-----	-----	-----	-----	-----	-----
Creative development (CD)	-----	-----	-----	-----	-----	-----	-----
Foundation Stage Profile score total	-----	-----	-----	-----	-----	*	-----
Child Social & Emotional Development							
Emotional dysregulation	-----	-----	-----	-----	-----	-----	-----
Positive social behaviour	-----	-----	-----	-----	-----	-----	-----
Internalising	-----	-----	-----	-----	-----	-----	-----
Self regulation	-----	-----	-----	-----	-----	-----	-----
Child Cognitive Development							
BAS Naming Vocabulary	*	*	**	**	*	-----	-----
BAS Non-verbal	-----	-----	-----	-----	-----	-----	-----
Child Physical Health							
BMI (standardized)	-----	-----	-----	-----	-----	-----	-----
General health	-----	-----	-----	-----	-----	-----	-----

----- non significant; * Significant at p<.05; ** Significant at p<.01

Appendix J continued:

ECERS-E subscale effects upon child outcomes

Child Outcome	Literacy	Mathematics	Science - Environment	Diversity
Child Educational Development	-----	-----	-----	-----
Personal, social and emotional (PSE)	-----	-----	-----	-----
Communication and language (CLL)	-----	-----	-----	-----
Problem-solving, reasoning and numeracy (MAT)	-----	-----	-----	-----
Knowledge and understanding of the world (KUW)	-----	-----	-----	-----
Physical development (PD)	-----	-----	-----	-----
Creative development (CD)	-----	-----	-----	-----
Foundation Stage Profile score total	-----	-----	-----	-----
Child Social & Emotional Development				
Emotional dysregulation	-----	-----	-----	-----
Positive social behaviour	-----	-----	-----	-----
Internalising	-----	-----	-----	-----
Self regulation	-----	-----	-----	-----
Child Cognitive Development				
BAS Naming Vocabulary	**	**	-----	*
BAS Non-verbal	-----	-----	-----	-----
Child Physical Health				
BMI (standardized)	-----	-----	-----	-----
General health	-----	-----	-----	-----

----- non significant; * Significant at $p < .05$; ** Significant at $p < .01$

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