



Department  
for Education

# **The impact of children's centres: studying the effects of children's centres in promoting better outcomes for young children and their families**

**Evaluation of Children's Centres in England (ECCE, Strand 4)**

**Research report**

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# Evaluation of Children's Centres in England: Research Team

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## List of Abbreviations

BAS	British Ability Scales
BMI	Body Mass Index
BTEC	Business and Technology Education Council
CC	Children's Centre
CCLMRS	Children's Centre Leadership and Management Rating Scale
CFA	Confirmatory Factor Analysis
CHAOS	Confusion, Hubbub, and Order Scale
CVA	Contextualised Value Added
DCSF	Department for Children, Schools and Families (Now the DfE)
DfE	Department for Education
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders - 4 <sup>th</sup> Edition
EAL	English as an Additional Language
EBP	Evidence-Based Practice
ECCE	Evaluation of Children's Centres in England
EEC	Early Excellence Centre
EFA	Exploratory Factor Analysis
EIG	Early Intervention Grant
EHS	Early Head Start
EPPE	(The) Effective Provision of Pre-School Education (Project)
EPPSE	(The) Effective Pre-School, Primary and Secondary Education (Project)
ES	Effect Size
ETI	Education and Training Inspectorate
EYFS	Early Years Foundation Stage
FE	Further Education

FSP	Foundation Stage Profile
GHQ	General Health Questionnaire
HES	Household Economic Status (workless household)
HLE	Home Learning Environment
HS	Head Start
HSCIC	Health and Social Care Information Centre
ICC	Integrated Children's Centre
IDACI	Income Deprivation Affecting Children Index
LSOA	Lower Super Output Area
Mean	Mean average
MCS	Millennium Cohort Study
NESS	National Evaluation of Sure Start
N	Total Number
N/A	Not Applicable
NFER	National Foundation for Educational Research
NHS	National Health Service
NN	Neighbourhood Nursery
NPQICL	National Professional Qualification in Integrated Centre Leadership
NS-SEC	National Statistics Socio-Economic Classification
NVQ	National Vocational Qualifications
Ofsted	The Office For Standards in Education, Children's Services and Skills
OR	Odds Ratio
PCA	Principal Components Analysis
PCT	Primary Care Trust
PSI	Parenting Stress Index

PVI	Private, Voluntary and Independent sector
RCT	Randomised Control Trial
RMSEA	Root Mean Square Error of Approximation
SALT	Speech and Language Therapy
SD	Standard Deviation
SDQ	Strengths and Difficulties Questionnaire (Goodman, 1997;1999)
SES	Socio-Economic Status
SSCC	Sure Start Children's Centres
SSLP	Sure Start Local Programme
UK	United Kingdom
WHO	World Health Organization

## Executive Summary

The six year Evaluation of Children's Centres in England (ECCE) study was conducted between 2009 and 2015. It is based around a number of linked Strands and has produced a series of reports. This penultimate report describes and summarises the main results from the *Impact study* (Strand 4). It will feed into further analyses that investigate cost effectiveness (Strand 5). The impact results are based on analyses involving over 2,600 families registered at 117 Phase 1 and 2 children's centres serving disadvantaged communities in England. These analyses draw together data collected by earlier Strands of the evaluation, linking surveys of user families and information about children's centres.

The ECCE research seeks to provide formative evidence on practices in the provision, delivery and use of children's centres and their services between 2011 and 2013, and has explored perceptions of their impact from stakeholder groups, including both users and providers. Interviews with children's centre staff in 2013 suggested that children and adults attending 'Play and Learning' activities received a number of benefits as a result of their participation (Evangelou et al., 2014). For example, children were reported to develop skills which supported their 'Personal, Social and Emotional Development', 'Physical Development', and 'Understanding of the World'; as well as school readiness and social interaction. Adults were reported to benefit from improved parenting skills, greater knowledge of child development, and increased confidence in parenting, as well as receiving more general support for their personal needs. Parents attending the children's centres in 2013 also gave similar examples of perceived benefits for their children (including improved 'Personal, Social, and Emotional Development', as well as improved 'Physical Development'). There were also high levels of satisfaction within children's centres, with the vast majority of interviewed parents indicating that they were "very happy" with the services that they received (92% of parents; see Evangelou et al., 2014 for further information).

This report builds upon previous ECCE research by *evaluating the impact of children's centres in improving measured outcomes for a broader sample of user families than investigated in the earlier fieldwork strands*. These outcomes (family, mother and child) were chosen to reflect the aims of children's centres regarding improving family functioning and providing children with a better start to school. Thirteen outcomes were measured through a longitudinal survey design (Strand 2 of the evaluation) that recruited a sample of user families that were registered at a named children's centre with a child aged 9-18 months (mean age 14 months) and followed up to age 3 plus (mean age 38 months).

The underlying rationale for the introduction of children's centres was to *support all children and families living in particular disadvantaged areas* by providing a wide range of services tailored to local conditions and needs. This evaluation has focused on children's centres that were set up under Phase 1 and 2 of the programme, Phases which targeted the most disadvantaged areas. The original intention of children's centres was to

maximise reach, and many services were intended to be available to all families with young children who were living in such neighbourhoods. Children's centres would thereby have an inclusive purpose rather than being available to only those families regarded as the 'most needy'. Thus, potential users would not be stigmatised by attendance because at least some services were open to all families and children (see Sylva et al., 2015). Having said this, children's centres were also intended to assess local needs by studying the characteristics of local communities, and undertaking outreach to attract and serve the 'most needy' families. Towards this aim, some services were therefore targeted to particular groups of high-risk families (e.g. teenage parents, workless families etc.) The definition of 'needs' and factors that might be deemed to make families vulnerable is open to a range of interpretations including high financial disadvantage; family or child characteristics including parental needs such as mental health problems, or parent-child relationships; ethnic minority status; child health or behaviour problems (see Lord, Southcott and Sharp, 2011, for further information).

## Investigating Impact

Chapter 1 summarises key findings of past research on the effects of children's centres and similar programmes. The review shows that, as yet, there is no strong or consistent evidence about the impact of children's centres or similar types of programmes in other contexts. Previous research, particularly the National Evaluation of Sure Start (NESS) study of Sure Start Local Programmes (the precursor to the current children's centre programme in England) identified a number of weak to modest positive effects for parent, family and some child outcomes. However, the results of the NESS study also suffered from some methodological limitations: it was not designed to focus on a user group and so could not assess changes in users' outcomes directly; rather it adopted an area-based design reflecting the neighbourhood focus of the original Sure Start Local Programmes when first introduced. The longitudinal ECCE evaluation has adopted a different but, nonetheless, complementary design to investigate 'impact' based upon a sample of families (drawn from registration lists at children's centres rather than sampling through benefit records as in NESS) that show different patterns of use of children's centre services, again with a focus on centres in the most disadvantaged neighbourhoods (Phase 1 and 2).

Investigating 'impact' is a difficult task because children's centres have a variety of objectives, were set up to vary in function and/or organisation, and ways of providing services tailored to their neighbourhoods (see Chapter 1). Children's centres thus cannot be seen as a single 'intervention'. They vary widely in terms of the type and mix of services that they offer. Moreover, families vary widely in the extent to which they may choose or be guided (signposted or referred) to make use of the services on offer. Families are not randomly allocated to a single children's centre intervention and so an RCT (Randomised Control Trial; see Glossary) design is inappropriate. It is not possible to compare an intervention group with a control group because children's centres were intended to be open to all families and flexible patterns of service use have remained a

fundamental feature of children's centre policies. Establishing 'impact' is therefore not a matter of identifying a *single* effect but rather, identifying and summarising a *range* of effects, across the sample of users and centres, and covering the variety of centre characteristics and provision that existed between 2011 and 2013.

To investigate impact, Strand 4 has studied naturally occurring variation in the take-up and use of children's centres and their services amongst a sample of families registered at 117 children's centres. It links together quantitative data about children's centres and their characteristics, and the use of children's centre services and other services by this sample of children and families (collected from the earlier Strands of the project - Strand 1: *Survey of children's centre leaders*, Strand 2: *Visits to families*, and Strand 3: *Visits to children's centres*). Overall, Strand 4 has addressed the overarching question: "*What aspects of children's centres (management structure, working practices, services offered, and services used) promote better family, parent, and child outcomes?*"

Answering this overarching question required linking data about the children's centres at which families were registered, to data about families and children over time (from Strand 2, *Visits to families*). Based on the survey responses from the three occasions that families were contacted, it is therefore possible to identify and document the main patterns of: 1) variation in families' engagement with children's centres in the ECCE sample, and 2) variations between families in their use of various children's centre services over time. In terms of theoretical conceptualisation, the research draws on Bronfenbrenner's (1979; 1986) ecological model concerning proximal to distal influences on the child (family influences being proximal while neighbourhood or institutional influences are more distal). It also draws on various models about how children's centres might provide services in order to address parent and family needs and so promote better outcomes for children indirectly, by influencing parenting practices (see Sameroff and Fiese, 1990; Woolfson, 2002; and Boag-Munroe and Evangelou, 2010).

## **Creating measures and indicators**

Chapter 2 outlines the overall mixed methods design of the ECCE evaluation, and the educational effectiveness methodology adopted to model centre effects and investigate impact by identifying effects on selected child, parent and family outcomes. It describes how a set of measures was created to measure the main patterns of use of children's centre services by the sample of user families. It also presents a summary of the measures of children centre characteristics (organisational models and processes) that were created, and describes the analysis techniques used to produce these. Both sets of measures (use of services and features of centres) are then tested in the impact analyses.

Chapter 3 outlines the characteristics of families that are the focus of the *Impact study*. It analyses the patterns of variation in their use of different services, following the sample across the three time points where they were interviewed by Strand 2 fieldworkers (as their children aged from 9-18 months to 3+ years).

## Child, mother and family outcome measures

Data was collected for six measures of child outcomes: three on social skills and behaviour, two on cognitive skills, and one on health. These measures assessed children's *internalising*<sup>1</sup> behaviours, *externalising*<sup>2</sup> behaviours, *pro-social* skills, cognitive attainment, both language (naming vocabulary) and non-verbal reasoning (picture similarities), and one of health (whether or not a child was in poor health). Outcomes were measured at Wave 3 when children were aged 3 years plus, but only child health was also measured at baseline when families were first recruited to the study (Wave 1 visits). This means that it was not possible to measure change in outcomes over time for the first five of the child outcomes, it was only possible for child health. This is a limitation in the methodology (originally an additional sample of older children was also due to have been studied where change would have been measured<sup>3</sup>, but a cut to the scope of the evaluation in 2010 led to removal of this element). The implication for the analysis is that some effects might be missed and that the evaluation is limited in its attempt to investigate impact on changing child outcomes.

For mother outcomes, two measures were collected: one focusing specifically on mental health, and the other on a more general measure of the mother's health status (better or poorer). For family functioning, six outcome measures were obtained. *Household Economic Status (HES)* identified workless household status (whether no parent in the household was working). The *Confusion, Hubbub, And Order within the home Scale (CHAOS)* provided an indicator of the structure of the home environment, while the early years *HLE* measured more specific features of the early years *home learning environment* at child age 3 years plus. In addition, two measures of parenting were collected; *Parental Distress* and *Parent-Child Dysfunctional Interaction*. For all mother and family outcomes, it was possible to measure change because baseline data was also obtained when families were recruited to the research at Wave 1.

Where possible the same (or similar) outcome measures that had been used in the earlier NESS evaluation of SSLPs were also included in ECCE in order to allow comparisons of findings about impact: these included mother's mental health, the CHAOS, early years HLE measures and children's cognitive skills.

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<sup>1</sup> This measure is based on items relating to children's display of emotional symptoms and peer problems. It is a higher-order subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and indicates problem behaviour.

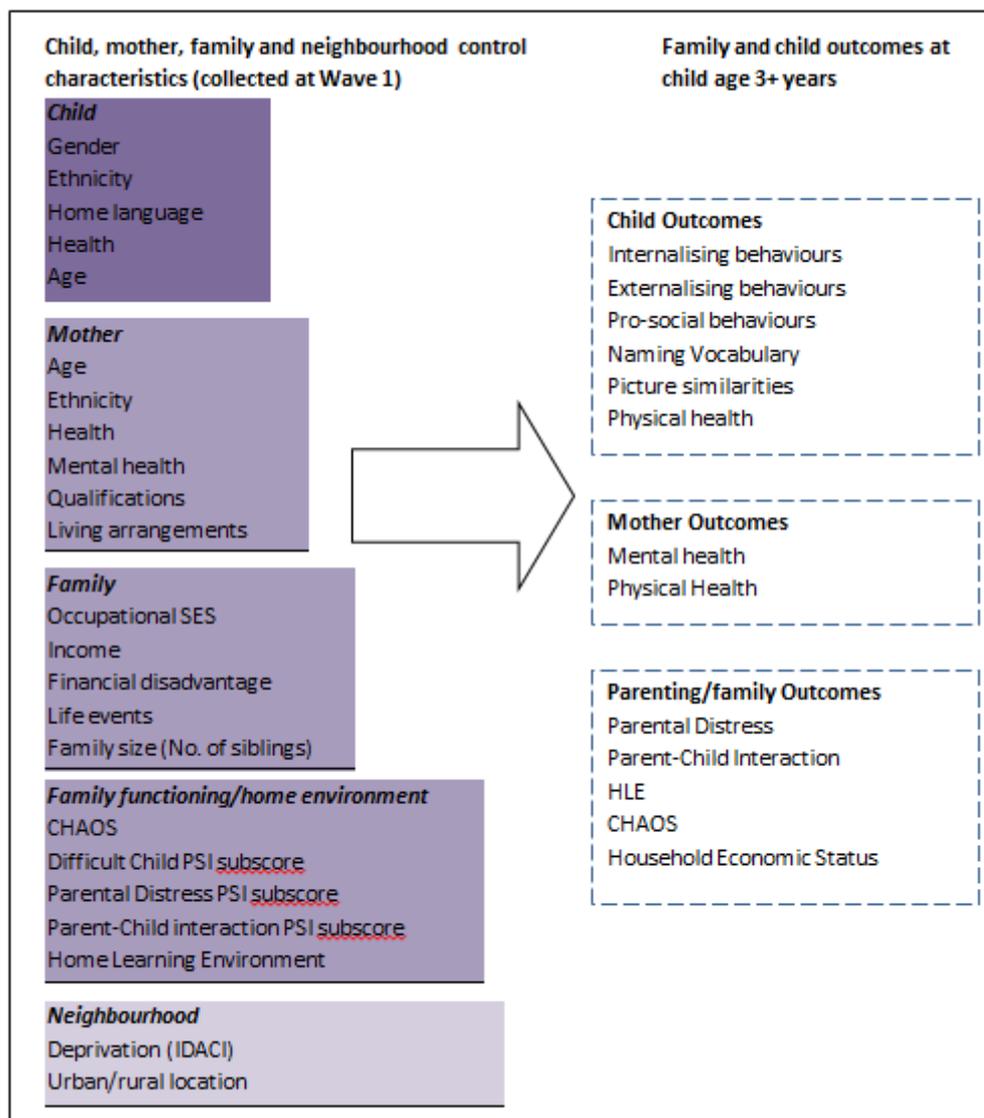
<sup>2</sup> This measure was comprised of items relating to children's display of conduct problems and hyperactivity. It is a higher-order subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and indicates problem behaviour.

<sup>3</sup> Originally a cohort of children aged 3-5 years (with supplemental administrative data obtained at age 7) would have been studied alongside a cohort of children aged 1-5 years. The older cohort would have had full baseline measurement at age 3. This would have enabled the study of impact upon change in outcomes over a longer four year period, rather than for just one group over the two year period presented here (across mean child ages 14-38 months).

## Modelling the effects of children's centres

Chapter 3 summarises the statistical modelling approach used to obtain evidence of 'impact'. Multilevel regression models produced results that are based on statistical estimates of how far families' engagement with children's centres and use of their services showed measurable 'effects' on outcomes for the sample of children and families. These estimates were obtained while controlling for the effects of important individual child, parent, family and neighbourhood characteristics that also influenced such outcomes.

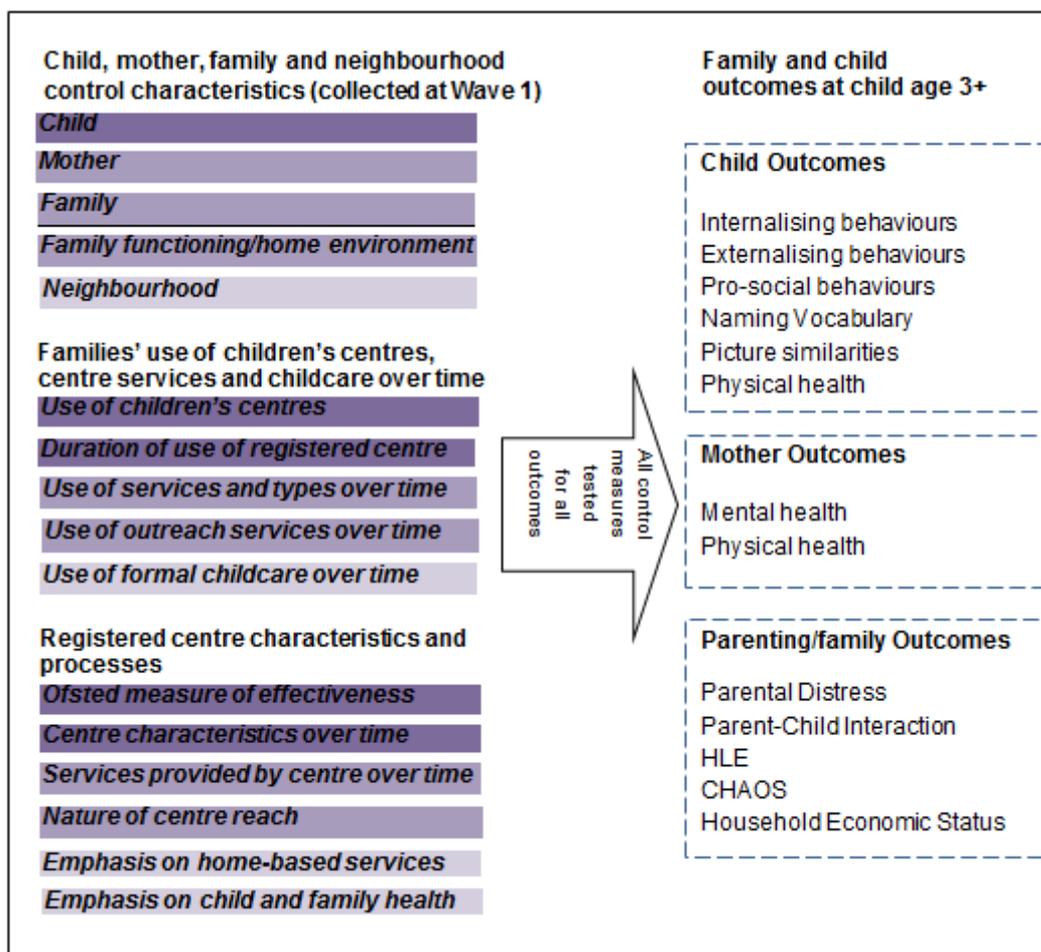
**Figure A Sets of child, mother, family and neighbourhood predictors (contextualising controls) tested in multilevel models of different on various child and family outcomes**



In addition, some other descriptive analyses explored how far service use was driven by different characteristics of the children and families, for example, addressing the question of whether more needy families made greater use of certain services. Figure A illustrates the main measures of child, mother, family and neighbourhood characteristics collected for the user sample of families and adopted as controls in the statistical models. Figure B

illustrates the main measures of service use and features of children’s centres (characteristics and processes) that were tested for impact.

**Figure B Contextualising controls, centre characteristics, and measures of centre and service use tested in multilevel models of different on various child and family outcomes**



Chapters 4 to 6, present the results of the main Impact models developed to explore the effects of various child, family and neighbourhood background influences on the three sets of outcomes measured when the children were age 3 years plus. Chapter 4 summarises impacts for child outcomes, Chapter 5 for mother outcomes and Chapter 6 those for families. A summary of the main findings for these three user groups is provided. The strength of effects is measured by Effects Sizes (ES) or in terms of Odds Ratios (OR) for dichotomous outcomes such as child health or HES (Household Economic Status; workless household or not) and shown in the relevant chapters.<sup>4</sup>

All estimates are ‘net effects’ identified once other significant child, family and neighbourhood background characteristics were controlled: in educational effectiveness research this is referred to as a *contextualised analysis*. Effects are only reported for

<sup>4</sup> The OR is a measure of the strength of an effect for dichotomous outcomes expressing the likelihood of an outcome for the alternative comparison group versus the reference group.

measures that remained statistically significant in the combined models that tested simultaneous impacts from multiple centre features and/or services used. The full models are shown in the Technical Appendices to each of these chapters. A summary of key findings is now listed for family, mother and child outcomes. In addition, this section will then draw together the findings from the more-detailed Impact analyses that take into account patterns and combinations of service use as well as the characteristics of children's centres.

After summarising the main findings of the overall impact of children's centres for each stakeholder group, the results of more detailed topics are reported. These include the effects of the use of the most common individual named services and the results of more detailed study of the impacts of children's centres in meeting the needs of the most disadvantaged families that forms the focus of Chapter 7.

## Family Outcomes

Baseline measures of family functioning and parenting were assessed at the start of the study (Wave 1) and again when children were aged 3 years plus (Wave 3 survey). This allowed change in family outcomes to be studied using contextualised value added statistical models. It is important to recognise the powerful effects of background characteristics as these are found to be the main drivers of outcomes. The results also allow the research team to put the findings of impact (various effects) of children's centres in context.

### Family and background characteristics effects

- The strongest predictors of later family functioning outcomes at Wave 3 (*CHAOS*, *Parental Distress* and *Parent-Child Dysfunctional Interaction*), early *HLE* and *HES*, were the relevant baseline prior ratings on the same measure at Wave 1.
- Once their prior level of family functioning was controlled, a number of statistically significant effects were identified. Mothers in poorer physical health, families experiencing high levels of financial disadvantage, out of work households, larger families, and families where the mother had lower qualifications, showed poorer family functioning outcomes.
- Families where the ECCE sample child was a girl showed higher early *HLE* scores and lower levels of *Parent-Child Dysfunctional Interaction* when the child was age 3 years plus.
- Analyses of Household Economic Status (*HES*) when their child was age 3 years plus revealed that being an out-of-work household was predicted by the Wave 1 baseline measures of higher financial disadvantage, low income, low maternal qualifications and living in more income deprived neighbourhoods. In addition, marital status (single/separated), poor maternal health and higher *Parental Distress* at Wave 1 also predicted later *HES* status.

## Children's centre impacts

- When aspects of service use, service provision and children's centre characteristics were investigated, multiple impacts were found particularly for *CHAOS* and early *HLE*. As found for other outcomes, families with poorer family functioning had experienced greater contact with health visitors or outreach workers. In addition, use of childcare (long term only) predicted lower scores for the early *HLE* when the child was age 3 years plus, probably due to less time spent with the child in the home. Long term use of childcare may reduce parental opportunities to engage in home learning activities, but the size of the overall positive impact of childcare on child outcomes suggests the benefits to the child outweigh any potential negative impacts related to the relatively smaller effects on reduced *HLE* scores.
- Service use at the registered centre showed positive effects on family functioning and early *HLE*. No significant effects of children's centre service use, or centre characteristics were found for HES when the ECCE child was three years plus. Engaging in family/parenting activities also predicted improved early *HLE*.
- Families using services early or longer term showed greater gains in early *HLE* and decreases in *CHAOS*.
- Service use (anywhere) at Wave 1 (heavy use compared to inconsistent use) predicted reductions in *Parent-Child Dysfunctional Interaction*, and using services more intensely (more hours a week) or engaging in organised activities, predicted reductions in *Parental Distress*.
- Families registered at centres where the number of named programmes<sup>5</sup> for families had increased, showed improvements in early *HLE* and reductions in *Parent-Child Dysfunctional Interaction*. This is in line with findings for *externalising* behaviours. Being registered at a children's centre with higher staffing numbers and also degree-level qualified centre leaders predicted improvements in the early years *HLE*. However, families registered at a centre where the manager had the National Professional Qualification in Integrated Centre Leadership (NPQICL) showed poorer outcomes for the early *HLE*. It is possible that such managers did not have an education leadership background, as this research found being registered with an education-led centre showed positive effects on the early years *HLE*.

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<sup>5</sup> ECCE Strand 3 fieldwork researched the programmes that centres were offering to children, parents and families. Children's centre staff were asked to fill in a questionnaire that asked about a number of programmes by name; for example, whether or not a centre offered families the '*Positive Parenting Programme: Triple P*'. The named programmes covered included those that featured on the list produced by the Allen review (2011) as 'well-evidenced', as well as including others that were commonly offered and thought by practitioners to be beneficial. Finally, the questionnaire also allowed centre staff to self-report named programmes that were not included in the list provided. For more information, see the ECCE Strand 3 Reports (Goff et al., 2013, Evangelou et al., 2014, Sylva et al., 2015).

- Families registered at centres not experiencing cuts to services (compared with those registered at centres that had experienced cuts to budgets/staffing) showed reductions in scores for *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction* as well as increases in early *HLE*.
- In line with findings for child behaviour, families registered at 'standalone' one centre unit setups showed significant reductions in *Parental Distress*.
- Centres with mixed leadership predicted better outcomes for *Parental Distress* and *Parent-Child Dysfunctional Interaction*, and families attending centres with moderate partner-agency resourcing (compared with no partner-agency resourcing) showed reductions in *Parent-Child Dysfunctional Interaction*. Mixed leadership may be more likely to enhance multi-agency working and this may provide more specialist experience to support parenting, and the emotional needs of parents.

## Mother Outcomes

Mother's mental and physical health (diet and lifestyle) were investigated at the start of the study (Wave 1) and again when their children were three years plus (Wave 3 survey). This allowed change in mental and physical health to be investigated.

### Family and background characteristics effects

- Prior mental or physical health measured at baseline when their child was aged 9-18 months (14 months on average) were the strongest predictors of later outcomes.
- Once their prior level of mental health was accounted for, older mothers, those experiencing higher financial disadvantage, and those in poorer physical health showed relative declines in their mental health. In addition, mothers reporting higher levels of *Parental Distress* at Wave 1 were also more likely to show poorer mental health outcomes.
- After accounting for their prior level of physical health, mothers experiencing higher financial disadvantage, those in lower Socio-Economic Status (SES) groups, those holding lower educational qualifications, or those who were single/separated were more likely to show poorer subsequent physical health.
- Living in a more deprived neighbourhood also predicted poorer maternal health.
- Older mothers were less likely to be in poorer health, possibly reflecting the nature of the measure that captured lifestyle and diet-related health.
- High levels of childcare use (both long-term and long hours) predicted poorer mental health outcomes for mothers.

### Children's centre impacts

- As found for some of the child outcomes, mothers with poorer mental health had greater contact with health visitors. Health visitor contact across time predicted poorer

mental health. This suggests that health visitors were targeting mothers with the greatest needs.

- Using children's centre services either in a more directed way at baseline (limited or heavily), rather than inconsistently, predicted improved mental health outcomes for mothers later on.
- Mothers who attended centres that were expanding services (in combination with no cuts to services) also showed improved mental health compared to mothers attending centres that had experienced budget cuts and were reducing services.
- Fewer impacts were evident for mother's physical health. However, being registered at a centre with a high health emphasis (reported by centre managers) predicted mothers moving out of poor health status.
- Similarly, taking children to organised activities (anywhere) also predicted improved mother physical health outcomes, controlling for other influences.

## Child Outcomes

### Family and background characteristics effects

- Girls had better behavioural, cognitive and health outcomes than boys.
- Early health and developmental problems at baseline (mean age 14 months) predicted poorer outcomes at age 3 plus.
- Greater financial disadvantage and lower maternal education level predicted poorer behavioural and cognitive outcomes. In addition, a more enriched very early *HLE* at baseline predicted better cognitive attainment (verbal and non-verbal reasoning) and *pro-social* skills.
- Other aspects of early family functioning measured at baseline also predicted child outcomes. Higher *difficult child* and *CHAOS* scores predicted poorer behaviour; and higher *Parent-Child Dysfunctional Interaction* scores predicted higher levels of *internalising*, poorer *pro-social* behaviours and poorer cognitive attainment<sup>6</sup>.
- Higher levels of childcare use by a family predicted better child outcomes in terms of higher cognitive attainment, lower levels of *internalising* behaviours and greater *pro-social* skills.

### Children's centre impacts

- Vulnerable families had greater contact with children's centres via one to one contact or long term service provision. Extended outreach or health visitor contact (received by only a very small minority of families) predicted poorer child behaviour, suggesting

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<sup>6</sup> Some other significant effects were also found but were specific to only individual child outcomes. See Technical Appendix 4 for full model details.

that contact is being maintained with families identified as experiencing more complex problems. In addition, long term use of children's centres predicted poorer behavioural outcomes for the whole sample (*internalising* and *externalising* behaviours). This also suggests that the neediest families are maintaining contact with centres long term, and make more use of services.

- Lower levels of *externalising* behaviour were identified for children whose families were registered at centres that had more named programmes at baseline and those that increased the number of named programmes for families.
- More favourable outcomes in *pro-social* behaviour were identified for children whose families were registered at 'standalone' one centre units, school-led centres, centres with higher numbers of named programmes for families running, and those with higher levels of partner-agency resourcing.
- Children whose families used services (compared to none/very little) at baseline Wave 1 showed lower levels of later *externalising* behaviour at age 3 years plus.
- There was little evidence that the measures of children's centre service use or centre characteristics predicted variation in children's cognitive attainments at age 3 years plus. Only inconsistent or weak effects were found.
- Health status included parent reported health problems, diet, injuries and developmental issues (so includes some aspects of health that are less open to influence by children's centres than other outcomes). Change into poorer health status was associated with greater levels of childcare, greater levels of Stay and Play and attending centres with home-based outreach services. This may well reflect greater contact with trained staff leading to the identification of previously undetected health problems or an increased awareness of health problems when parents are able to make comparisons with other children of a similar age. Preliminary work on child diet suggests that children's centres can have more of an influence on improving this outcome.

## **What are the effects of the most commonly used individual services?**

In addition to considering broad patterns of service use by families, the evaluation examined the effects of the three most commonly used individual services. These were midwife/health visitor services (used by 88% of the sample at any Wave of the three surveys); Stay and Play (used by 85%); and organised activities (used by 59%).<sup>7</sup> Extended contact with health visitors/midwife services was associated with negative effects indicating poorer functioning for many outcomes and most likely indicating higher and persisting or emerging needs for those families. The authors interpret this as evidence of impact as reach (see Glossary). This is because health visitors/midwives are

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<sup>7</sup> The percentage figures for use represent families reporting use in at least one or more time points in the three surveys.

a special kind of service (compared to others such as Stay and Play, for example) that aims to target and work long-term with those families showing persisting needs. In contrast, significant positive effects of Stay and Play and of organised activities on the *early years HLE* (improvements), *mother health* (improvements) and *Parental Distress* (reductions) were found, suggesting that such practical activities involving parents and children may be of general benefit for specific outcomes.

Evidence for the impact of health visitors/midwives being different to other services (such as Stay and Play) due to their intention to target specific needs, was demonstrated through follow-up analyses. When additional family characteristics measuring need (adverse life events such as bereavement/divorce or problems of drug/alcohol abuse etc) were taken into account, the negative associations between mother or family outcomes and extent of engagement with health visitor/midwife visits were no longer statistically significant. Such effects for additional family characteristics related to vulnerability were not found for analyses of engagement with more universal services such as Stay and Play, or for other organised activities.

Overall, these findings show that different services can have different effects for different user groups. Moreover it is important to distinguish effects that relate to impact as outreach (see Glossary) for certain targeted services aimed at high need (vulnerable) groups. Our main impact analyses (summarised next) also show it is important to consider the dynamic nature of children centre service use by families over time (different combinations of services used and how use may change over time), and the effects of services used elsewhere.

## **Improving outcomes and meeting the needs of the most disadvantaged families**

Further analyses examined the effects of engagement with children's centres on outcomes for different groups of users according to the level of disadvantage of families (high, medium or low) because high levels of financial disadvantage were found to be a very strong predictor of poor outcomes for children, mothers and families.

- Families experiencing high levels of financial disadvantage had significantly poorer family functioning, poorer health, and experienced a greater number of stressful life events at both Waves 1 and 3 than less disadvantaged families. Lone parent status in the early years of the ECCE child's life was much more prevalent in disadvantaged families (at Wave 1, 53% of high disadvantaged families were lone parents, compared with just 1% of low disadvantage and 11% of medium disadvantage families).
- Children from families experiencing high levels of financial disadvantage already showed poorer levels of development at aged 9-18 months than their more affluent peers, and also showed poorer health, cognitive and behavioural development at age 3.

- There was no difference by financial disadvantage in terms of whether families had ever used a service, used Stay and Play, or used health visitor/midwife services at the registered children's centre.
- In contrast, there were differences between financially disadvantaged families and other families in certain patterns of service use:
  - i. High disadvantage families were more likely to use the registered children's centre long term (5 months longer than low disadvantage families), and for more hours in total (38 hours more than low disadvantage families);
  - ii. High disadvantage families were more likely to access specialist services aimed primarily at parents and families (e.g. family support, employment, and education) than other families, but less likely to engage in organised activities at the registered children's centre;
  - iii. High disadvantage families were less likely to focus on specific services (either health or family services) than other families when their child was very young (9-18 months), showing a less consistent pattern of service use at this time point;
  - iv. High disadvantage families were less likely to use services outside the registered children's centre than other families, especially organised activities.
- There was evidence of positive effects on four of the five outcomes investigated, related to children's centre service use and provision measures for high disadvantage families:
  - i. Decreases in *Parental Distress* when families used services at the registered children's centre (particularly early focused use);
  - ii. Decreases in *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, and increases in *HLE* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
  - iii. Decreases in *CHAOS*, *Parent-Child Dysfunctional Interaction* and increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.
- A number of positive effects on outcomes were also found for selected service use and provision measures for families in the medium disadvantage group:
  - i. Decreases in *CHAOS* when families used services at the registered children's centre (particularly early focused use);
  - ii. Decreases in *Parent-Child Dysfunctional Interaction* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
  - iii. Increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.

In contrast, one negative effect was found. Long term use of the registered children’s centre (persisting broad use) was associated with poorer mental health for mothers from high disadvantage families. Highly disadvantaged mothers showed more mental health problems at baseline which may be difficult to support appropriately in a children’s centre setting.

## Drawing together the Impact Findings

Chapter 8 discusses the impact results in more detail. Figure C provides an illustrative overview that draws together the main positive effects identified in the combined models. Although some positive effects were identified for the majority of outcomes, no statistically significant effects were found for change in overall child health and Household Economic Status (the latter was defined in terms of being in a workless household at Wave 3 when the child was aged 38 months on average)<sup>8</sup>.

Figure C Overview of Positive Impacts<sup>9</sup>

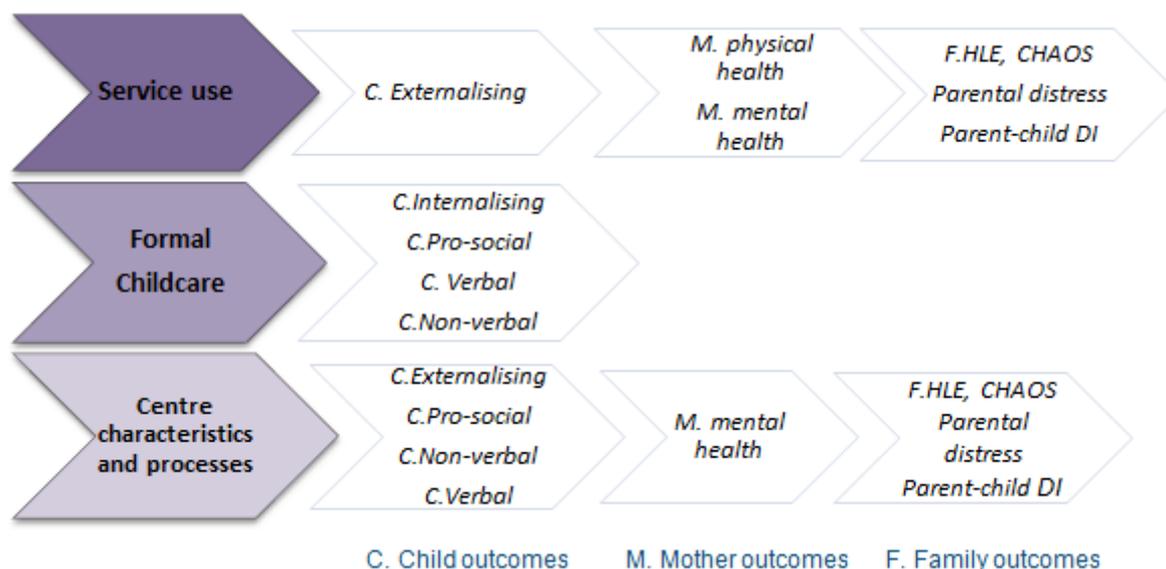


Figure C shows that service use, centre characteristics and centre processes predicted improvements in outcomes for families, and to a lesser extent for mothers. Child outcomes showed significant positive effects related to formal childcare use (either childminders or group care) and some for centre characteristics and processes: but only one (for *externalising behaviour*) for children’s centre service use. Child outcomes were more likely to show positive effects where families indicated they made greater use of formal childcare over the longer term (compared to none used anywhere). These positive

<sup>8</sup> Descriptions of the provision of services aiming to improve children’s health and adult employment can be found in the ECCE Reports published by Strands 1 and 3.

<sup>9</sup> It should be noted that no positive impacts on child health or Household Economic Status (workless household) were found.

impacts were consistent for both cognitive outcomes, and two (of three) social behaviours<sup>10</sup>. Elsewhere the report notes that *high* use of childcare was linked to somewhat poorer mental health for mothers, perhaps reflecting pressures and difficulties in combining work and family responsibilities for young children<sup>11</sup>, and a lower score for engagement in *early HLE* activities at home (the latter may be linked to less time available for *HLE* activities at home due to family work commitments<sup>12</sup>).

It is important to note that only a very small proportion of families used childcare at their registered children's centre (4% at Wave 1, and 8% at Wave 2; between the ages of 1 to 3 years). In interpreting this it must be recognised that many children's centres did not offer childcare: indeed they were encouraged to refer or signpost families to local private or voluntary providers of childcare as part of government policy. These findings show that it is important to take account of families' patterns of use of different services, wherever they are located, in studying outcomes. This has been the approach used in the main impact analyses reported here. The testing of the effects of the use of individual named services is thus problematic if it ignores the realities of families' varied patterns of use (combinations of services used by families, and the way their use may change over time).

The main Impact findings across the 13 outcomes studied are now summarised in relation to two key questions that provide the focus for the Impact research.

## **Does children's centre engagement improve child, mother and family outcomes?**

Strand 4 sought to answer this overarching question about how far children's centres can promote better outcomes for different stakeholder groups. The summary of findings identified evidence of a number of significant effects for each user group considered (child, mother, families), and the number of significant effects identified was more than might be anticipated by chance from the number of measures tested (one in 20 at the 95% confidence interval).

As noted earlier, Figure C provides an overview that draws together the main positive effects identified in the combined models for each user group. Although a number of positive effects were identified for the majority of outcomes, no statistically significant

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<sup>10</sup> These effects relate to the families use of childcare. Although the measure of use does not necessarily reflect childcare use for the named child in the ECCE evaluation, in most cases this was for the ECCE sample child: it could have been for a sibling age 0-5 as well.

<sup>11</sup> Analyses found that the link between high use of childcare and mental health disappeared when mother's work pattern was taken into account (specifically working full time at baseline).

<sup>12</sup> Families using long term childcare were more highly educated as a group than other families, with higher very early *HLE* scores. It is possible that the early engagement in *HLE* activities for this group remain constant rather than increasing over time due to family work commitments. It should be noted that learning experiences in childcare settings were not collected so investigation of overall learning experiences was not possible.

effects were identified for two of the 13 outcomes considered: 1) change in child health, or 2) Household Economic Status.

The results also identified a number of negative effects on outcomes. The authors have interpreted these as evidence of impact via reach (see Glossary) and conducted further analyses which have supported this interpretation. A key point to note is that centres were actively encouraged to focus their efforts on identifying and targeting the most vulnerable at risk families and to try to engage with them to meet their needs. This evaluation has found that those small number of families that received more visits from outreach, midwife and health visitors did indeed show more problems and their negative outcomes are likely to reflect their difficulties (a topic discussed in more detail in relation to findings on specific services and again addressed later in the Conclusions).

By contrast, the positive effects identified relate to larger numbers of families and more typical patterns of service use, and general centre characteristics and processes. Measures of service use predicted more favourable family and mother outcomes (improvements in mother mental and physical health, *CHAOS*, early years *HLE*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*) and one child outcome (*externalising* behaviours). Services used at the centre that a family was registered with were more likely to show statistically significant effects than were services used elsewhere but additional impacts were also found for these services (those used at another children's centre or at any other non-children's centre provider). In interpreting these findings the authors note that families may have been signposted or referred to other providers by their registered centre or other agencies, particularly where they did not offer the service on site.

## **What children's centre features influence families' outcomes?**

As well as addressing the question of, "Does engagement with children's centres promote better outcomes?", the Impact evaluation has provided evidence on a number of children's centre characteristics and processes that promote better child, mother and family outcomes. Again the results do not show one simple pattern of associations, but instead point to various features that predict specific outcomes; albeit with communalities observable in these features and effects. Three in particular stand out:

### **1. Named programmes**

Offering a greater number of named programmes for families at a children's centre (or increasing the numbers of named programmes offered) predicted better outcomes for selected child behaviour (*externalising* and *pro-social* behaviours) and family outcomes (early years *HLE* and *Parent-Child Dysfunctional Interaction*). These are all outcomes that involve parent-child interactions.

## 2. Maintaining or Increasing services

Centres that were maintaining or increasing services rather than experiencing cuts and restructuring had better outcomes for mothers and family (mother mental health, reductions in *CHAOS*, improvements in early *HLE*, reductions in *Parental Distress* and *Parent-Child Dysfunctional Interaction*).

## 3. Multi-agency working

Multi-agency working (mixed leadership<sup>13</sup>, partner-agency resourcing) appears to be beneficial for some child (*pro-social skills*, *non-verbal reasoning*) and family (*Parental Distress*, *Parent-Child Dysfunctional Interaction*) outcomes. In addressing these two main research questions (“Does engagement with children’s centres promote better outcomes for children, mothers and families?” and, “What aspects of children’s centres (management structure, working practices, services offered, services used) promote better family, parent, and child outcomes?”) we can conclude that both family engagement in service use and certain children’s centre characteristics and processes showed positive effects, particularly for family and mother outcomes. However, some positive effects on children’s outcomes were also found which suggests the potential for children’s centres to influence child outcomes even though most centres in our sample were not providing childcare and most children used childcare offered by other providers. These effects were weak however and it should be recognised that children’s centres were typically emphasising parenting and family services. Therefore, it is perhaps unsurprising that the more notable effects were found for improvements in family functioning and parenting, and to a lesser extent, mother outcomes than they were on child outcomes. Future analyses of indirect effects on child outcomes via intermediate family and parent effects are planned.

To summarise, most of the characteristics of centres that were found to predict better outcomes related to:

- **The ability to provide more services** (number of named programmes, expansion in named programmes/absence of budget cuts, number of staff, including partner agency resourcing that typically involves staff).

In addition, a number of more specific centre characteristics also predicted particular outcomes, but these did not show consistency in their effects across outcomes. Thus, the research team cannot make generalised conclusions to the same extent. These less consistent findings related to centre configurations (organisation and structure) and the changes in these over the course of the evaluation.

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<sup>13</sup> Mixed leadership refers to the situation where multiple organisations share in leading a children’s centre (e.g. the NHS and a Local Authority).

In relation to two of the sub-questions, therefore, these findings allow the team to conclude that:

- Some models of centre organisation (service delivery) are more effective than others in fostering specific outcomes, but this does not generalise across most outcomes.
- More specific centre characteristics (e.g. location, leadership and management processes and structures, financial arrangements) are shown to predict some outcomes but again not most outcomes.

## Comparison of findings with earlier research

In line with results from the earlier NESS evaluation of Sure Start Local Programmes (SSLPs), fewer effects were found for child outcomes, and more for family outcomes. Positive impacts of both service use and centre characteristics and processes were identified for the early years *HLE* measure (which past EPPSE and Millennium Cohort research indicates is a strong predictor of later child outcomes at school). Thus it is possible that children's centres may benefit future child outcomes indirectly, through intermediate effects on changes in the quality of the early *HLE*. A further follow-up would be needed to test this hypothesis by measuring child outcomes when children enter primary school, or up to the end of Key Stage 1.

The ECCE results show some clear parallels with NESS in terms of identifying children's centre effects on family functioning, including improved *HLE*, and reductions in family disorganisation (reflected in the *CHAOS* measure). Reductions in *Parental Distress* and *Parent-Child Dysfunctional Interaction* were also noted. The Strand 3 fieldwork provided more detail on the children's centre emphasis on various services. This revealed that many sought to provide named programmes for parents and parenting support. The impact results also point to some positive effects on outcomes for mothers in terms of mental or physical health related to the number of named programmes for families provided by centres.

Nonetheless, it should be noted that children's centres typically did not have highly qualified specialist staff to support complex mental health or social problems. Moreover, the external context of cuts to mental health provision at this time may make referral and signposting for high need families difficult (see the paper produced by the British Psychoanalytic Council and UK Council for Psychotherapy, 2015). Children's centres may be better placed to provide services to support families and parents, but may struggle to support those with complex social or mental health problems. This was an issue of concern noted in previous ECCE reports from Strand 3 (Sylva et al, 2015).

An important finding was related to the impact on children's centres from budget changes over the course of this evaluation. Some centres had expanded services or increased budgets (N=32, 27%), others had experienced cuts to their budget and or staff (N=14, 12%), or both cuts and restructuring (N=30, 26%). There were also centres with stable

funding (N=18, 15%).<sup>14</sup> The impact analyses identified better family and mother outcomes for those families registered at a centre that was growing (with increased budget and expanded services), rather than centres that had cut budgets and restructured. It is perhaps unsurprising that reductions in services/staffing and restructuring, predicted poorer outcomes. Lack of stability in a centre, and the time required to restructure provision, plus the loss of services or staff may well affect the ability of centres to deliver services. Such adverse impacts are likely to be compounded by the wider context of cuts in benefits or services that are linked with the austerity programme in operation while the ECCE evaluation took place.

The analyses of child, mother and family outcomes also point to other potential children's centre and service effects that we think are most plausibly interpreted as evidence of impact via reach (see Glossary). Children's centres have been encouraged to target high-risk or vulnerable families. Some of the measures provide evidence of targeting those most in need (e.g. outreach and health visitor home visits). Extended health visitor support was received by families with higher levels of: *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, out of work status (HES), lifestyles associated with poorer health and higher maternal mental health problems. There are relatively small numbers of families in these groups, but they show worse outcomes in terms of predicting increases in the *CHAOS* measure, mother's mental health, *Parental Distress* and child *externalising* behaviour. We think the most plausible interpretation is that centres and health visitors were attempting to identify and support high-risk families that were experiencing difficulties – those for whom providing effective support and improving outcomes would also be more difficult.

## Conclusions and Implications

The ECCE research has faced many challenges in seeking to identify and study the impacts of children's centres on child, mother and family outcomes. The complexities in the nature of children's centres, the variations in their offer and families' uptake of services, plus policy and contextual changes that have affected centres over the last five years need to be acknowledged. It is not possible to examine effects for many individual services offered by centres as too few of the families in our sample used many of these specific services (except for the most commonly used services which ECCE researchers were able to test).

The researchers have only had a relatively short time scale for the study of impact (mean period of 24 months from baseline to outcome measures). The analyses have modelled change in mother and family outcomes over this time period, but for child outcomes this was only possible for health status. The relatively short term nature of the analysis of

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<sup>14</sup> 23 centres (20%) did not provide any data about change in budgets, staffing or services.

change may mean that the researchers have missed some potential longer term effects. A further follow up would be required to address this. In addition it is possible that there may be indirect impacts on children's later cognitive or social development in school<sup>15</sup>.

The ECCE results support and extend those of the earlier NESS study. They demonstrate that children's centres do have the potential to promote better outcomes for families and to a lesser extent, for children and mothers. However, direct effects on children are more likely to happen if children are engaged in specific services provided by children's centres (such as high quality childcare). At present the focus of provision is on family and parenting services and, perhaps unsurprisingly, such outcomes show more evidence of impact in this evaluation.

In addition, centres that experienced budget increases and service expansion between 2011-2013 showed better effects on outcomes than those that experienced cuts and restructuring. This is an important message given the context in which children's centres were operating when this evaluation took place.

Children's centres seem to be targeting high need families (impact as reach). They are thus addressing a crucial feature of their core purpose. Nonetheless, do children's centre staff have the expertise and training to address complex needs? This is a matter of serious concern to policymakers, centre managers, and centre staff. Children's centres may find it hard to deliver services if they do not have the financial and staffing resources to meet needs. It may be that greater attention is needed to provide tailored services: making sure vulnerable mothers/families get directed or structured support at children's centres or via specialist providers (such as mental health services, child psychologist, etc.) for the relatively small number of high-risk families. This is because centre staff expressed concerns about their expertise and capacity to support such families. They may be better placed to support parenting as the positive effects identified on their impact on family outcomes such as the *HLE*, the organisation in homes and the parent-child relationship (see the Strand 3 report on parenting by Evangelou et al, 2014 for more detail).

As a whole, the ECCE research suggests that children's centres can have positive effects on outcomes, especially on family functioning that affects the quality of parenting, and that children's centres are highly valued by parents. However, they were not intended to be, and should not be viewed as some kind of a universal panacea that can address all the adverse influences of social disadvantage. Therefore, in interpreting the evaluation findings, it should also be noted that other research has also shown that schools or medical services (both forms of universal services) cannot fully combat the effects of disadvantage. It is unlikely that children's centres can pick up and fully address

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<sup>15</sup> Possibly through effects on the *early Home Learning Environment* which is known to be strongly linked to later child outcomes (Melhuish et al., 2008) and through which early interventions are known to be cost-effective (Heckman, 2006).

all families complex social needs, especially in a context where there are major cuts to other public services that also affect children and families. There may be a need to re-assess the role and capacity of children's centres in supporting vulnerable or high need families. How should such families be identified and do centres have the resources and capacity to offer appropriate services that meet such needs? Health visitors are likely to play an important role in supporting and referring such families in the longer term with issues such as: learning difficulties, drug/alcohol abuse and domestic abuse. However, they cannot provide the services themselves, and adequate provision of such services will be needed to allow swift and appropriate referral. Other reports from the ECCE evaluation show that centre staff were worried that they did not have the expertise, resources or training to support the most high need families with complex social problems (Sylva et al, 2015).

In addition to trying to reach and support the most vulnerable, children's centres have the capacity to improve outcomes more broadly for families and (as with universal pre-school, access to health services, or schools), there are very good arguments for provision to be available for all families living in disadvantaged contexts (note only Phase 1 and 2 children's centres were included in this evaluation). This seems especially important in order to avoid stigmatising high-risk families (Melhuish et al., 2007, Lord et al., 2011). Moreover it seems likely that supporting a broader group of families will have a better chance of promoting small (but because of large numbers, nonetheless worthwhile) benefits for many families that may show longer term positive effects on outcomes in the future.

The Strand 3 component of the ECCE evaluation has already demonstrated that users of children's centres value their services highly and evidence from both providers' and users' perspectives suggest various benefits to outcomes. The users' surveys of Strand 2 likewise found that parents are very satisfied with children's centre services (78%). This softer evidence has been added to in this impact report where we have examined in detail a wide range of measured child, mother and family outcomes based on quantitative data. Despite the difficulties in measurement and complexities in analyses reflecting the real life variation in children's centre provision, and characteristics and range of patterns of families' use of different services, the results of the statistical analyses suggest a number of positive, but generally weak, effects, more notable for family outcomes such as the early *HLE* and *CHAOS* measures. The findings support and extend those found in past ECCE reports that were based on interviews and surveys of parents and providers' perceptions (Goff et al, 2013; Evangelou et al, 2014).

## **Background characteristics remain important**

It should still be recognised that the main drivers of outcomes identified in the impact analyses reflect the strong influence of background for user families. The financial disadvantage measure and mother's educational qualifications are especially strong predictors of outcomes. Their effects are larger than those we have identified for our

measures of children's centres (service use, characteristics and processes). For child outcomes, the very early *HLE* (measured at average child age 14 months) is also important, and the finding that children's centres can support improvement in early *HLE* outcomes measured later on at child age 3 years plus is an encouraging one because this may lead to later benefits for child outcomes at school age.

The impact analyses provide new evidence that children's centres can promote better outcomes, especially for family functioning linked to parenting; but these effects are only likely to ameliorate the effects of disadvantage. While they may help to reduce the equity gap, they are not strong enough to overcome the adverse effects of being part of a disadvantaged family. Further subgroup analyses have been conducted to establish how far children's centres are able to address the needs of the most disadvantaged families (see Chapter 7). The results demonstrate that children's centres are able to target and support such groups (impact as reach) and provide evidence that they can promote better outcomes for the most disadvantaged families. Children's centres are thus able to help to ameliorate but not overcome the effects of high financial disadvantage. In this connection it is worth noting that more disadvantaged families made greater use of children's centres (Maisey et al., 2015). Moreover, the impact analyses have shown that children's centres are targeting high-risk families with the greatest needs via health visitor contact and outreach visits, which we interpret as evidence of impact via reach (see Glossary). Here we note the important policy emphasis evident in the work of children's centres to identify and work with the most at risk or vulnerable families while fieldwork in Strand 3 has shown this was an important priority for centre managers (Goff et al. 2013; Evangelou et al. 2014; Sylva et al. 2015).

Nonetheless, the Impact strand of the evaluation has provided new evidence that demonstrates that children's centres can and do have positive effects in promoting better family, mother and child outcomes. In addition it sheds light on the particular characteristics and features of centres that promote these. It also shows that families differ in their patterns of use of services and that such use changes over time.

The findings in this report raise some important questions about the ability of children's centres to adequately support families with very challenging problems. In terms of implications for policy and practice, it will be important to try and establish the role of children's centres in local Early Help strategies. For example, are there clear protocols for deciding locally how families with different types and levels of needs should be supported by different local agencies? Further, are there staff, resources and also clear pathways for ensuring that this happens? Earlier evaluation reports by ECCE provide more detail on the organisation of centres and the features of families' use of services that complement the findings presented here and which are of interest (and applicability) to both policy and practice in 2015 and beyond.

## NOTE: Some limitations of the Impact analyses

The report provides a more detailed discussion of some of the main issues that affect the interpretation of results, and highlights some specific limitations. Here we make a note of some key points.

### Reaching the disadvantaged

It is important to note that earlier ECCE analyses of the reach of children's centres confirmed that they tended to serve those predominantly drawn from disadvantaged neighbourhoods (Smith et al., 2014). The *Impact Strand* further investigates the sample of families who were registered users of children's centres. Compared with families who participated in baseline (Wave 1) fieldwork, those registered users who were followed up across the three Waves of family fieldwork were somewhat less disadvantaged. This is a common problem in longitudinal surveys. Nonetheless the Impact user sample included a broad range of families in terms of their SES, income and overall financial disadvantage. The loss of more disadvantaged families restricts some of the sub-group analyses (e.g. young mothers, never worked group) that can be conducted.

The creation of the *financial disadvantage* measure produced a three group categorisation (low financial disadvantage; medium financial disadvantage; high financial disadvantage). This measure was based on information on household receipt of benefits, tax credits and housing tenure. For example, the *low disadvantage group* were owner/occupiers not in receipt of any benefits or tax credits, whereas the *high disadvantage group* were in receipt of benefits and largely lived in rented accommodation. Overall, the results showed that the majority of registered families in the final Impact sample were experiencing either high (20%) or medium levels of financial disadvantage (48%). In line with the earlier and broader study of *reach* based on postcodes (Smith et al., 2014), this result shows that children's centres in our sample were serving a broad spectrum of users but largely reaching those who are relatively disadvantaged. This is in line with the original intention of the Sure Start policy.

As noted earlier, considerable challenges are encountered in attempts to evaluate the impact of children's centres due to their varied nature, the varied patterns of family use of services, and the way the policy changed over time. The latter led to children's centres changing and restructuring during the evaluation period when seeking to measure impact. Therefore, it was necessary to use complex statistical modelling techniques to estimate 'net effects'. While a good set of measures of child, parent, family and neighbourhood were obtained to act as statistical controls in the multilevel models, it is always possible that some other unmeasured factors were at work which could have influenced the results. Having said this, the controls (the background measures which lead to the 'net effects' suggesting impact) are robust and similar, or more extensive than those found in many other educational or social research studies. Moreover, the effects of the controls operate in similar ways to those found in past research. In addition, the impact results are in line with those found by the earlier NESS research, but the focus on

a user sample adds new evidence to complement and extend the NESS findings of SSLPs.

## Specific limitations

1. It was not possible to analyse the impact of many of the individual specialist services due to low numbers of families taking up these services in the user sample. However, it was possible to test the effects of the most commonly used services.
2. Service use and need: service use by nature is individualised. It is also needs driven, and both complicate the analysis. The Contextual Value Added (CVA) approach that was used is robust, but could also have some limitations. For example, families experiencing more stress/life events after baseline testing could show negative change in outcomes that may lead to them to access more services. This would be expected to influence outcomes that are likely to be affected more by stress, such as mother's mental health, or *Parental Distress*.
3. Children's centres have been encouraged to target 'needy' families (sometimes termed as vulnerable or 'at-risk' groups), however there are various interpretations of what factors should be used to identify such groups. The identification of vulnerable families or those families with additional needs is not possible directly from the evaluation data collected by ECCE, but a number of measures such as extended health visitor contact or extended outreach visits can be viewed as indirect indicators of higher needs. These data have allowed the impact analysis to investigate the outcomes for such families and their children, but the interpretation of the effects is more plausible as it is likely to reflect impact in terms of 'reach' rather than in terms of improving outcomes.
4. Different patterns of service use by families were identified: both of services at registered children's centres and of services elsewhere. Looking at service use more broadly (incorporating children's centre use and elsewhere) allows investigation of possible indirect children's centre effects through signposting and also the impact of families using services generally on outcomes. However, it moves the focus away from exclusively children centre effects.
5. The ECCE evaluation took place at a time of reductions in many public services, reductions in benefits, high unemployment and austerity policies (2011-2013). This affected service provision elsewhere even though children's centres budgets were intended to be ring-fenced. Many centres in the study experienced restructuring and/or budget cuts leading to changes or reductions in services or staff<sup>16</sup> (as documented in evidence to the House of Commons Education Select Committee

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<sup>16</sup> Sam Gyimah MP in March 2015 reported that, as of December 2014, 142 children's centres had closed (leaving 2816 centres remaining). [Gyimah \(2015\) can be found through this link.](#)

(2013)<sup>17</sup>. Nationally, mental health services were also reducing. This broader socio-economic context is likely to have had a greater impact on vulnerable families and those living in disadvantaged areas (as disadvantaged local authorities experienced greater budget cuts). Children's centre staff interviewed for Strand 3 fieldwork expressed concerns about budget cuts affecting staff and services, and also about their training and capacity to deal with families with more complex social or health needs (Sylva et al., 2015). The impact analyses could not investigate the effects of these contextual changes, although one measure was created that identified whether centres had experienced stasis (no change), expansion or increases in budget, cuts to budgets or staff, or cuts and restructuring. It should also be noted that the impact of children's centres is likely to be affected by the quality and level of services provided, including those by partner agencies. However, the evaluation did not have consistent data on these features for inclusion in the impact analyses, although some evidence is reported as part of the qualitative fieldwork in Strand 3.

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<sup>17</sup> 'In April 2011 the Government removed the ring-fence from Sure Start funding and introduced the Early Intervention Grant (EIG), with the result that it is not possible to put a figure on central government funding for Sure Start from 2011/12 onwards. From April 2013 EIG was transferred to the Department for Communities and Local Government to include in its Business Rates Retention scheme. Funding for the two year old offer was initially included in the EIG but has been transferred to the Dedicated Schools Grant. The EIG, excluding the two year old offer, is decreasing, meaning that there is less money available to spend on children's centres. Information provided by the LGA, based on DfE returns, shows a total planned expenditure by local authorities on Sure Start and children's centres of £1.0 bn in 2011/12, falling to £0.95bn in 2012/13: a decrease of 4.6%... Policy Exchange estimates that in 2013/14, spending on children's centres will fall to around £0.854bn, a total reduction of 28% from 2010... Prospects for local government funding to 2015 suggest that further significant reductions should be expected.' House of Commons Education Select Committee (2013).

# 1 Introduction [*Goff, Sammons and Eisenstadt*]

Children's centres are a key policy initiative that recognises the importance of the early years. They aim to support families with young children in England by providing access to integrated and good quality family services. Children's centres are intended to be located in accessible places and aim to provide services that will best meet local needs. While currently often targeted towards disadvantaged families and disadvantaged communities, they are encouraged to be accessible, and offer a range of services including some that are open to all families. They were originally established from *Sure Start Local Programmes* (SSLPs), *Early Excellence Centres* (EECs) and *Neighbourhood Nurseries* (NNs) in 2002, and a discussion of their historical development is presented in Appendix A1 and explored in more detail in Eisenstadt (2011).

Children's centres were initially rolled out in the poorest 30 per cent of neighbourhoods, with the primary aim of 'narrowing the gap' between the rich and poor in terms of children's outcomes in the early years; by supporting families and so helping to provide a better start to school. Initially SSLPs were tasked with delivering open-access services within poor neighbourhoods. However, in 2004 there was an important shift in Sure Start policy that had a significant impact on children's centres, with the publication of *Choice for Parents, the Best Start for Children*. This document jointly developed across the Treasury and the Department for Education and Skills (DfES) marked the end of Sure Start as a policy aimed particularly at poor areas. It promised a network of 3,500 Sure Start Children's Centres (SSCCs), one in every community, offering a range of parenting support services as well as directly providing childcare or easy access to childcare (HM Treasury, 2004). This change reflected the growing popularity of children's centres, and a demand for all families to have access to them.

Children's centres were initially expected to deliver a 'core offer' of services. This original 'core offer', as defined by the Department of Children, Schools and Families (DCSF) at the beginning of this evaluation (2010), specified a range of services which all children's centres should provide:

- "Information and advice to parents on a range of subjects including looking after babies and young children, the availability of local services such as childcare;
- Drop-in sessions and activities for parents, carers and children;
- Outreach and family support services, including visits to all families within two months of a child's birth;
- Child and family health services, including access to specialist services for those who need them;
- Links with JobCentre Plus for training and employment advice; and
- Support for local childminders and a childminding network"

(House of Commons, Children, Schools and Families Committee, 2010: pp.12-13).

Future phases of children's centres (Phase 3 as they were known) were not required to provide this complete range of services, but rather to signpost to provision not available on-site but within the local area. For example, only Phase 1 and Phase 2 centres were required to provide access to the full set of services which included early education and childcare. The Phase 1 and 2 centres served the most disadvantaged areas, with the Phase 3 centres rolled out into all other areas. This evaluation commenced in 2009 and focuses only on Phase 1 and Phase 2 centres.

Following a change of government, and at a time of national austerity and cuts to public services and local authority budgets, there was a move away from implementing a 'core offer' of services, towards a statement of 'core purpose' which reduced the emphasis on open access, and instead emphasised providing services for those deemed to be in greatest 'need' (DfE, 2011). Other changes became apparent in response to this new 'core purpose': particularly the removal of the requirement to link with JobCentre Plus for promotion of employment opportunities, and the removal of the requirement to offer early education and childcare for working parents. Consequently, without the provision of childcare the requirement for a fully qualified teacher in children's centres was also removed. Children's centres were encouraged to signpost families to childcare by local voluntary and private providers rather than provide childcare places themselves. As of 2012, over 55% of children's centres (n=562 base) surveyed as part of the Children's Centre Census were not offering fulltime childcare, equating to a potential near 2,000 centres not offering childcare across England (4Children, 2012). The following 'core purpose' of children's centres was defined by the DfE in 2013:

"...to improve outcomes for young children and their families and reduce inequalities between families in greatest need and their peers in:

- child development and school readiness;
- parenting aspirations and parenting skills; and
- child and family health and life chances."

[Sure Start Children's Centres \(SSCCs\) Statutory Guidance \(DfE, 2013a: p.7\).](#)

The revised children's centre core purpose highlights the need to reduce inequalities apparent between children in greatest need and their peers. A recent report by Ofsted (2014) noted that there was still a substantial gap between the outcomes of children from lower income families and their relatively more advantaged peers, with children living in poverty having poorer language and communication skills, fewer words in their vocabulary, and a slower vocabulary learning rate compared with more advantaged children.

Since 2010 children's centres have experienced considerable turbulence and volatility as a result of changing organisational models, funding constraints linked to budget cuts, and addressing the new children's centre 'core purpose'. Local authorities were given responsibility for making decisions on which services were most required per locality. The

ring-fence from Sure Start funding was removed and the Early Intervention Grant (EIG) was introduced in 2011, thus it is not possible to put a figure on central government funding for Sure Start from 2011/12 onwards. Budget cuts were often linked to reorganisation of centres into cluster type arrangements rather than maintaining standalone centres. Funding for all non-statutory school aged children's services was rolled into a reduced local authority overall spending settlement. This not only reduced funding available for children's centres, but made the tracking of funding especially difficult. This has been studied and documented in earlier reports, and also noted by national inspections: many children's centres reduced their services and staffing as a consequence (Goff et al., 2013; Ofsted, 2014; Sylva et al., 2015).

As noted earlier, the Evaluation of Children's Centres in England (ECCE) commenced during the period when centres were tasked to deliver the 'core offer' of services. The evaluation has mapped considerable changes to centres as result of the change to their overall 'purpose', and moves towards targeting of provision (Sylva et al., 2015). The overall aims of the evaluation are to study the changing nature of children's centre provision, examine how families use centres, and assess whether different patterns of service use and models of children's centre provision and delivery have measurable effects on outcomes for children and families in a broadly representative user group. This is a challenging task when considering the many changes that have taken place in children's centre provision during the last five years. The evaluation faces particular challenges because children's centres were never intended to provide a single programme. Rather, the policy and its evolution and implementation explicitly sought to support children's centres that were locally varied in order to be responsive to local need, and families could choose whether or not to take up services available at their local centre.

## **1.1 Past research about the effects of children's centres or similar early interventions**

A number of previous studies have investigated interventions which are similar to the children's centre programme (see Appendix A2). To date however, there have been few evaluations of children's centre effects on child or family outcomes. The largest study evaluated the previous iteration of children's centres (when they were known as Sure Start Local Programmes: SSLPs). However, it is important to note that SSLPs were only located in very poor areas, all being in the 30 per cent most disadvantaged communities in England. The NESS Research Team (2003) gave a detailed description of the substantial disadvantage in the SSLP areas. The National Evaluation of Sure Start (NESS: which began in 2001) provided extensive evidence regarding the general overall impact of the original Sure Start programme, and influenced how children's centres were rolled out nationally. It comprises of impact, cost effectiveness and implementation strands which aimed to measure differences across a range of child and parenting outcomes. The evaluation adopted an "intention to treat" design to assess any impact, considering families living across the SSLP areas within the potential treatment group;

not just those that used the SSLP services on offer. SSLPs were meant not only to provide new services, but to improve the way existing services in very poor neighbourhoods worked together to promote better child outcomes. The NESS Impact strand did not involve a user sample but considered longitudinal effects of the SSLP intervention, following children in areas that provided SSLPs across the ages of nine months, three years, five years and seven years; and comparing families to those in similar non-Sure Start areas who did not have access to SSLPs. Note that this intervention design could not be used in the later ECCE research as children's centres had been rolled out in all areas by the beginning of the evaluation in 2009. There were no comparable areas without provision.

Limitations to the NESS evaluation design meant that it could not focus on specific users of local programmes, but rather, studied changes in outcomes for families living in Sure Start areas and families living in poor areas without SSLPs<sup>18</sup>. It was thus not possible to establish how far SSLPs shaped outcomes for those families that were users of their services. The ECCE children's centre evaluation reported here has a very different design, which focuses on a user group. Due to this difference in design it can investigate whether particular patterns of service use are associated with better outcomes for children, parents and families. ECCE also studies different models of children's centre delivery and organisation, and characteristics of centres including leadership. It seeks to identify features of centres that may promote positive outcomes for children, parents and families, especially for the most disadvantaged.

Melhuish (2013) reported how the NESS evaluation posed a great challenge to the research team given the variety of unique interventions used across the SSLPs. Programmes were required to deliver a set of core outcomes, but had significant freedom in deciding the precise set of services that they would deliver. Overall, the NESS study produced mixed results which have been discussed by the NESS research team, and are considered in more detail in Appendix A2.1 and Technical Appendix 1. As explored by this review, the later stages of the NESS Impact evaluation identified some main effects of the local programme for families in SSLP areas, in terms of benefits for family functioning; although some of these were present only for specific subgroups of families. A later report also identified potential economic benefits to the SSLP programme (Meadows and the NESS Research Team, 2011).

Table 1.1 details the main findings of a number of evaluations of early interventions, including the NESS study of SSLPs. Further details of these interventions and their

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<sup>18</sup> Randomised Control Trials (RCTs) were not feasible for this study due to the intervention being targeted towards areas rather than specific groups of individuals, and the early rollout and rapid expansion of the SSLP intervention. Johnson (2011) noted that there were also practical and political concerns regarding deciding whether or not localities would be designated as a Sure Start area for an RCT design. Eisenstadt (2011) provides a detailed discussion on the NESS evaluation and relevant design issues.

findings are presented in more detail in Appendix A2. In addition, the NESS evaluation and policy context has been discussed by Eisenstadt (2011).

## 1.2 Summary of evidence from past research on interventions which are similar to children's centres

To date, evaluations of the impact of children's centre-type programmes, initiatives and interventions have produced mixed evidence on their effects in terms of selected measures of child, parent and family outcomes (see Appendix A2 for further details). There are limitations to the evaluation designs in many cases (as area-based evaluations could not use an RCT-type design) and some of the research studied has limited sample sizes. Rolling out programmes to meet need is a common policy choice, and this means that quasi-experiments and RCT designs are not feasible as a comparison/control group cannot be identified. The promotion of open-access to families in disadvantaged areas was originally seen as crucial in promoting uptake of children's centre services by avoiding the potential adverse effects of stigma.

Most of the evidence reviewed here has suggested that children's centre-type initiatives may provide significant but relatively modest benefits to parents and families in promoting better outcomes, but less evidence that they have been successful in clearly narrowing the equity gap in children's development. Better outcomes have been identified in terms of reductions in negative parenting behaviours and improved Home Learning Environments (HLE), plus improved family functioning such as reduced '*CHAOS*'<sup>19</sup> in the home. There is however, little evidence on improved outcomes for children especially in terms of cognitive and linguistic development lasting into school.

The only programme to suggest any longer-term effects of intervention was the well-resourced Head Start: researchers were able to demonstrate suggestive improvements to school attainment and college enrolment, improvements in health and reduced levels of crime (see Table 1.1). However, the more rigorous RCT-design follow up did not show evidence of a longer term impact. It should be noted that a key feature of Head Start was the provision of high quality pre-school for children. This is not a feature of children's centres in England (universal part time pre-school was made available for all children from age 3 years from 2003 for 12.5 hours, rising to 15 hours a week from 2010). As noted children's centres typically signpost families to childcare elsewhere.

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<sup>19</sup> Confusion, Hubbub, and Order Scale (Matheny, Washs, Ludwig and Philips, 1995).

Table 1.1 Overview of early intervention programme evaluations, and evidence of child and family main effects

Intervention/ Evaluation	Evaluation methodology	Child main effects: Positive effects	Child main effects: Negative/lack of effects	Family main effects: Positive effects	Family main effects: Negative/lack of effects
<p><b>SSLPs:</b></p> <p>NESS Phase 1</p> <p>NESS Research Team, 2005</p> <p><i>Appx A2.1</i></p>	<p><b>Waiting-list design based on quasi-experimental methods.</b> Utilised 'intention to treat' methodology. 16,502 children aged 9 months-3 years and their families, living in SSLP areas. Compared to a sample of 2,610 families from a comparison group not yet involved in SSLPs.</p>	<p>1) SSLP children with non-teenage mothers = fewer behavioural problems/greater social competence.</p>	<p>1) SSLP children with teenage mothers (14% of the sample) = lower verbal ability/social competence, more behavioural problems;</p> <p>2) SSLP children from workless households (40% of the sample)/ lone-parent households (33%) = lower verbal ability.</p>	<p>1) Mothers of 9 month olds = lower levels of household 'CHAOS';</p> <p>2) Mothers of 3 year olds = less negative parenting;</p> <p>3) Non-teen mothers (86% of the sample) = less negative parenting.</p>	N/A
<p><b>SSLPs:</b></p> <p>NESS Phase 2</p> <p>NESS Research Team (2008; 2010; and 2012); Meadows/ Ness Research Team (2011)</p> <p><i>Appx A2.1</i></p>	<p><b>Matched comparison to a national cohort study (data collected 2 years apart) based on quasi-experimental methods.</b> Over 5,000 7 year olds and their families through the ages of 9 months, 3 and 5 years old. Compared to non-SSLP children and families drawn from the Millennium Cohort Study (MCS): living in similar areas (economic and demographic factors).</p>	<p><b>Age 3)</b> SSLP children = better social and emotional development, fewer accidental injuries since 9 months old, higher likelihood of receiving recommended immunisations;</p> <p><b>Age 5)</b> SSLP children = less likely to be overweight, more likely to have better general health.</p>	<p><b>Age 3)</b> No statistically significant effects on verbal ability or reduction in negative social behaviour;</p> <p><b>Age 5)</b> No effects on child educational development, child social and emotional development, number of accidents;</p> <p><b>Age 7)</b> No consistent effects on child educational development, social and behavioural outcomes.</p>	<p><b>Age 3)</b> SSLP families = less negative parenting behaviour, less problematic parenting, better Home Learning Environment (HLE), using more services for supporting child and family development;</p> <p><b>Age 5)</b> SSLP families = greater life satisfaction, less harsh discipline, less chaotic household and better HLE. Workless SSLP families = more likely to move into employment, gaining approximately 20% to their income (£50 a week). Economic benefits reported to range from £279 and £557 per eligible child;</p>	<p><b>Age 3)</b> No effects on father involvement, mother smoking, life-satisfaction, Body Mass Index (BMI), and rating of their area;</p> <p><b>Age 5)</b> No effects on mothers' rating of area. Mothers experienced more depressive symptoms; were less likely to attend child's school for meetings;</p>

Intervention/ Evaluation	Evaluation methodology	Child main effects: Positive effects	Child main effects: Negative/lack of effects	Family main effects: Positive effects	Family main effects: Negative/lack of effects
<b>SSLPs (Continued)</b>				<b>Age 7)</b> SSLP families = less harsh discipline, more stimulating HLE. SSLP families of boys = less chaotic home environment. SSLP lone parent and workless households = better life satisfaction.	<b>Age 7)</b> No effects on mother's life satisfaction nor self-ratings of depressive symptoms.
<b>Children's centres</b>  Blewett et al. 2011  <i>Appx A2.2</i>	<b>Longitudinal Survey.</b> Study of 53 families, drawn from 5 centres. Used a researcher-developed scale to review family progression between first and last contact with centre (or case closure).	General picture of ' <i>children doing better</i> ' after working with centres, in terms of reduced levels of need.	N/A	N/A	N/A
<b>Welsh Integrated Children's Centres</b>  NFER (2010)  <i>Appx A2.2</i>	<b>Qualitative case study design.</b> 4 Integrated Children's Centres in Wales (chosen to be representative) visited at three time points between 2008-2009. Interviews with parents, children, staff and managers.	Use of ICCs= improved social and cognitive skills, stronger links with primary schools to enhance school readiness and transition.	N/A	Use of ICCs= obtaining qualifications and employment; improved physical and psychological health.	N/A
<b>Head Start</b>  U.S. Dept of Health and Human Services, (2010)  <i>See Appx A2.4</i>	<b>RCT design.</b> Compared a nationally representative group of 3 and 4 year olds, randomly assigning them to either a Head Start (HS) group or control group. Involved 383 randomly selected Head Start centres - 4,667 3- and 4-year olds who were new to the programme. The groups were further broken down into age groups (3 or 4 years).	<b>Cognitive)</b> Better language and literacy during HS/until age 4; few remain at kindergarten; <b>Social/Emotional)</b> Limited effect on hyperactive behaviour during HS, in kindergarten and 1 <sup>st</sup> grade for 3 year olds; <b>Health)</b> Positive effect on dental health and health insurance.	<b>Cognitive)</b> No effect on language/literacy after age 4. <b>Social/Emotional)</b> Negative effect of shyness in 1 <sup>st</sup> grade for children starting at 4.	<b>Parenting)</b> Reduction in negative parenting behaviours, reduction in authoritarian parenting style. Longer lasting effects for 3 year old HS starters.	N/A

Intervention/ Evaluation	Evaluation methodology	Child main effects: Positive effects	Child main effects: Negative/lack of effects	Family main effects: Positive effects	Family main effects: Negative/lack of effects
<p><b>Early Head Start</b></p> <p>Vogel, et al. (2010), Vogel, et al. (2013)</p> <p>See Appx A2.4</p>	<p><b>RCT design.</b> 17 Early Head Start (EHS) programmes chosen to reflect characteristics of programmes funded in 1995 and 1996. Randomly assigned pregnant women/families with children under 12 months to either an EHS group or control group. 3,001 children and families at the beginning of the study.</p>	<p><b>Age 3)</b> EHS children = better engagement of parent, sustained attention to objects, less negativity toward parent during play, less aggressive behaviour. Better cognitive development and receptive vocabulary.</p> <p><b>Age 5)</b> Lower social behaviour problems, more positive approaches to learning. Better receptive vocabulary (Spanish speakers only).</p>	<p><b>Age 3)</b> No effect on child health.</p> <p><b>Age 5)</b> No continued effects on engagement, sustained attention, lower negativity or aggressive behaviour. No continued receptive vocabulary improvement for English speakers. No effect on child health.</p> <p><b>Age 10)</b> No effects on socio-emotional and approaches to learning outcomes; no effects on language, cognitive and academic skills; and no effects on child health.</p>	<p><b>Age 3)</b> EHS parents = better language and learning in home, more likely to read daily to child, more supportive during play. Less likely to report physical punishment. More likely to be in school or training.</p> <p><b>Age 5)</b> EHS parents = continued effects on reading to child daily. More likely to demonstrate teaching activities and attend child's school meetings. Less depression.</p>	<p><b>Age 3)</b> No effect on family wellbeing and mental health.</p> <p><b>Age 5)</b> No continued effects on language and literacy in the home, parental supportiveness, or lower levels of physical punishment. No effect on parent self-sufficiency.</p> <p><b>Age 10)</b> No effects on parenting and the home environment; no effects on family wellbeing and mental health; and no effects on parent self-sufficiency.</p>
<p><b>Head Start</b></p> <p>Ludwig and Phillips (2008)</p> <p>See Appx A2.4</p>	<p><b>Regression discontinuity design.</b> Compared outcomes for children just above and below the county poverty rate cut-off for grant-writing assistance for Head Start funding.</p>	<p>Counties receiving a 50-100% increase in funding for HS in the 1960s/1970s = decline in mortality from 'causes of death that could be affected by the program'; suggestive evidence of increase in schooling attainment; increase in likelihood of attending college.</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>
<p><b>Head Start</b></p> <p>Carneiro and Ginja (2014)</p> <p>See Appx A2.4</p>	<p><b>(Fuzzy) regression discontinuity design.</b> Compared outcomes for children eligible for Head Start (based on family income) and those not, using a regression discontinuity estimator.</p>	<p><b>Age 12-13)</b> Boys = reduced probability of being overweight, reduced probability of having a health condition involving special equipment, reduction in behavioural problems;</p>	<p>The cognitive tests for this study were noted to be 'imprecise'. No evidence of any impact of Head Start eligibility on cognition.</p>	<p>N/A</p>	<p>N/A</p>

Intervention/ Evaluation	Evaluation methodology	Child main effects: Positive effects	Child main effects: Negative/lack of effects	Family main effects: Positive effects	Family main effects: Negative/lack of effects
Head Start (Continued)	(Continued)	<b>Age 16-17)</b> Reduced probability of being overweight, reduced symptoms of depression; <b>Age 20-21)</b> Reduced probability of having been sentenced for a crime, and idleness for males.		N/A	N/A
Flying Start Programme  Knibbs et al. (2013)  See Appx A2.5	<b>Matched comparison design.</b> 1,033 families with children aged 2-4 years living in Flying Start areas in Wales; compared with 1,083 families in comparison areas (similar in demographic/socio-economic variables). Comparison areas were relatively less disadvantaged.	N/A	No statistical differences between areas on key child outcomes (cognitive and language skills, social and emotional development and independence, self-regulation).	Flying Start areas = Higher take-up of parenting/ language support, better contact with health visitors, higher parental confidence.	No statistical differences on key parent outcomes (immunisation rates, parenting self-confidence, mental health, or home environment).

## 1.3 Overview of the ECCE Impact Report

As noted earlier, past research has not provided strong or consistent evidence about the impact of programmes that are similar to children's centres in other contexts. This is the tenth report from the multi-component longitudinal Evaluation of Children's Centres in England (ECCE). It describes and summarises the main results from the *Impact study*. Chapter 2 outlines the mixed methods design of the overall ECCE evaluation and the educational effectiveness methodology used to investigate impact (by identifying effects) on selected child, parent and family outcomes. Chapter 3 describes how a set of over 40 measures of the use of children's centre services were created for the sample of families included in the evaluation. It also outlines the measures of children centre characteristics (organisational models and processes) that were created for this study and describes the analysis techniques used to create these measures. Both sets of measures were then tested in the Impact analyses. Chapter 3 also reports on the characteristics of centre users and analyses their use of services, along with characteristics of the centre sample. Chapter 4 describes the various outcomes for children at age 3 and the models that were developed to show what characteristics and factors predict these. Chapter 5 goes on to present the statistical models that were developed to predict outcomes for mothers; Chapter 6 presents the models for family and parenting outcomes; Chapter 7 presents children's centre effects for the most disadvantaged user families; and finally, Chapter 8 concludes the report with a discussion of key points emerging from the Impact analyses, and draws conclusions and implications from the results.

## 2 Research Design and Methodology [Sammons, Hall, Smees and Goff]

### 2.1 Evaluation of Children's Centres in England (ECCE)

The ECCE research seeks to provide both formative evidence on practices in the provision, delivery and use of children's centres and their services between 2011-2013, and also to evaluate the impact of children's centres in improving outcomes for children to age 3 years plus (mean age 38.1 months) and their families. To achieve both these formative and summative purposes, the evaluation links together data and evidence collected through five linked Strands that are briefly described next. Strands 1, 2, 3 and 5 have already published several reports and research summaries to inform policymakers and practitioners (addressing the formative purposes). This report focuses on the study of *impact* which is the prime focus of Strand 4. Results from Strand 4 allow the reader to examine the success of children's centres in achieving their core aims of promoting better outcomes for children and families living in disadvantaged areas, and helping to combat the adverse impact of disadvantage on their lives. The results of the analyses of *impact* will feed into the study of *cost effectiveness* (Strand 5).

#### 2.1.1 Strands of the Evaluation

The Evaluation of Children's Centres in England (ECCE) is being carried out by a consortium of organisations (NatCen Social Research, the University of Oxford and Frontier Economics), that were commissioned by the Department for Children, Schools and Families (DCSF, now Department for Education: DfE). The eight year study (2009-2017) aims to provide an in-depth understanding of children's centre services, including establishing their effects in promoting better outcomes for children and families; and seeks to assess their economic cost and value for money in relation to different types of services. The evaluation will involve a further follow up of children when they enter primary school. The research comprises a number of different research components carried out by the different ECCE consortia organisations. These were organised into five 'Strands' of work as detailed next:

#### **Strand 1: Survey of children's centre leaders (led by NatCen Social Research)**

Strand 1 utilised multiple surveys with children's centre leaders. Leaders from a sample of 509 children's centres<sup>20</sup> were interviewed in 2011 on key aspects of service provision, including management, staffing, services, users, and finance (Tanner, Agur, Hussey, Hall, Sammons, Sylva, Smith, Evangelou and Flint, 2012). In 2013, a second survey was

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<sup>20</sup> Representative of all Phase 1 and Phase 2 children's centres in the most disadvantaged areas across England.

carried out with children's centre leaders from the subset of 128 centres sampled for Strands 2-4 (described next, 98 of which took part): see Poole, Fry and Tanner (2015).

### **Strand 2: Survey of families using children's centres (led by NatCen Social Research)**

Strand 2 involved a number of repeated surveys with families registered at 128<sup>21</sup> of the children's centres taking part in the Strand 1 survey (those same 128 centres also visited in Strand 3). The first family survey was carried out in 2012 to collect information regarding families' service use, demographics, health, and wellbeing: 5,717 families (with children aged between 9-18 months) were interviewed in 2012 (Maisey, Speight, Haywood, with Hall, Sammons, Hussey, Goff, Evangelou and Sylva, 2013). A further 3,599 families<sup>22</sup> of the original family sample were surveyed again via telephone when their child reached the age of two years (in 2013). A final survey of 2,608 families from the initial sample was carried out in 2014 when the child reached the age of three years plus to profile their development (via child assessments of cognitive and social development), as well as investigating families' use of children's centre services over time (Maisey, Poole, Chanfreau and Fry, 2015).

### **Strand 3: Visits to children's centres (led by the University of Oxford)**

Strand 3 involved visits to 121 of the 128 children's centres sampled for Strand 2. The first of two Waves of fieldwork was carried out by the research team in 2012, to assess the range of activities and services that centres delivered, partnership working methods, leadership and management, and evidence-based practice (EBP: see Goff, Hall, Sylva, Smith, Smith, Eisenstadt, Sammons, Evangelou, Smees and Chu, 2013). One hundred and seventeen of the 121 centres were revisited in 2013 to assess the services available for parents and families, and to investigate the views of parents attending children's centre sessions (see Evangelou, Goff, Hall, Sylva, Eisenstadt, Paget, Davis, Sammons, Smith, Tracz and Parkin, 2014). Strand 3 also involved an area profiling exercise to assess the 'reach' of children's centres. Data on centre users was compared with data from the local area served by the centre (see Smith, Field and Smith, 2014). A final report synthesising the organisation, delivery of family services, and reach of children's centres has been produced (Sylva, Goff, Eisenstadt, Smith, Hall, Evangelou, Smith and Sammons, 2015).

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<sup>21</sup> These 128 centres consisted of: 1) a core sub-sample of 120 centres, and 2) an extra eight centres which had successfully recruited users for the evaluation. For more information, refer to Maisey et al. (2013).

<sup>22</sup> Of the Strand 2 sample of user families, only 3,588 of the Wave 2 and 2,602 of the Wave 3 sample were included in the Strand 2 report as containing fully productive interviews. Strand 4 draws on the full sample of families with data for at least one outcome (3,599 families at Wave 2 and 2,608 families at Wave 3).

#### **Strand 4: Analysing the ‘impact’ of children’s centres (led by the University of Oxford)**

Studying the *impact* of children’s centres is the key purpose of Strand 4 and the main focus of this report. Establishing *impact* is a difficult task because children’s centres have a variety of objectives and were set up to vary in function and form across neighbourhoods/areas rather than to exist in a fixed form regardless of local needs (see Chapter 1). Establishing *impact* is therefore not a matter of identifying a *single* effect but rather, identifying and summarising overall impacts that summarise a *range* of effects, across the sample of users and centres, and covering the range of centre practices that existed between 2011 and 2013. The underlying rationale is that children’s centres seek to support all children and families living in disadvantaged areas by providing a wide range of services tailored to local conditions and needs. The intention is to maximise reach, and services were intended to be available to all families with young children who were living in such neighbourhoods; thereby having an inclusive purpose rather than only being available to the most disadvantaged. The intention was to avoid stigmatising potential users and to maximise benefits to all families and children who might attend (for a recent discussion, see Sylva et al., 2015). Having said this, children’s centres more recently have been encouraged by successive governments to target individual families in greatest need, rather than provide open access services.

Strand 4 thus studies naturally occurring variation in the take-up and use of children’s centres and their services amongst a sample of users. It links together quantitative data about children’s centres and their characteristics, and the use of children’s centre services by children and families, collected from the first three Strands of the project (Strand 1: *survey of children’s centre leaders*, Strand 2: *visits to families*, and Strand 3: *visits to children’s centres*). Overall Strand 4 seeks to answer the overarching question: “*What aspects of children’s centres (management structure, working practices, services offered, services used) promote better family, parent, and child outcomes?*” Answering this overarching question requires the research team to link together data about children and families from Strand 2 (*visits to families*) and identify variations in their engagement with children’s centres in the ECCE sample. The research team explored their use of various children’s centre services over time and collected data about a number of child and family outcomes. This report describes the range of outcomes studied, and what factors predict them. The report seeks to establish whether specific features of children’s centres and patterns of service use help to promote better outcomes.

This report examines child and family outcomes measured when children in the sample were age 3 years plus (on average, 38.1 months). In the future, ECCE plans to collect Foundation Stage Profiles from these children, and conduct further analyses to explore the impact of children’s centres on child school readiness at age five. The analyses in this report provide a longitudinal perspective by following up child and family outcomes

over a period of time (children and families being recruited to the study when a child was aged 9-18 months, and followed up again when their child was mean aged 38.1 months)<sup>23</sup>. Evidence of 'impact' can be provided by establishing how far engagement with children's centres and use of their services shows measurable 'effects' in statistical models that predict outcomes for the sample of children and families in this research, while controlling for the influence of other individual child, parent, family and neighbourhood characteristics that also influence (predict) such outcomes. In addition, the models can establish how far service use is driven by different characteristics of the children and families, for example, '*Do more disadvantaged families make greater use of certain services?*'

### **Strand 5: Cost benefit analysis (led by Frontier Economics)**

Strand 5 aims to assess the cost-effectiveness and cost benefit of children's centre services based on integrating the impact findings of children's centre effects obtained from Strand 4, with cost data collected from 24 case studies carried out in children's centres (investigating the costs of services and provision). Case studies were carried out in 12 children's centres in 2012 (see Briggs, Kurtz and Paull, 2012) with a further 12 visited at the end of 2013-early 2014. A cost-benefit analysis report will be produced in 2015.

### **2.1.2 Evaluation sample**

ECCE used a nested fieldwork design, with a stratified random sample of centres selected for Strand 1 being used to create the smaller focused samples of centres for Strands 2, 3 and 5. Sampling stratification criteria are presented in Figure ApB1 (Appendix B1, with further details available from Tanner et al., 2012). There were eligibility criteria for centres, which were to be classed as a Phase 1 or 2 centre; intended to be located within one of England's 30 per cent most deprived areas; designated as such for a minimum of two years before fieldwork, and running the full 'core offer' (as defined in Chapter 1) for three or more months before fieldwork. The achieved sample cannot therefore be considered as representative of *all* children's centres in England, as it did not contain any of those centres designated as 'Phase 3 centres', i.e. those established to provide services for families living in somewhat less disadvantaged areas. Instead, the sample is likely to remain broadly representative of those Phase 1 and 2 centres that were in existence and operating in England at the time the evaluation research was conducted (2009-2014).

Eight hundred and fifty centres were selected as a random stratified sample for the Strand 1 *survey of children's centre leaders*, of which 509 centres (59.9%) took part

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<sup>23</sup> The time between Wave 1 and Wave 2 interviews ranged from 21-35 months, with a mean of 24 months (SD=1.00).

(Tanner et al., 2012). Three hundred of these centres were selected as the basis for recruiting users for the Strand 2 *survey of families* (of which 128 took part, 42.7%; see Maisey et al., 2013). These 128 centres were later invited to take part in the first Wave of Strand 3 *visits to children's centres* fieldwork in 2012 (n=121 centres participated, representing 94.5% of the 128; see Goff et al., 2013), and again in 2013 (n=117 centres participated, representing 91.4% of the 128; see Evangelou et al., 2014). Alongside this, 72 local authorities (containing one or more of the original 128 centres) were surveyed for the *reach* fieldwork. The *reach* sub-study examined centre records of registered families' postcodes to establish how far centres were successful in attracting users who lived in the most disadvantaged neighbourhoods (Smith et al., 2014). A detailed sampling diagram is presented in Appendix B1 (Figure ApB1), along with a figure detailing the different samples and data collection periods discussed within this report (Appendix B1, Figure ApB2).

## 2.2 Aims of Strand 4

The core aim of Strand 4 is to investigate whether different *features* of children's centres (e.g. centre forms of organisation and characteristics) or different *patterns in the use* of children's centres show statistically significant effects in relation to later outcomes for families and children. In order to investigate such potential effects, data collected from multiple Strands of the evaluation has been linked together. This includes information about children and families in the sample of users, information about their patterns of engagement with various children centres services, and their use of the target children's centre from which they were recruited (Strand 2); and information about centre characteristics and provision such as the leadership, configuration and quality of services in the target centre (Strands 1 and 3).

The *Impact* study (Strand 4) uses a range of quantitative information to create statistical models identifying the factors that predict a range of child and family outcomes, and establishes the effects of various demographic variables (child, parent, family, neighbourhood) and measures of children's centre provision. The present report focuses on impact assessed when the children in the sample were age 3 plus. A further follow up is planned to assess the impact of children's centres on later child outcomes at age rising 5 using Early Years Foundation Stage (EYFS) data.

**Strand 4 addresses the overarching question "How far does engagement with children's centres promote better outcomes for families, parents, and children?"**

The analyses test the overarching hypotheses that greater use of services may support better outcomes, and that certain features of children centres (e.g. better scores for leadership, parenting services and multi-agency working) may predict better outcomes. These are addressed in two main sets of analyses that identify:

1. Families' use of children's centre services over 3 time points; and

2. Children's centre characteristics and processes (quality of provision in terms of leadership, organisation and management structures, working practices, services offered, reach) that predict outcomes.

A number of more specific research questions are addressed through the use of multilevel statistical analyses.

- 'Do some patterns of families service use (e.g. mix and intensity) have differential effects on child and family outcomes?'
- 'Are some models of centre organisation (service delivery) more effective than others in fostering better outcomes?'
- 'Which centre characteristics (e.g. location, leadership and management processes and structures, financial arrangements) predict better outcomes for children and families?'
- 'What are the effects of the most commonly used services?'
- 'Is there any evidence that services used through children's centres have differential effects than the use of similar services provided by other organisations?'
- 'Does impact vary for families and children with different socio-economic profiles?'

The Strand 4 analyses aim to identify statistical patterns and effects of various measures of children's centre use of services, and characteristics of centres, on important child and family outcomes, but this *does not imply causation*. The notion of 'impact' used here is based on models that statistically predict child and family outcomes and the evidence obtained about the size and significance of any such effects is thus probabilistic. ECCE is in a position to identify statistically significant associations, effects and trends that are unlikely to be due to chance (e.g. between service use and child outcomes), but ECCE was not designed to answer questions of causality (e.g. through use of a Randomised Control Trial: RCT<sup>24</sup>). As children's centres were provided in disadvantaged neighbourhoods across England, the research team can only study naturally occurring variation in families and their outcomes, the centres they were registered with, and their use of children's centres.

The impact analysis has not studied how children's centres may shape families' use of their services (either directly at the centre through what they offer, or by personal encouragement or at other organisations through signposting or referral) because collecting this level of detailed information consistently for all families was beyond the scope of the evaluation. Nor can it establish the total 'impact' of a children's centre on child and family outcomes in a geographical area. Strand 4 was not designed to address whether greater targeting of services results in more delivery of services to the types of

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<sup>24</sup> See Appendix B2 for more information on the research rigour of the ECCE design.

families that could benefit most. It can, however, show whether certain kinds of families make more use of some services.

## 2.3 Methodology for studying the impact of children's centres

### 2.3.1 The influence of variation on choice of methodology

Recent ECCE publications (see Section 2.1) have shown that children's centres offer a wide variety of services in varied configurations that evolve over time. These services were also used in varying amounts by families. There are, however, commonalities apparent across the ECCE sample in terms of types of children's centres and types of service use. For example, Strand 1 revealed four *types of centre* (Tanner et al., 2012); Strand 3 (Sylva et al., 2015) suggested three centre *organisational models* were present as well as one developing *mode of service delivery*; and Strand 2 indicated several distinct *patterns in how families used children's centre services* (Maisey et al., 2013).

### 2.3.2 Approach to estimating the impact of children's centres

Data for the *Impact Strand* was drawn from multiple elements of the evaluation (Strand 1 *survey of children's centre leaders*, Strand 2 *visits to families*, and Strand 3 *visits to children's centres*). All of this is used within statistical models that aim to capture the relationship between a family's *use of children's centres*, the *characteristics* of centres, and how associated *both* are with subsequent measures of the family. Including different measures of children's centre experience and provision in these models will help to identify those features of use or provision that predict better (or poorer) outcomes.

There is a particular focus in this report on the data from the users of children's centres (Strand 2) where longitudinal multilevel statistical models of relevant outcomes for mothers<sup>25</sup>, families and children at different time points have been used to establish whether different features of centres predict better outcomes (e.g. health, parenting, children's cognitive and social development). The analyses were based on users drawn from 117 centres. By necessity, Strand 4 carries forward the terminology and design choices of the preceding three Strands. This includes considering only families with a child aged 9-18 months at the start of the study and also only those who were 'registered' at their local children's centre (though this does not imply any use of services). Subsequent distinctions were therefore made between centres at which users were 'registered' and 'other' children's centres.

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<sup>25</sup> Strand 4 considers mother outcomes where 'mothers' include both biological and non-biological (step, foster etc.). This focus on mothers instead of broader terms such as 'parents' or 'primary caregivers' was based upon the reality of the data obtained from the ECCE sample of families using children's centres. Ninety-six per cent of the adults who took part in Strand 2 were the mothers of the children who were 9-18 months old when their families were first recruited.

Multilevel statistical models permit Strand 4 to estimate impact on outcomes while accounting for salient but extraneous measures, including:

- **Child factors at baseline:** ethnicity, health and birth weight, age, gender, home language;
- **Parent and family factors at baseline:** mother's highest qualification levels, mother's age, mother's ethnicity, mother's health (e.g. physical, lifestyle, diet, mental), mother's living arrangements (e.g. lone parents), family socio-economic status (SES), family income/financial disadvantage, Household Economic Status (e.g. whether a parent is working), number of children, family experienced life event, family functioning and home environment (e.g. *Parenting Stress Index: PSI* scales, very early *Home Learning Environment*, *Confusion, Hubbub and Order Scale: CHAOS*).
- **Neighbourhood factors at baseline:** indices of disadvantage based on user postcodes linked to administrative data such as the Income Deprivation Affecting Children Index: IDACI; whether the family lives in a rural location.

Furthermore, the baseline measures of child health, parental behaviour, and mother mental health have all been incorporated into the models (where available) to allow change in outcomes to be studied over time<sup>26</sup>. Cluster analyses were used to identify similar groups of children's centres and families based on shared characteristics (e.g. a family's use of children's centre services). This strategy was informed by its successful use in previous ECCE reports such as the Strand 2 baseline report (Maisey et al., 2013) and the Strand 3 baseline report (Goff et al., 2013). Cluster analysis is a data reduction technique that allowed Strand 4 to create summary groupings based on a broad range of information from Strands 1-3. This was necessary to keep the number of measures tested in the statistical models and amount of analyses manageable<sup>27</sup>. Technical Appendix 3 documents the work that was undertaken to investigate the suitability of cluster analyses as a useful data reduction technique for Strand 4.

### **Impact of using centres and services**

The first set of multilevel statistical models investigate the question, "*What are the impacts of using children's centres and their services?*" These analyses summarise information from the Strand 2 surveys over three time points. This direct link between centre use, service use and outcome measures is possible due to the same sample of families providing information on both their use of children's centres (both where they were registered and otherwise) and services (listed in Technical Appendix 2.6) as well as providing outcome data when their child was aged from 9-18 months (at recruitment) to age three years plus.

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<sup>26</sup> Although this was not always possible due to wider project aims limiting the range of baseline measures that were collected. No cognitive or social behavioural measures were available for the children at age 9-18 months.

<sup>27</sup> Given that over ten thousand measures were achieved by the ECCE project across Strands 1-3 alone.

The most commonly used services were identified and only these were tested individually alongside the broader measures of centre use and centre characteristics<sup>28</sup>. The baseline Strand 2 report (Maisey et al., 2013) has already demonstrated one of the ways in which families can be grouped according to their patterns of service use at the start of the study, and this is a measure that is again tested (see Figure 2.1). Fifty seven per cent of the baseline families were found to demonstrate distinct patterns in how they used family services. They were:

1. Limited users of family services, mainly accessing only health services;
2. Heavy users of multiple family services with an emphasis on activities for parents and toddlers;

And therefore also:

3. Families with no consistent pattern in their use of services (the remaining 43%).

Figure 2.1 illustrates the range of measured concepts that have been considered in the multilevel models that analyse the effects of different kinds of centre use and service use as statistical predictors of variations in different parent, family, and child outcomes.

The measures are described in more detail in Chapter 3 (Section 3.2) and a comprehensive list of measures related to this analysis is presented in Technical Appendix 2. The simultaneous consideration of the impact of outcome-relevant background measures (as “statistical controls”) is undertaken in order to facilitate the production of more appropriate estimates of the effects of children’s centres.

### **Impact of centre features and characteristics**

Here the research team consider information from Strands 1-3 to answer the question, “*What are the impacts of attending a children’s centre that is defined by one set of characteristics rather than another?*” Multilevel regression models are specified which link the families that have been sampled (2,608 families with children) to the 117 children’s centres at which they were registered. Illustrated in Figure 2.2, these analyses draw on the widest range of data that has been gathered and provide a broad picture as to the impacts of engagement with different *kinds* of children’s centres (measured by Effect Sizes: ES and Odds Ratios: OR; See Glossary) on different child, mother, and family outcomes. These analyses complement those presented in Figure 2.1: an *in-depth*

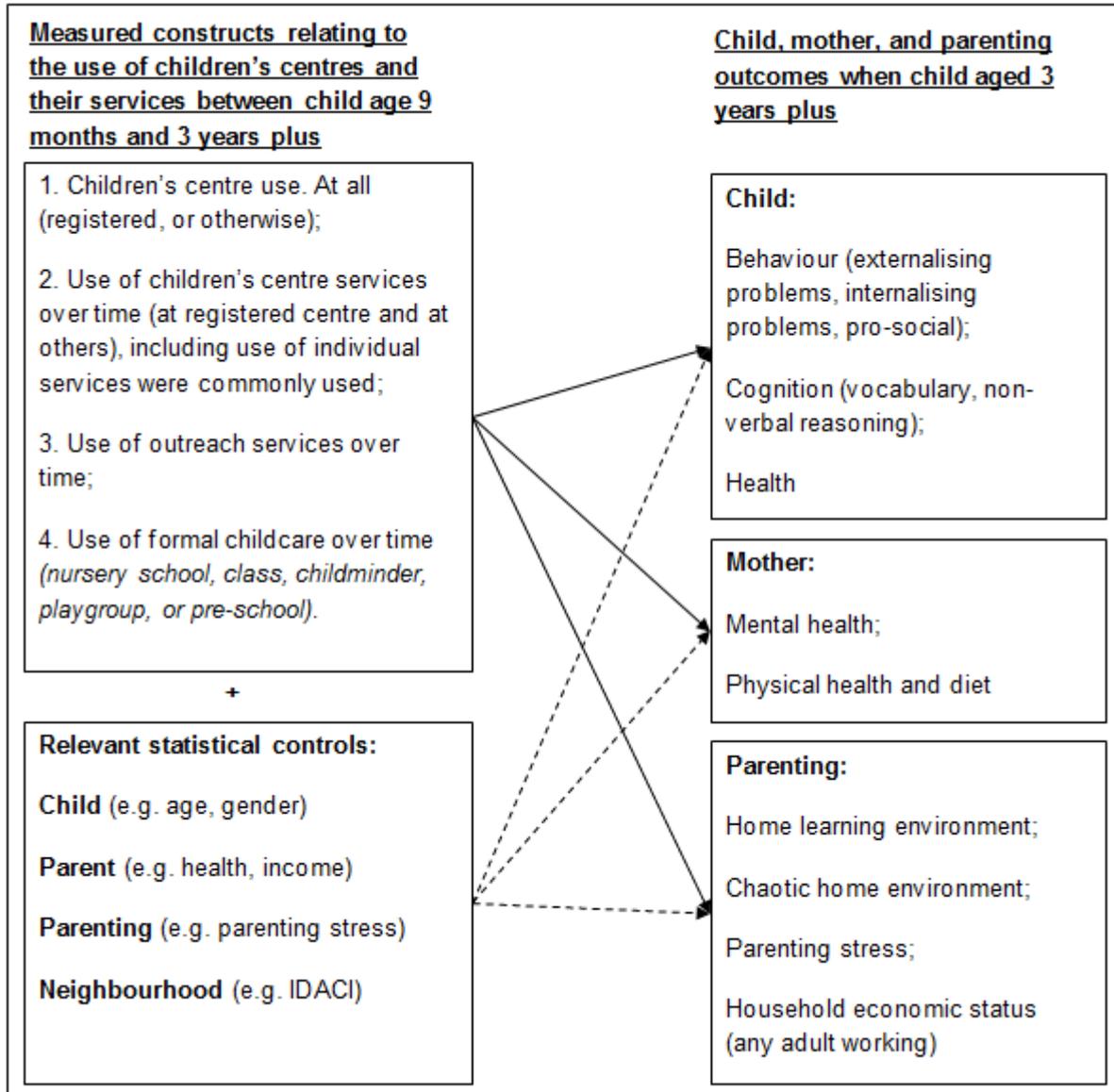
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<sup>28</sup> A separate analysis of each of the 21 individual services was not possible for two reasons:

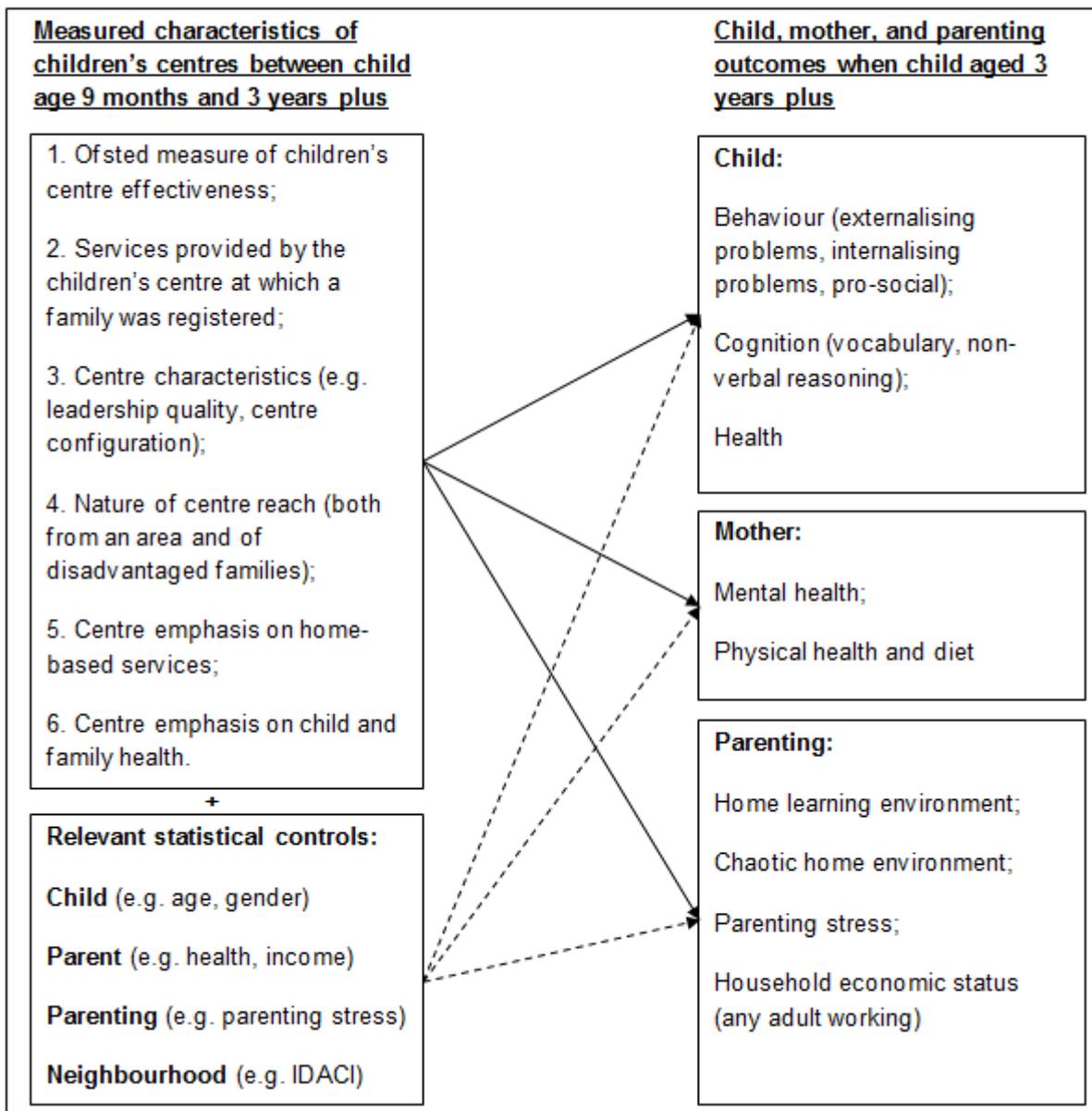
- 1) Data collection procedures in the Strand 2 surveys that balanced obtaining information on a range of services against how services were being used at three time points. This led to a strategy of collecting data on only some of a family’s used services (see Technical Appendix 2.6);
- 2) Differential use of services by families. Some services are used by fewer families and this risks the lack of sufficient statistical power.

examination of the impact of *usage* is combined with a *broader* examination of impact linked to centre *characteristics*. A comprehensive list of measures related to this analysis is presented in Technical Appendix 2.

**Figure 2.1** The children’s centre use and service use constructs tested in models that predict various child, mother, and parenting outcomes at child mean age 38.1 months (n=2,608 families, n=117 centres)



**Figure 2.2** The children’s centre characteristics tested in models that predict various child, mother, and parenting outcomes at child mean age 38.1 months (n=2,608 families, n=117 centres)



## 3 The Sample and Measures [*Smees and Hall*]

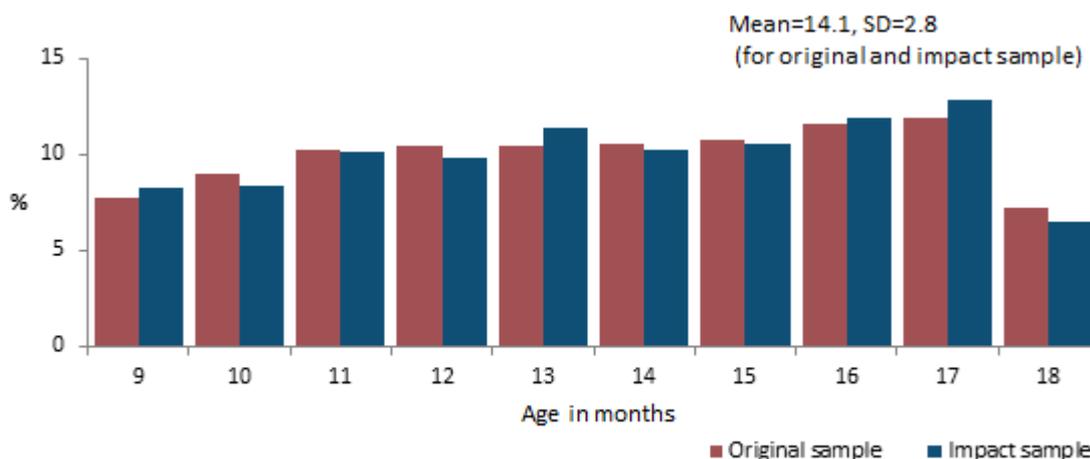
### 3.1 The Sample

#### 3.1.1 Characteristics of the sample of children and families (users)

The *Impact* Strand is based on a follow-up of families in the original ECCE Strand 2 sample recruited to the project in 2012. Full sample details can be found in Maisey et al. (2013 and 2015). Briefly, a sample of 5,717 families (Wave 1) was recruited to the project when their child was between the ages of 9 to 18 months (mean age 14.1 months). All parents who had agreed to be contacted again were invited to take part in a further follow-up phone interview: this tracked 3,599 of the original families (Wave 2). The final (Wave 3) interviews invited only those families whose children's centres were also taking part in Strand 3 of the evaluation (i.e. families from the 117 children's centres that took part in both rounds of fieldwork), thereby eliminating a source of systematic missingness within the data analysed as part of the *Impact* study. The sample considered here consists of 2,608 families registered at 117 centres that each had a child aged between three, to three and a half years old at the Wave 3 follow up (mean age of 38.1 months)<sup>29</sup>.

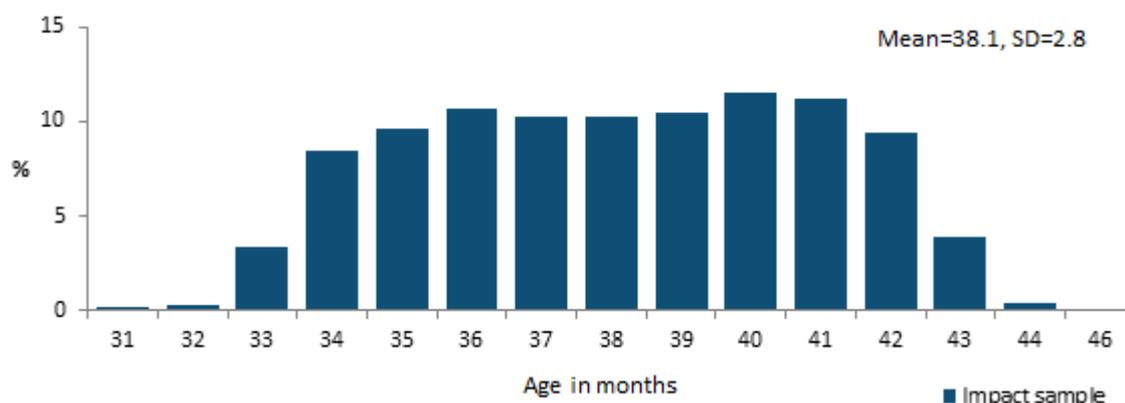
Figures 3.1 and 3.2 display the age range of ECCE children at both Wave 1 and Wave 3.

Figure 3.1 Age in months distribution for ECCE children at Wave 1



<sup>29</sup> Of these, only 3,588 families at Wave 2 and 2,602 at Wave 3 had full interview data. To maximise sample numbers, the full 3,599 Wave 2 sample and 2,608 Wave 3 sample was used in the impact analysis. For equivalent details about reductions in the sample size of children's centres, see Section 3.1.2.

**Figure 3.2 Age in months distribution for ECCE children at Wave 3**



Tables 3.1-3.4 provide a brief summary of the child and family characteristics of the final Impact sample and the original ECCE sample (those families recruited at Wave 1) for comparison. These tables show differences in the characteristics of the original and Impact sample. For further information on the Wave 3 sample see Maisey et al (2015). This discusses both the weighting and patterns of response for different groups at Wave 3.

Strand 4 uses unweighted data because of the relatively small sample size to maintain statistical power in the multilevel models.<sup>30</sup> Analyses are based on 79 per cent of the original sample of families (n=2,608 out of 3,299 who attended children’s centre in the Strand 3 centre sample; see Maisey et., 2015). The characteristics shown here were all collected in the original interview in 2012. The Impact sample of children was almost equally split between males (50%) and females (50%). The majority of the children were of White UK heritage (71%), while children of Bangladeshi and Black Caribbean heritage represented the smallest ethnic groups (1% for each). The proportion of ethnic minority heritage children in the final Impact sample reflects general population trends (DfE, 2014a).

Table 3.2 shows the characteristics of the mothers of ECCE sample children. The majority of mothers in the Impact sample were in their thirties at their child’s birth (52%). Just under one in twenty mothers had no formal qualifications (5%) and just over a third (35%) possessed a degree or higher qualification. Table 3.2 also shows the living arrangements of mothers at the start of the project. The majority of mothers were married (59%) and approximately a quarter were living with a partner (24%). The proportion that were single parents (never married) was just over one in ten (12%), and the remaining were separated/divorced or widowed (5%). It can be seen that the Impact sample contained proportionately fewer younger mothers, those who were single parents, and those without qualifications, when compared with the larger Wave 1 sample.

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<sup>30</sup> Jenkins (2008) shows that the use of unweighted data in multilevel models that predict continuous dependent variables show little bias and have greater statistical power than weighted models.

**Table 3.1 Characteristics of the sample: child characteristics in 2012, comparing the original Wave 1 sample and those in the Impact (Wave 3) sample**

Characteristics of the child sample in 2012		Original sample (Wave 1)		Impact sample (those included at Wave 3 from 117 centres)	
Characteristics	Category	n	%	n	%
<b>Gender of child</b>	Male	2,920	51.1	1,305	50.0
	Female	2,797	48.9	1,303	50.0
<b>Ethnicity of child</b>	White British	3,896	68.1	1,853	71.1
	White European	342	6.0	153	5.9
	Mixed Race	389	6.8	156	6.0
	Indian	160	2.8	63	2.4
	Pakistani	307	5.4	107	4.1
	Bangladeshi	83	1.5	37	1.4
	Black Caribbean	76	1.3	36	1.4
	Black African	245	4.3	107	4.1
	Any other	210	3.7	93	3.6
	No data available	9	0.2	3	0.1

Table 3.3 compares the characteristics of families in terms of Socio-Economic Status (SES), Household Economic Status (HES) and family size. Regarding SES, approximately a third of the families in the Impact sample were in the highest SES group (37% in 'higher managerial', 'administrative' or 'professional' occupations), one third in routine or semi-routine occupations (30%), and just three per cent had never worked. The proportion of households where no resident parent was working was relatively low (16%). Table 3.3 also shows family structure (measured at the start of the project). Only a small proportion were large families (6%: defined as having three or more siblings when recruited to the study), while just under half had one or two siblings (46%). Compared with the Wave 1 sample, the Impact sample included proportionately more families with a parent in work, fewer from large families, and more from higher SES groups.

As anticipated, given the location and remit of children's centres, the majority of families in the Impact sample were living in deprived neighbourhoods (based on postcode data: 62%), whereas just one in five (21%) lived in less/least deprived neighbourhoods (see Table 3.4). Again compared with the Wave 1 sample, there is a reduction in the proportion living in the most disadvantaged areas.

**Table 3.2 Characteristics of the sample: mother characteristics in 2012, comparing the original Wave 1 sample and those families in the Impact (Wave 3) sample**

Characteristics of the mother sample in 2012		Original sample (Wave 1)		Impact sample (those remaining at Wave 3)	
Characteristics	Category	n	%	n	%
<b>Mother's age at child's birth</b>	Less than 20 years old	269	4.7	66	2.5
	20-29 years old	2,600	45.8	1,038	40.0
	30-39 years old	2,549	44.9	1,350	52.0
	40 years or older	253	4.5	142	5.5
	No data available	46	---	12	---
<b>Mother's qualifications at Wave 1</b>	None	520	9.2	135	5.2
	Compulsory education: GCSE/NVQ/BTEC 1-2	1,774	31.2	702	27.0
	FE/lower HE: A level BTEC, NVQ 3-5, Foundation degree	1,545	27.2	758	29.2
	Higher Education: Degree or higher	1,635	28.8	918	35.3
	Other non-academic/vocational qualifications	209	3.7	85	3.3
	No data available	34	---	10	---
<b>Mother's living arrangements at Wave 1</b>	Married	3,091	54.3	1,537	59.1
	Living with partner	1,380	24.2	634	24.3
	Single parent, never married	921	16.2	304	11.7
	Separated, divorced, or widowed	302	5.3	126	4.8
	No data available	23	---	7	---

Overall, the Impact sample shows differences in the representation of certain groups: younger and lower qualified mothers, lower SES groups, non-working, and single parent families. See Technical Appendix 2 for further details of the sample.

**Table 3.3 Characteristics of the sample: family characteristics in 2012, comparing the original Wave 1 sample and those families in the Impact (Wave 3) sample**

Characteristics of the families in 2012		Original sample (Wave 1)		Impact sample (Wave 3)	
Characteristics	Category	n	%	n	%
<b>National Statistics Socio-Economic Classification (NS-SEC) at Wave 1</b>	Higher managerial, admin and professional	1,813	32.2	954	37.0
	Intermediate	513	9.1	243	9.4
	Small employers and own account workers	640	11.4	278	10.8
	Lower supervisory and technical	568	9.9	274	10.6
	Semi-routine and routine	1,816	32.2	764	29.6
	Never worked	286	5.1	68	2.6
	No data available	81	---	27	---
<b>Household Economic Status at Wave 1</b>	No-one working	1,318	23.1	415	15.9
	At least one parent working	4,399	76.9	2,193	84.1
<b>Number of siblings at Wave 1</b>	Singleton	2,661	46.5	1,249	47.9
	1-2 siblings	2,654	46.4	1,205	46.2
	3+ siblings	402	7.0	154	5.9

**Table 3.4 Characteristics of the sample: neighbourhood characteristics in 2012, comparing the original Wave 1 sample and those families in the Impact (Wave 3) sample**

Characteristics of the neighbourhood in 2012		Original sample (Wave 1)		Impact sample (Wave 3)	
Characteristics	Category	n	%	n	%
<b>Neighbourhood Income Deprivation Affecting Children Index (IDACI)</b>	Least deprived	389	6.8	231	8.9
	Less deprived	554	9.7	306	11.8
	Average	863	15.2	454	17.5
	Deprived	1,564	27.5	673	25.9
	Most deprived	2,319	40.8	933	35.9
	No data available	28	---	11	---

### 3.1.2 Characteristics of the sample of children's centres

More information about the 117 children's centres that feature in this report are documented in Chapter 2, Section 2.1 (and graphically illustrated in Appendix B) while a full list of measures characterising these children's centres and which are used as potential predictors in the statistical models estimating impact can be found in Technical Appendix 2.5.

As noted earlier in Chapter 2 Section 2.1.2, the 117 children's centres that feature in this report are those that were sampled in 2011 and which then took part in yearly surveys and fieldwork visits between 2011 and 2013. Tables 3.5 and 3.6 provide a brief summary of three samples of children's centres that have featured in ECCE reports to date: 1) the initial sample of 509 centres (providing ECCE with breadth in measurement); 2) the 128

children’s centres which were initially sampled for complementary in-depth follow up to 2013; and 3) the final sample of 117 children’s centres that feature in this report. The characteristics shown are all drawn from the initial 2011 survey of children’s centre managers (Tanner et al., 2012). The measures that are considered in the models of impact are subsequently presented in Section 3.2 (with complementary full-documentation given in Technical Appendix 2).

Table 3.5 shows the measures and proportions that were variously used in drawing the random stratified sample of 509 centres (achieved) and the random stratified sub-sample of 128 centres (achieved). Despite ECCE’s intention to retain all NHS-led children’s centres, the combination of refusals and project drop-outs led to only one of these centres remaining in the final sample – which prevents Strand 4 from focusing on this sub group. Other percentages were roughly maintained over the four years of ECCE fieldwork (2011-14) and the four Waves of fieldwork conducted in them by Waves 1 and 3<sup>31</sup>. The Impact sample contains a substantial proportion of local authority and education run centres, with proportions slightly higher than that in the original sample, and somewhat more that offered evidence-based programmes (EBP): the latter were being encouraged during the timescale of the evaluation.

**Table 3.5 Characteristics of the children’s centre samples: Baseline characteristics of centres used to draw a stratified random sample**

Characteristics of the centres		Original sample (2011; n=509)		Original sub-sample (2012; n=128)		Impact sample (those 117 remaining at Wave 3)	
		n	%	n	%	n	%
<b>Centre Characteristics</b>	<b>Category</b>						
<b>Lead organisation (self-reported in 2011)</b>	No information/unclear	37	7.3	17	13.3	16	13.7
	PVI	76	14.9	22	17.2	20	17.1
	Local Authority	247	48.5	45	35.2	43	36.8
	PCT	22	4.3	4	3.1	1	0.9
	Nursery/School/College	127	25.0	40	31.3	37	31.6
<b>Urbanity (from 2011 EC Harris Database)</b>	Rural	46	9.0	11	8.6	11	9.4
	Urban	463	91.0	117	91.4	106	90.6
<b>"...had to make any cuts in services in 2010-11?"</b>	Missing	147	28.9	28	21.9	27	23.1
	No	216	42.4	60	46.9	54	46.2
	Yes	146	28.7	40	31.3	36	30.8
<b>Centre claimed to run one or more evidence-based programmes in 2011?</b>	Missing	73	14.3	13	10.2	12	10.3
	No	210	41.3	47	36.7	43	36.8
	Yes	226	44.4	68	53.1	62	52.9

<sup>31</sup> Note, the two Waves of Strand 5 fieldwork are not considered here; these took place in 24 centres that were in the original sample of 509 children’s centres, but not in the sub-sample of 128. Also excluded are the visits to children’s centres Local Authorities that took place in Strand 3, and the three interviews with the families using the 128 centres which took place in Strand 2.

Table 3.6 compares four key characteristics of the children’s centres that were originally sampled in 2011 and then followed up through 2013. Again, broad consistency can be seen in the percentages over time. Initial (2011) features that remained stable were: centres where their leader responded, there were no amalgamations since 2010, ten or more types of service were offered, and where 50 or fewer staff were employed. These results suggest that the initial representative nature of the ECCE sample was maintained over time, despite the multi-phase sampling procedure used (the selection of a sub-sample) and attrition from either drop out, centre amalgamation or closure.

**Table 3.6 Characteristics of the children’s centre samples: selected characteristics of centres when first sampled in 2011**

Characteristics of the centres		Original sample (2011; n=509)		Original sub-sample (2012; n=128)		Impact sample (those 117 remaining at Wave 3)	
Centre Characteristics	Category	n	%	n	%	n	%
Person supplying information in 2011	N/A	1	0.2	0	0.0	0	0.0
	Children's centre leader	438	86.1	112	87.5	104	88.9
	Member of lead organisation	58	11.4	12	9.4	10	8.5
	Someone else connected to the centre	12	2.4	4	3.1	3	2.6
Amalgamated with another centre since 2010?	N/A	1	0.2	0	0	0	0
	No	480	94.3	120	93.8	109	93.2
	Yes	28	5.5	8	6.3	8	6.8
Total number of service types centre claimed to provide or helped users gain access to in 2011 <sup>†</sup>	Missing	46	9	11	8.6	11	9.4
	8	10	2	2	1.6	2	1.7
	9	79	15.5	20	15.6	17	14.5
	10	374	73.5	95	74.2	87	74.4
Total number of staff claimed as employed in any capacity (direct, indirect, full-time, part-time) in 2011	0-50	310	60.9	73	57.0	64	54.7
	51-100	92	18.1	27	12.1	27	23.1
	101-150	23	4.5	8	6.3	7	6.0
	151+	5	1.0	1	0.8	1	0.9

<sup>†</sup> Ten types of service: Early learning and childcare; Before/after school care for older children; Opportunities for parents and children to play and take part in activities together; Childminder development and support; Health related services; Employment and benefits services; Other advice and information services; Adult education for parents; Family and parenting support; Outreach or home-based services.

## 3.2 The Measures

### 3.2.1 Outcome measures at child age 3 years

Various outcome measures were collected for children, parents and families. Where possible, baseline measures were obtained in the Wave 1 user surveys (Strand 2). Outcomes were collected at Wave 3.

### 3.2.1.1 Child

#### **Social skills and behaviour**

Social skills and behaviour were measured via the *Strengths and Difficulties Questionnaire* (SDQ: Goodman 1997, 1999; Goodman, Meltzer and Bailey, 1998). The SDQ is made up of five scales (5 items each), developed to be in line with the Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition (DSM-IV; American Psychiatric Association, 1994): the *Emotional Symptoms* subscale, the *Conduct Problems* subscale, the *Hyperactivity* subscale, the *Peer Problems* subscale and the *Pro-social* subscale. See Technical Appendix 2.1.2 for the full list of items. The subscales formed three outcomes used in the impact analyses:

- **Internalising behaviours:** made up of Emotional Symptoms and Peer Problems subscales;
- **Externalising behaviours:** made up of Conduct Problems and Hyperactivity subscales;
- **Pro-social skills:** using the Pro-social subscale alone.

The broader *Internalising Behaviour* and *Externalising Behaviour* SDQ subscales were chosen for the Impact sample as they were deemed to be more appropriate for low-risk samples, whilst use of individual subscales is considered more appropriate when screening for disorder or in samples with elevated SDQ scores (Goodman, Lamping, and Ploubidis, 2010). Although the ECCE sample may be considered to contain higher risk sub-groups, the distribution of SDQ subscales suggests the sample is broadly in line with national norms for *Emotional Symptoms* and *Peer Problems* (Griffiths, Dezateux, and Hill, 2011; Sim, O Dowd, Thompson, Law, Mamillan, Affleck, Gillberg, and Wilson, 2013). Scores for *Hyperactivity* and *Conduct Problems* were found to be slightly higher than national norms for similarly aged children<sup>32</sup>. In addition, the combined subscales were closer to a normal distribution than the individual subscales (the longer scale also allows for greater differentiation between children) and found to have superior reliability (Cronbach's Alpha for *Externalising Behaviours* = 0.76; Cronbach's Alpha for *Internalising Behaviours* = 0.64) and validity (Goodman et al., 2010).

*Internalising Behaviours* encompass a number of aspects of *Emotional Symptoms* (e.g. child often complains of minor ailments, often worries, is unhappy, nervous/clingy in new situations, is easily scared) and *Peer Problems* (e.g. child is often rather solitary, does not have one good friend, not liked by others, picked on, and more likely to get on with adults than children). The distribution of the *Internalising Behaviour* subscale is shown in Technical Appendix 2.1.2. The distribution of scores for the Impact sample, reflect a low

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<sup>32</sup> It should be noted that the norm data for British children is based largely on a narrowly aged pre-school sample so that direct comparisons are not necessarily possible.

incidence of problem behaviour such that more than one in ten children displayed no problems at all (15% scoring zero).

*Externalising Behaviours* encompass a number of aspects of *Conduct Problems* (e.g. child often has tantrums, is not obedient, fights, argumentative with adults, spiteful) and *Hyperactivity* (e.g. child is often restless/overactive, constantly fidgeting, easily distracted, doesn't think things through, lacking attention span). The distribution of scores showed a more normal distribution than for the *Internalising Behaviours* measure, with relatively fewer children showing no *Externalising Behaviours* (only 2% scoring zero: see Technical Appendix 2.1.2 for the distribution). There is evidence to suggest that for the individual subscales, the ECCE sample children have slightly elevated *Externalising Behaviours* than the general population. This is likely to reflect the more disadvantaged characteristics of the sample, as children's centres were targeted to more disadvantaged communities.

*Pro-social skills* encompass strong empathy skills including being considerate and kind, sharing, and volunteering to help others. A strong skew in the distribution indicated that most children showed positive *pro-social skills* (see Technical Appendix 2.1.2). Less than one per cent (0.3%, n=7) had the lowest possible *pro-social* score (i.e. very poor pro-social skills), whereas 16 per cent were recorded as showing behaviour consistent with the highest score possible.

### **Cognitive ability**

Cognitive ability was measured in the ECCE sample via two of the *British Ability Scale* core scales (BAS III: Elliot and Smith, 2011; Swinson, 2013): *Naming Vocabulary* and *Picture Similarities*. These two assessments measure language development and problem solving skills, and are designed for use with children aged between three years and zero months, and seven years and eleven months.

Both scales follow a similar structure that involve the child being shown a series of pictures.

- For the Naming Vocabulary scale, the child is asked to name a series of pictures of everyday items.
- In the Picture Similarities scale, children were shown a row of four pictures and were asked to match a fifth to one of the pictures. This test measures non-verbal reasoning.
- The items are structured by increasing difficulty so that the test can be terminated if a number of successive items are answered incorrectly.
- There is a maximum of 36 items in each assessment.

BAS III does not provide age standardised scores for children aged less than 36 months, so age standardised scores were created based on children’s un-standardised ability scores for the full sample<sup>33</sup>. Earlier analysis of the BAS age standardised scores found the ECCE sample to be roughly in line with published norms, although *Picture Similarities* may be slightly below the national average<sup>34</sup>. In total, 2,406 children had valid *Picture Similarities* assessment data (92% of Wave 3 sample), and 2,366 had valid *Naming Vocabulary* data (91%)<sup>35</sup>. The distributions are illustrated in Technical Appendix 2.1.3.

### **Child health**

Child health at Wave 3 was categorised into two groups via cluster analysis<sup>36</sup>: better or poorer health (at mean 38 months) based on the parent’s report of their child’s diet, development, health problems and injuries (see Technical Appendix 2.1.5). As can be seen in Table 3.7, the analysis of child health data revealed that roughly one quarter of children (24.6%) were classified as being in poorer health at Wave 3 based on parents’ reports on a range of items.

**Table 3.7 Child health status at mean age 38.1 months**

Health status	n	%
Better health	1,962	75.4
Poorer health	639	24.6

### **3.2.1.2 Mother**

#### **Mental health**

The 12 item self-report version of the *General Health Questionnaire* (GHQ-12: Goldberg and Williams, 1988) assesses minor, short-term psychiatric disorders within a general population (experienced in the last four weeks prior to testing). The questions cover both ‘Eudaemonic’ and ‘Hedonic’ aspects of mental health. Eudaemonic mental health covers aspects of psychological functioning such as concentration, decision making, facing up to problems, and feeling useful. Hedonic functioning relates more to the affective side of mental health such as feelings of happiness/unhappiness, confidence, worth, and enjoyment of day to day activities. See Technical Appendix 2.2.2 for the full list of items.

<sup>33</sup> The BAS III assessment provides age standardised scores (via look up tables) for children from age 36 months onwards, so were only available for 1,888 children in the ECCE sample because some children were still under 3 years at Wave 3.

<sup>34</sup> The BAS age standardised scores (Tscores) are based on a norm referenced scale where the population mean is 50, and the population standard deviation is 10. For the ECCE sample Maisey et al. (2015) reported a mean score of 52.1 on the Naming Vocabulary scale and 47.7 for the *Picture Similarities* scale. Melhuish (2010) found *Naming Vocabulary* to be slightly higher than *Picture Similarities* scores for a Scottish sample of 3 year olds (*Naming Vocabulary* mean =52.6, *Picture Similarities* mean=50.2).

<sup>35</sup> The test scores were treated conservatively due to the out of age range sample included. A small proportion of children were omitted from the analysis due to issues administering the test, or EAL status. The BAS manual states that they are likely to be inaccurate but should be kept in composite scores unless there is reason to believe that the score does not accurately reflect the child’s ability, e.g. the child refused to speak or cooperate, presented oppositional behaviour or was not proficient in English.

<sup>36</sup> Cluster Analysis techniques are discussed in Technical Appendix 3.

The *GHQ* scoring system of presence or absence of a symptom (collapsing the 4-point scale into a 2-point binary response) found that the majority of ECCE mothers did not display negative psychological symptoms. Table 3.8 shows the sample with *GHQ* data at Wave 3 of data collection. Over half displayed no negative symptoms (59% at Wave 3).

**Table 3.8 Mothers' GHQ thresholds**

GHQ thresholds	n	%
<b>Good (Score 0/12)</b>	1,413	59.0
<b>Moderate (score 1-3)</b>	635	26.5
<b>Poor (score 4+)</b>	346	14.2
<b>Total</b>	2,394	100.0

To allow for positive symptoms to be taken into account and provide greater discrimination through a wider variation in scores, the full four-point scale was utilised to produce a 12-48 total scale (based on combining responses to the individual four-point Likert scale). The distribution was found to be fairly normal, although still slightly skewed towards more positive mental health as might be expected (see Technical Appendix 2.2.2).

Cronbach's reliability analysis showed the scale to be robust (Cronbach's alpha=0.88). Additional Confirmatory Factor Analysis on the scale is found in Technical Appendix 2.2.2.

### ***Mother's health***

Mother's health was categorised into two groups via Cluster Analysis<sup>37</sup>: better or poorer health based on the mother's reported diet, and lifestyle (smoking, drinking and drug usage) at Wave 3 (Table 3.9). Technical Appendix 2.2.3 gives full details.

**Table 3.9 Mothers' health status**

Health Status	n	%
<b>Better health</b>	2,138	86.9
<b>Poorer health</b>	322	13.1
<b>Total</b>	2,460	100.0

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<sup>37</sup> Cluster Analysis techniques are discussed in Technical Appendix 3.

### 3.2.1.3 Family and parenting

#### **Household Economic status**

In total, 14 per cent of the sample were non-working households. Specifically this indicates that no parent in the household is working (see Table 3.10).

**Table 3.10 Household Economic Status**

Household Economic Status	n	%
At least one parent working in household	2,232	85.6
No parent working in household	376	14.4
Total	2,460	100.0

#### **Confusion, Hubbub, and Order within the home Scale (CHAOS)**

The scale captures aspects of family organisation/disorder, routine and generally the presence or absence of a calm home environment. An adapted four-item version of the scale was used for the impact analysis; the same measure used by the National Evaluation of Sure Start (the NESS Research Team, 2005). See Matheny, Washs, Ludwig, and Philips (1995) for details of the full scale. A higher score represents characteristics of a more chaotic home environment, and scores range between 4 and 20 (based on items scored on a five-point Likert scale). The distribution of the four-item scale reflected a tendency for lower levels of *Chaos* while Confirmatory Factor Analysis confirmed adequate model statistics to use as a single scale outcome (see Technical Appendix 2.3.2 for more details).

#### **The early Home Learning Environment**

The early *Home Learning Environment (HLE)* scale used in Wave 3 was developed by the earlier EPPE study of pre-school age children (Sammons, Elliot, Sylva, Melhuish, Siraj-Blatchford, Taggart, and Smees, 2004; Melhuish, Sylva, Sammons, Siraj-Blatchford, Taggart, and Phan, 2008). The index used consistent coding with the HLE measure used in NESS (The NESS Research Team, 2010<sup>38</sup>) which has also been used in the Millennium Cohort Study (Dearden, Sibieta and Sylva, 2011; De la Rochebrochard, 2012<sup>39</sup>) and elsewhere (Hunt, Virgo and Klett-Davies, 2010). For full details, see Technical Appendix, Section 2.3.3. This approach created a comparable scored scale for each item (0-7) before creating an overall index based on the sum of items.

The scale consists of seven items:

- Whether anyone at home ever reads to child;
- Whether anyone at home ever takes child to the library;
- Whether the child ever plays with letters at home;

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<sup>38</sup> NESS used a 6 item version at age 5, excluding letters.

<sup>39</sup> MCS used a 6 item version at age 3, excluding alphabet.

- Whether anyone at home ever helps child to learn the ABC or the alphabet;
- Whether anyone at home ever teaches child numbers or counting;
- Whether anyone at home ever teaches child any songs, poems or nursery rhyme;
- Whether child ever paints or draws at home.

The distribution of the early HLE at Wave 3 was found to be approximately normal, with a slight skew towards greater levels of home learning activities. The scale was tested in a Confirmatory Factor Analysis and found to be adequate (see Technical Appendix 2.3.3)<sup>40</sup>.

### ***Parenting Stress Index (PSI)***

Two subscales of the *Parenting Stress Index* (PSI, 3<sup>rd</sup> edition-short form, Abidin, 1995) were administered by interview at Wave 3:

- **Parental Distress:** measures self-reported levels of distress in everyday life and in relation to child rearing, support from others and relationship with partner, and perceived parenting ability.
- **Parent-Child Dysfunctional Interaction:** measures the parent's perception of closeness between parent and child, levels of positive interaction and child positivity.

The *PSI* is intended for use as an early identification tool for problem parenting and family functioning. Both subscales were kept separate in the ECCE impact models as they represented distinct groups of family functioning. Devised primarily for families with a pre-school child, the *PSI* can be used for parents with a child aged from one month to 12 years (each scale contains 12 items, with a 5-60 potential score). Higher scores on the scales represented higher Parental Distress or greater dysfunctional interaction. The distribution of *Parental Distress* indicated lower rather than higher levels of *Parental Distress* while the distribution of *Parent-Child Dysfunctional Interaction* indicated little or no dysfunctional interaction (see Technical Appendix 2.3.4).

### **3.2.2 Child, parent, family and neighbourhood measures: to contextualise the analyses of impact**

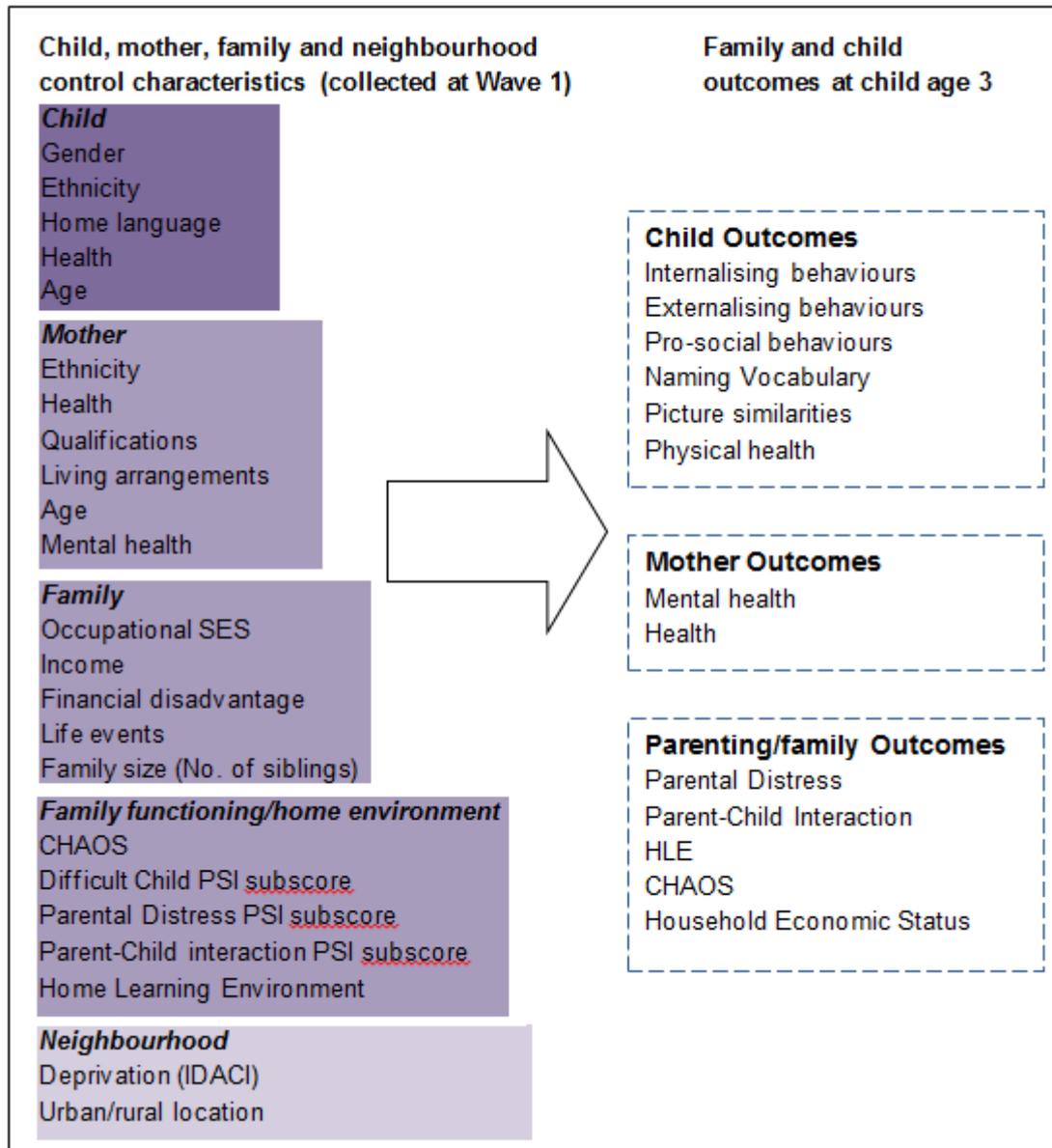
Figure 3.3 shows the various categories of predictors investigated for the impact analysis (details of all measures are shown in Technical Appendix 2). Tailored multilevel models were produced for each of the 13 outcomes. To avoid over-modelling, any predictors found not to be statistically significant were dropped from the final multilevel models.

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<sup>40</sup> The library item loaded poorly on the early *HLE* factor, but was kept in the scale as it made substantive sense to include, improved the overall distribution and allowed for direct comparisons with NESS and the Millennium Cohort Study.

Given the complex nature of the dataset it was necessary to reduce some of the data available into more manageable constructs for testing in the models.

**Figure 3.3 Sets of child, mother, family and neighbourhood predictors (contextualising controls) tested in multilevel models of different on various child and family outcomes at child age 3 years**



In total three of the potential predictors were derived, based on cluster analysis of raw data:

- **Child health:** the three group categorisation (1. *good health*, 2. *lesser health problems*, 3. *greater health problems/birth disadvantage*) was based on birth weight, prematurity and long-term health problems<sup>41</sup>;

<sup>41</sup> An additional categorisation was also considered that also included diet, developmental issues, injuries (all at Wave 1) and breastfeeding duration. This categorisation was not as strong a predictor in the

- **Mother health:** the four group categorisation (1. *good health*, 2. *poor diet*, 3. *poor lifestyle*, 4. *long-term illness/disability*) was based on items related to long-term illness/disability, diet, and lifestyle risks (smoking drinking, drug usage);
- **Financial disadvantage:** the three group categorisation (1. *low financial disadvantage*, 2. *medium financial disadvantage*, 3. *high financial disadvantage*) was based on information on household receipt of benefits, tax credits and housing tenure. For example, the *low disadvantage group* were owner/occupiers not in receipt of any benefits or tax credits, whereas the *high disadvantage group* were in receipt of benefits and largely in rented accommodation.

### 3.2.3 Service use: families' use of children's centres, centre services and childcare

Families' use of services at their (registered) children's centre and elsewhere were organised within five groups, though all the measures within were tested for unique effects upon the child, mother, and parenting measures presented in Section 3.2.1.

These five groups of family service use were:

1. Whether a family had used children's centres
  - Including use of the centre that they were registered at, and other children's centres;
2. Duration measures of the use of the children's centre at which each family was registered;
3. Use of services over time - anywhere as well as at their registered children's centre
  - Common types of services (health, parent-child activities, family/parenting);
  - Common individual services (health visitor<sup>42</sup>, Stay and Play, organised activities);
4. Use of centre outreach services over time;
5. Use of formal childcare over time (nursery school, nursery class, day nursery, childminder, playgroup or pre-school)<sup>43</sup> - anywhere as well as at their registered children's centre.

Within these five groups of centre use and service use are nested 20 measures derived from fieldwork undertaken with parents (Strand 2), details of which are found in Technical

multilevel models as the simpler child health measure so was discarded. Where appropriate the child's prior developmental level at Wave 1 was also modelled alongside child health.

<sup>42</sup> Throughout the report 'health visitor' refers to midwife/health visitor drop-in sessions or clinics.

<sup>43</sup> Differentiated from *informal* including: relative (e.g. grandparent, ex-partner, older siblings), friends, and neighbours.

Appendix 2.6. Briefly, these measures attempted to capture key aspects of the *use of* children's centres both initially in 2012 and over time to 2014. This was achieved by including measures that reflected both the broad usage of children's centres as well as the use of particular service types, and some of the most commonly-used services. All of these measures of use however, come solely from the reports of the 2,608 families interviewed yearly between 2012 and 2014. As such, they systematically miss information about children's centres which could be important when estimating their impact (such as elements which would be unrealistic to expect families to have awareness of). For example the quality of a centre's leadership, or the extent of a centre's multi-agency working (see also Chapter 4, Table 4.15). It is for this reason that additional measures, collected by direct fieldwork rather than parental interview, were also tested in the predicted models, as discussed in Section 3.2.4.

The last of the five groups presented (use of formal childcare) differs from the others in that it is a form of service use distinct from those relating to children's centres (either those at which families were registered or other centres) and the services that they provide. Formal childcare use is included amongst these measures of children's centre use rather than in the list of demographic controls so that equivalent and comparative estimates are obtained. In other words, any link between the use of centre services and an outcome can be directly compared to the equivalent link between formal childcare and this outcome. This helps to put any effects identified into a readily understandable context for the reader. The need for this is also a reflection of the evidence that most children's centres do not provide childcare directly but rather have been encouraged to signpost families to local voluntary and private childcare providers and evidence of change in services provided due to cuts and restructuring over the timescale of the evaluation (Sylva et al, 2015).

### **3.2.4 Centre characteristics and processes**

The children's centre characteristics and processes that were tested as predictors of each of the child, mother, and parenting outcomes were organised within six groups:

1. Ofsted inspection rating indicator of children's centre effectiveness;
2. Services provided by the children's centre at which a family was registered
  - Including named programmes for families (a full list including those defined as well-evidenced by Allen, 2011<sup>44</sup>), and multi-agency working;
3. Children's centre characteristics

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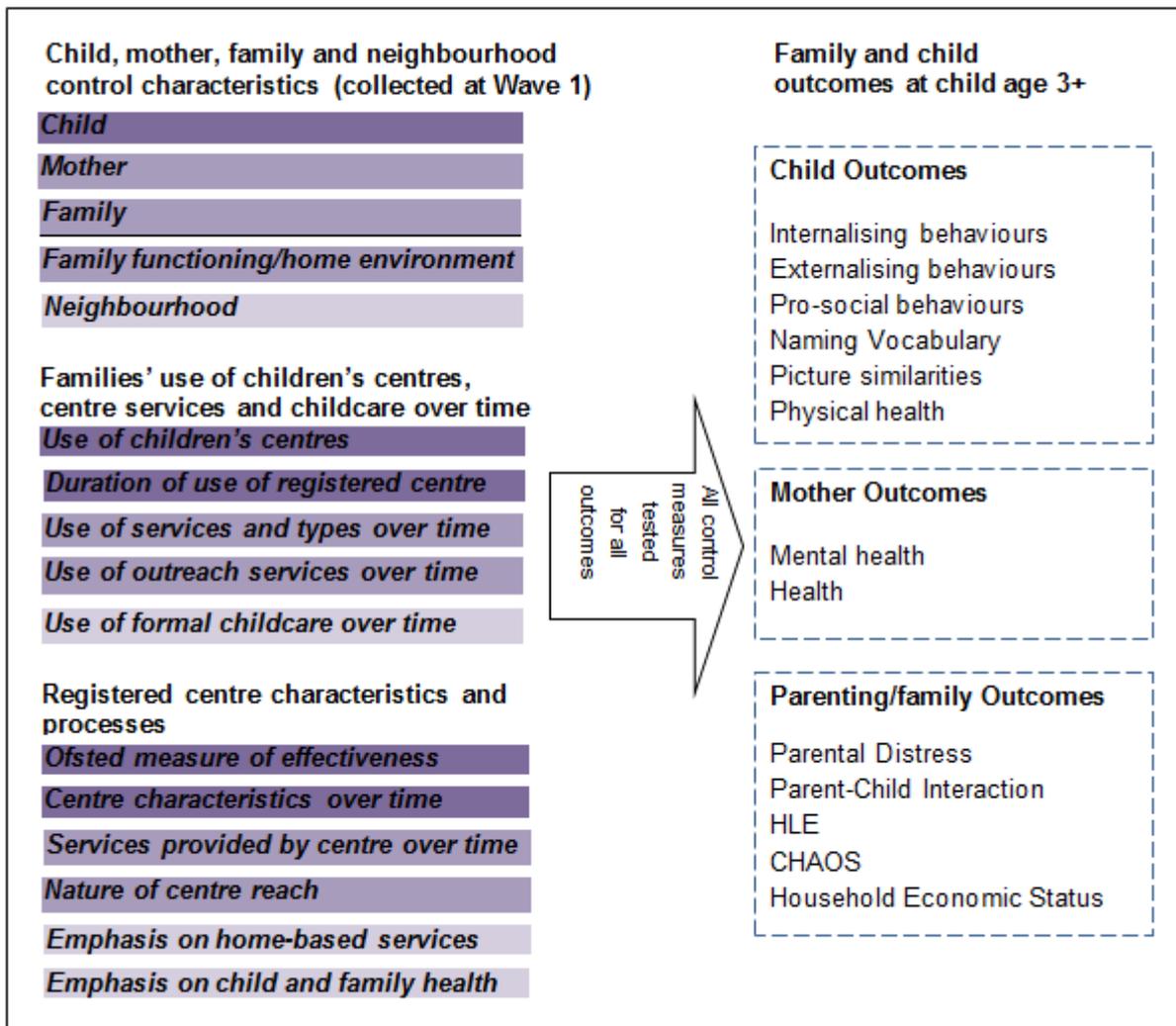
<sup>44</sup> In the Strand 4 Impact analysis the number of named programmes in total (in 2012) and change in the number of 'named' programmes (to 2013) were measured. In addition, the number and change of well-evidenced (according to the criteria of Allen, 2011) programmes were also measured in both 2012 and change to 2013. It should be noted that the list of 'named' programmes also includes those that are described here as 'well-evidenced' based upon their inclusion on Allen's list (2011).

- Including measures of leadership quality, centre configurations, manager training, and measures denoting changes in funding (including cuts and restructuring);
4. The nature of a centre's *reach*
    - from an area, and of disadvantaged families;
  5. Centre emphasis on home-based services;
  6. Centre emphasis on child and family health.

Within these six broad groups that categorise centre characteristics and processes, 27 more specific measures are nested. These were derived from surveys and fieldwork undertaken within children's centres with full details shown in Technical Appendix 2.5. As with the 20 measures capturing how families used children's centres, these measures aimed to capture both breadth and depth. On one hand, broad characteristics were captured (such as whether or not the centre operated as part of a *hub-and-spoke cluster* or was *standalone*) whereas on the other, information was also gathered on how strongly each centre emphasised the provision of home-based services. As with all non-experimental designs, it is not possible to draw any firm conclusions about potential causality from the Impact analyses even when statistically significant effects are identified. It is only possible to show common patterns of the processes and characteristics that predict various outcomes.

Figure 3.4 builds on Figure 3.3 to illustrate the measures used to predict the various child, parent (mother) and family outcomes in the contextualised multilevel statistical models of impact implemented in this report. Subsequent chapters summarise the main findings.

Figure 3.4 Contextualising controls, centre characteristics, and measures of centre and service use tested in multilevel models of different on various child and family outcomes at child age 3+ years



## 4 Impacts upon Child Outcomes at age 3 [Smees and Hall]

### Key Findings

The Impact models explored the effects of various child, family and neighbourhood background influences on child outcomes at age 3 plus. The summary findings are net effects once other background characteristics were controlled<sup>45</sup>:

- Girls had better behavioural, cognitive and health outcomes than boys.
- Early health and developmental problems at baseline (mean age 14 months) predicted poorer outcomes at age 3 plus (mean age 38 months).
- Greater financial disadvantage and lower maternal education level predicted poorer behavioural and cognitive outcomes. In addition, a more enriched very early Home Learning Environment (HLE) predicted better cognitive attainment (vocabulary and non-verbal reasoning) and pro-social skills.
- Other aspects of early family functioning measured at baseline also predicted child outcomes. Higher Difficult Child and CHAOS scores predicted poorer behaviour; and higher Parent-Child Dysfunctional Interaction scores predicted higher levels of internalising behaviours, poorer pro-social behaviours and poorer cognitive attainment<sup>46</sup>.

When aspects of service use (including formal childcare<sup>47</sup>), service provision and children's centre characteristics were investigated, a few notable associations were found.

- Higher levels of childcare predicted better outcomes in terms of higher cognitive scores, lower levels of internalising behaviours and greater pro-social skill.

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<sup>45</sup> It should be noted that the analysis of children's behavioural and cognitive outcomes reported here has no way of measuring progress due to lack of a baseline, so cannot predict change in outcomes over time.

<sup>46</sup> Other associations were also found but were specific to only individual child outcomes.

<sup>47</sup> Use of formal childcare over time (nursery school, nursery class, day nursery, childminder, playgroup or pre-school); see Chapter 3 for more details.

- Vulnerable families had greater contact with children’s centres via one to one contact or long term service provision. Extended outreach or health visitor contact (received by only a small minority of vulnerable families) predicted poorer child behaviour, suggesting that contact is being maintained with families exhibiting more complex problems. In addition, long term use of children’s centres predicted poorer child outcomes (vocabulary and internalising behaviours). This also suggests that the neediest families are maintaining contact with centres longer term and make more use of services.
- Externalising behaviour was greater in children whose families used no/very little services (anywhere) at baseline rather than some (of any kind).
- More favourable outcomes in pro-social skills were identified for children whose families were registered at centres which were noted to be ‘standalone’ one centre units; school-led centres; centres offering more named programmes for families and increasing named programmes; and centres with higher partner-agency resourcing.
- More favourable outcomes in externalising behaviours were identified for children whose families were registered at centres which were noted to be ‘standalone’ one centre units, and those with increases in the number of named programmes for families.
- There was little evidence that children’s centre service use or centre characteristics predicted variation in children’s cognitive attainments at age 3 years plus. Only inconsistent or weak effects were found.
- Child health status included parent-reported health problems, diet, injuries and developmental issues and so includes some aspects of health that are less open to influence by children’s centres than other outcomes. A children’s change into poorer health status was associated with greater levels of childcare, greater levels of Stay and Play, and attending centres with home-based outreach services. This may well reflect greater contact with trained staff, which could enable identification of previously undetected health problems or an increased awareness of health problems when parents are able to make comparisons with other children of a similar age.

## 4.1 Identifying the effects of background characteristics: the contextual models

This section outlines the background predictors that have been taken into account before modelling the impact of children’s centres on six child outcomes. These outcomes cover three measures of child behaviour: *externalising*, *internalising* and *pro-social* behaviours (based on items from the Goodman’s Strengths and Difficulties Questionnaire); two cognitive outcomes (Vocabulary and Non-verbal reasoning obtained from the British Ability Scales); and a measure of physical health. The analyses developed to predict cognitive and behavioural outcomes are based around Contextualised models that include any background characteristics that were found to be significant predictors of

child outcomes collected by the Wave 3 survey when children were age 3 plus (full details are presented in Technical Appendix 4.1). The models for child physical health are based on Contextualised Value Added models (CVA) as they include prior measures of child physical health at baseline (Wave 1) when children were age 9-18 months in addition to background characteristics from Waves 1 to 3 that predicted changing health.

The multilevel models used to estimate impact of various measures of children's centres (service use and centre characteristics) do so while taking account of (statistically controlling for) the simultaneous effects of various significant child, parent, family and neighbourhood characteristics. As such, the impact models are said to produce *contextualised* estimates of impact (AKA: net effects). Estimates of the effects of these contextualising predictors are produced first via the specification of *control models*. The results of these control models are documented in this Section (4.1) before they are then built upon in Section 4.2 via the addition of individual measures of centre- and service-use (Section 4.2.1) as well as measures of centre characteristics (Section 4.2.2) (previously described in Chapter 3). The final section (4.2.3) of this chapter then provides further analyses that identify impacts by including multiple measures of children's centres in combined contextualised impact models. The effects that feature in these final combined impact models are those that were identified as statistically significant predictors of child outcomes when tested individually and which also remain significant when tested in combination. They thus provide the most robust estimates of children's centre Impacts.

### 4.1.1 Child behaviour at age 3

Girls showed better outcomes across all three child behaviour measures (lower levels of *externalising* and *internalising* behaviours, and higher scores for *Pro-social* skills). In addition, children with the following background characteristics (in terms of child, mother, family and neighbourhood) showed poorer outcomes across all three behaviour measures<sup>48</sup>:

- Children with health problems (compared to healthy children);
- Children with higher *Difficult Child* scores<sup>49</sup> (*PSI* subscale) at Wave 1;
- Children from households with more financial disadvantage (compared to low disadvantage) at Wave 1;

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<sup>48</sup> Poorer outcomes are reflected as higher scores on the Goodman's *Externalising* and *Internalising* subscales, and lower scores on the Goodman's *Pro-Social* subscale.

<sup>49</sup> The *Difficult Child* subscale is part of the *Parenting Stress Index* described in Chapter 3. The Index is made up of three subscales: *Parental Distress*, *Parent-Child Dysfunctional Interaction* and *Difficult Child*. The scales have been analysed separately in the impact analysis. N.B. The *Difficult Child* subscale was not collected at Wave 3, and so is only used as a baseline predictor.

- Children from households with higher reported *CHAOS* at Wave 1.

Additionally, other background characteristics were found to be outcome specific<sup>50</sup>:

- Older children displayed lower scores for *externalising* and higher scores for *pro-social behaviour* than younger children;
- Children whose mothers had lower qualification levels (i.e. none, low, other) displayed greater *externalising* behaviours whereas those with mothers who had 'other' qualifications showed greater *internalising* behaviours (when compared to those whose mothers had a degree or higher qualification). Children whose mothers had no qualifications displayed poorer *pro-social behaviours*;
- Children of mothers who had an unhealthy diet at Wave 1 (compared to healthy mothers) displayed greater *externalising* behaviours and lower *pro-social skills*; children of mothers who had an unhealthy lifestyle at Wave 1 also displayed greater *externalising* behaviours;
- Children of older mothers (compared to those of younger mothers) had lower levels of *externalising* and *internalising* behaviours, but in contrast, they also had lower *pro-social skills*;
- Children of mothers with poorer prior mental health (GHQ) at Wave 1 showed increased *externalising* and *internalising* behaviours;
- Children from households with higher very early *Home Learning Environment* scores (*HLE*) at Wave 1 showed greater *pro-social skills*;
- Children from households with higher prior *Parent-Child Dysfunctional Interaction* scores (*PSI* subscale) at Wave 1 had higher levels of *internalising* and lower levels of *pro-social* behaviours;
- Children from households with higher *Difficult Child* scores (*PSI*) at Wave 1 had lower *pro-social behaviours*;
- Children living in more highly income deprived areas (*IDACI* score) displayed greater internalising behaviours than those living in less deprived neighbourhoods.

The relative influence of background characteristics (Effect Sizes; see Glossary) are shown in Figures 4.1-4.3. Looking at Figure 4.1, it can be seen that the child's score on the *Difficult Child* subscale at Wave 1 (ES=0.45) showed the greatest influence on *externalising* behaviours, followed by mothers who lacked any formal qualifications (None: ES=-0.42. Other: ES=0.32). Previous child injuries (ES=0.27) and children of Black African origin showed lower *externalising* behaviour (ES=-0.24) as did girls (-0.21).

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<sup>50</sup> Note: small effects were also found for living arrangements, SES and child ethnic heritage. These were specific to one outcome only, and so are not shown here. See Figures 4.1-4.3 for details.

However those with severe health problems and mothers' poorer mental health (ES= 0.20) showed greater *externalising* behaviour with effects of 0.20 or more.

*Somewhat* weaker background influences were found for *internalising* behaviours (see Figure 4.2). Nevertheless, greater prior health problems (ES=0.22) and mothers holding other qualifications (ES=0.30) showed modest effects. Those of Pakistani ethnic background showed more *internalising* behaviour (ES=0.35) but effects for ethnic groups, although significant, are based on small group sizes and so should be treated with caution.

Figure 4.1 Influences on Externalising behaviours at age 3

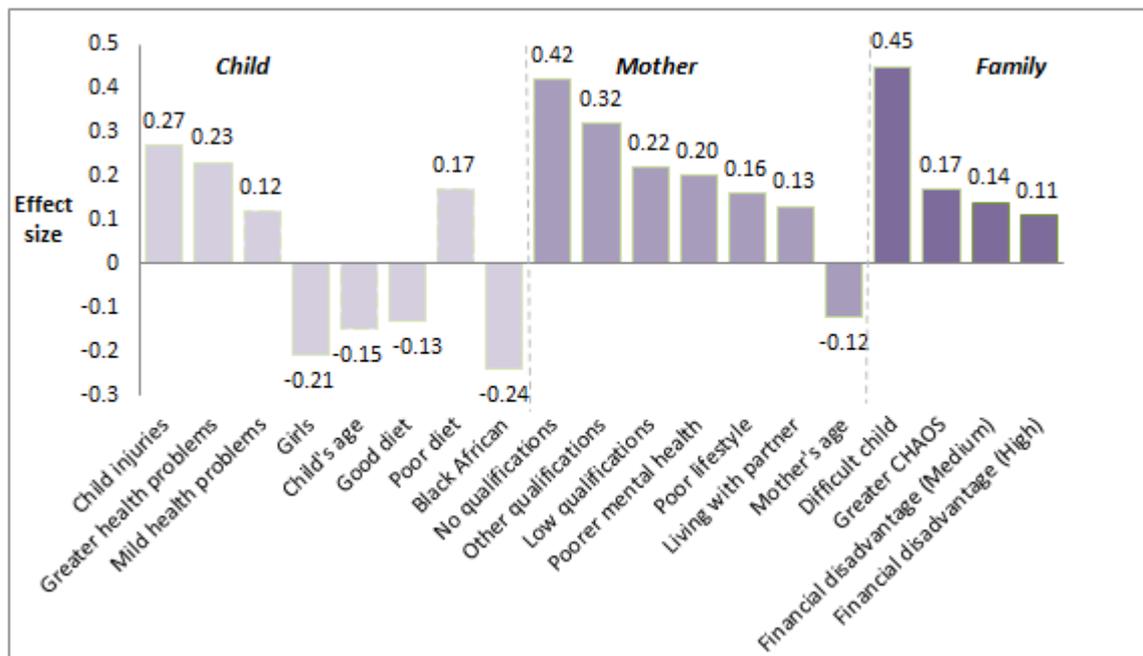
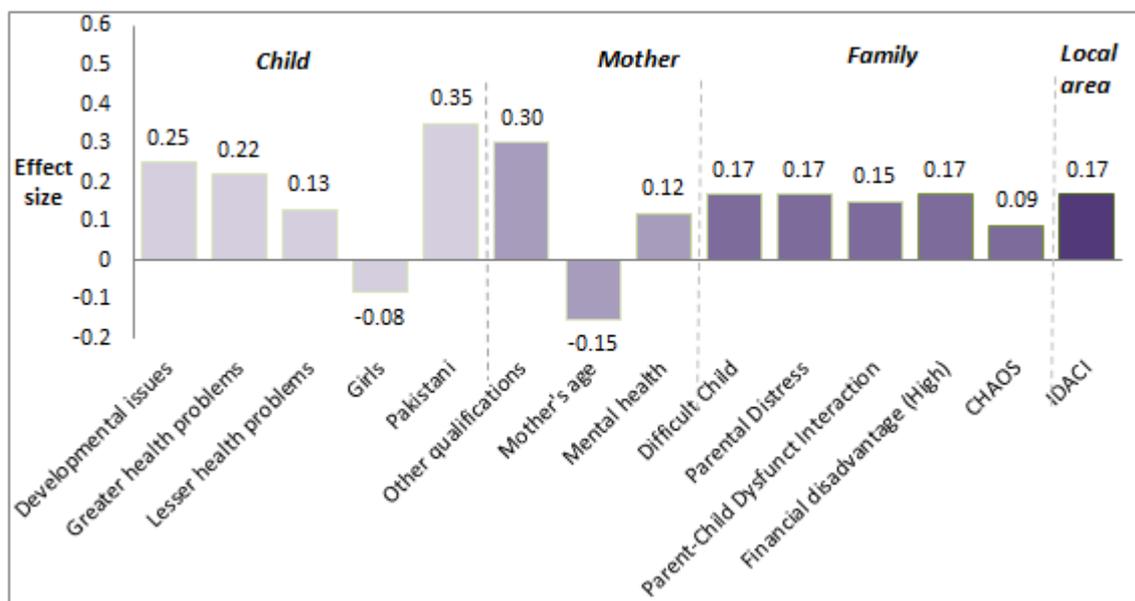
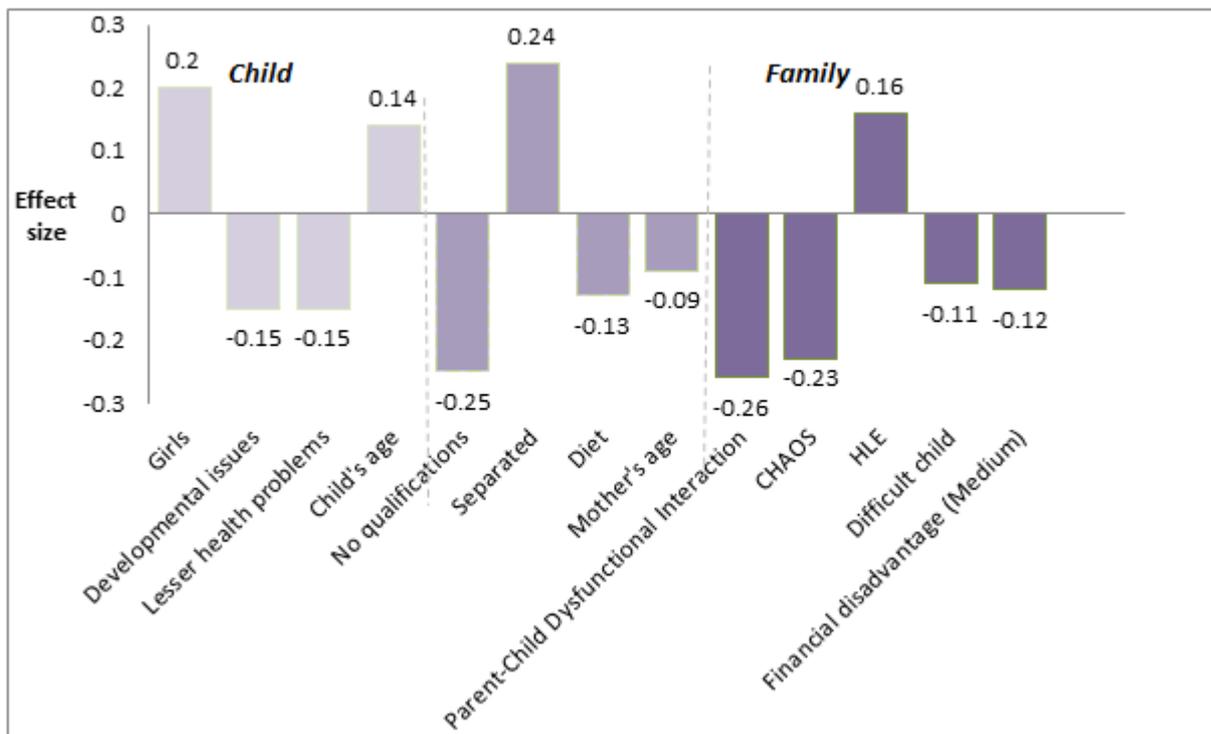


Figure 4.2 Influences on Internalising behaviours at age 3



*Pro-social* behaviour is predicted by the quality of the prior score for *Parent-Child Dysfunctional Interaction* (ES=-0.26), and mothers having no qualifications (ES=-0.25) both of which are linked to lower scores. However, mothers being separated rather than married (ES=0.24) and the *Home Learning Environment* at Wave 1 (ES=0.16) predicted better scores for *pro-social* behaviour (see Figure 4.3). In addition, girls (ES=0.20) and older children showed higher *pro-social* skills (ES=0.14). Prior scores for the *Difficult Child* subscale had a negative effect (ES=-0.11), although the effects were small.

Figure 4.3 Influences on Pro-social behaviours at age 3



#### 4.1.2 Child cognitive ability at age 3

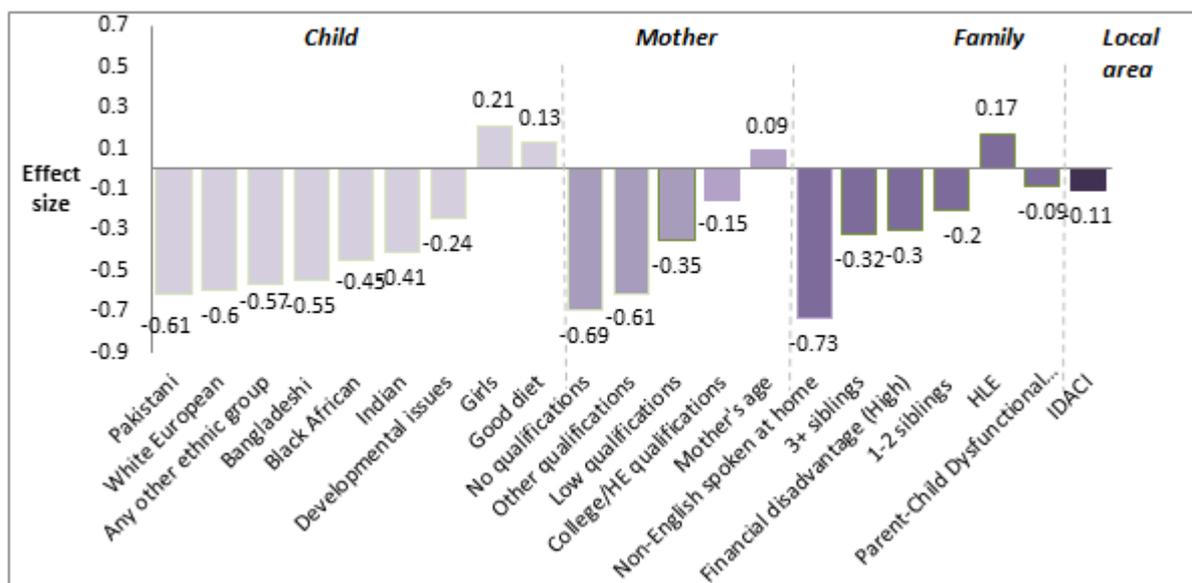
Similar to the results for all three measures of behavioural outcomes, girls showed significantly better vocabulary and non-verbal reasoning abilities at age 3 years plus. Overall children with the following background characteristics (in terms of child, mother, family and their neighbourhood) showed poorer outcomes for both cognitive measures (BAS: *Naming Vocabulary* and *Picture Similarities*):

- Children with developmental problems at Wave 1 (compared to children with no issues);
- Children whose mothers had lower qualifications compared to those with a degree or higher;
- Children from households with lower very early *Home Learning Environment* scores (*HLE* Wave 1) and higher prior *Parent-Child Dysfunctional Interaction* scores (*PSI* subscale) at Wave 1;

- Children with more siblings in the house compared to only child;
- Children from 'Black African' and 'any other' ethnic heritage group compared to White UK.
- Additionally, other background characteristics were found to be outcome specific:
- Children from 'White European', 'Indian', and 'Bangladeshi' ethnic heritage had lower Naming Vocabulary scores (compared to White UK children);
- Children in households where English language was not spoken showed lower *Naming Vocabulary* scores;
- Children of older mothers (compared to those of younger mothers) had higher verbal ability;
- Children from households with higher financial disadvantage had lower *Naming Vocabulary* scores;
- Children whose families had suffered one or more negative life events had poorer *Picture Similarities* scores;
- Children who lived in more deprived neighbourhoods had lower *Naming Vocabulary* scores;
- Children with greater prior health problems had poorer *Picture Similarities* scores.

The Effect Sizes for vocabulary (*Naming Vocabulary*) are shown in Figure 4.4. Ethnicity and home language played a sizeable, negative influence on attainment at age 3 plus, but it should be remembered that some of these groups were relatively small.

Figure 4.4 Influences on Naming Vocabulary at age 3

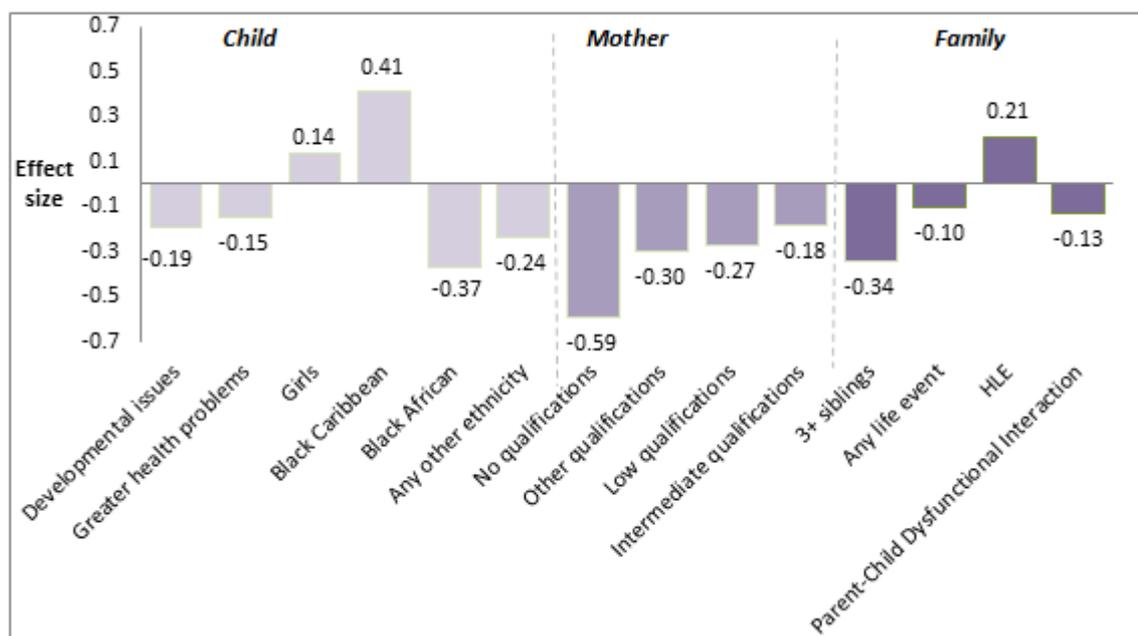


Mother's qualifications showed the strongest influence on *Naming Vocabulary* (None: ES=-0.70. Other: ES=-0.61. Low: ES=-0.35. College/Higher Education: ES =-0.16).

Negative effects were also found for financial disadvantage (e.g. High financial disadvantage:  $ES=-0.34$ . Medium financial disadvantage:  $ES=-0.09$ , compared with low financial disadvantage); and family size ( $ES=-0.32$ ) for three or more siblings, versus none. Smaller effects were found for child's diet (Good diet:  $ES=0.13$ ), neighbourhood deprivation (IDACI:  $ES=-0.12$ ), and *PSI* subscales (*Parent-Child Dysfunctional Interaction*:  $ES=-0.09$ ) and *Home learning Environment* ( $ES=0.17$ ).

More modest effect sizes were found for non-verbal reasoning (*Picture Similarities*). This is in line with past research which shows language tends to be more strongly predicted by background characteristics. From Figure 4.5 it can be seen that mothers' educational level shows the strongest relationship to non-verbal reasoning (None:  $ES=-0.59$ . Other/non-formal:  $ES=-0.30$ . Low:  $ES=-0.27$ . Intermediate:  $ES=-0.18$  compared with degree or higher). Modest negative effects were found for large family size (3+ siblings:  $ES=-0.34$ ). Very early *HLE* ( $ES=0.21$ ), prior developmental issues ( $ES=-0.19$ ), prior health problems ( $ES=-0.15$ ) and prior *Parent-Child Dysfunctional Interaction* ( $ES=-0.13$ ) were also predictors of non-verbal reasoning. Smaller effects were found for gender (Girls:  $ES=0.14$ ), particular *PSI* subscales (*Parent-Child Dysfunctional Interaction*:  $ES=-0.13$ ), and experiencing a life event ( $ES=-0.10$ ).

Figure 4.5 Influences on Picture Similarities at age 3



#### 4.1.3 Child health at age 3

Health problems and developmental issues at baseline (Wave 1) strongly predicted later health status at age 3. In addition, children with the following background characteristics (child, mother, family and neighbourhood) were more likely to be in better health (in terms of change from Wave 1 to Wave 3):

- Girls (compared to boys);

- Children with older mothers;
- Children from households where English was not spoken in the home.

In contrast, children with the following background characteristics measures were more likely to be in poorer health (in terms of change from Wave 1 to Wave 3):

- Children from larger families (3+ siblings, compared to singletons);
- Children whose mother was in poorer health (diet, lifestyle or long term illness/disability).

Table 4.1 shows the Odd's Ratios for being in the poorer health category.

**Table 4.1 Influences on child health at age 3 (CVA)**

Characteristic	Predictors	OR	Sig.
Child's gender	Girls	0.80	*
Child health	Lesser health problems	4.12	***
	Greater health problems	6.61	***
Developmental issues	Any	1.51	***
Mother's health	Poor diet	--	--
	Poor lifestyle	1.33	#
	Long term illness/disability	1.34	*
Mother's age <sup>a</sup>	At Wave 1 interview	0.97	**
Family size	Large (3+ siblings)	1.63	*
Home language	Non-English only	0.54	**

<sup>a</sup> For Mother's age the Odds Ratio is for each unit difference on the measurement scale. For example, the Odds Ratio for mother's age represents the odds of being the poorer health category for each year of mother's age.

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08

## 4.2 Identifying the effects of children's centres

The previous section identified significant child, mother, family and neighbourhood characteristics that were important in predicting child behaviour, cognition, and health outcomes at age 3 plus. There was strong evidence that specific factors shaped these outcomes making it vital that robust control models were created before modelling the potential impacts of children's centres.

This section presents the results from the contextualised models for behaviour and cognition that assess the effects of different aspects of children's centres<sup>51</sup> on children's

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<sup>51</sup> The measures of centres, centre use and service use are presented in Sections 3.2.4 and 3.2.5 while full documentation is provided in Technical Appendices 2.5 and 2.6.

outcomes, controlling for the important background factors that were identified as shaping these areas (Section 4.1).

It should be noted that the analysis of the impact of children centres on health is different to that of impact upon behaviour and cognition. The analysis of impact on health considers change over the time that children and families were enrolled in the ECCE study (by a Contextualised Value Added model). This is a more desirable method of assessing impact, but one that was unavailable for the analysis of impacts upon either behaviours or cognition as no baseline measures were available at Wave 1. Additional analyses were carried out using the contextualised control models for child health and can be found in Technical Appendix 4.2.

### 4.2.1 Effects of service use on child outcomes

As illustrated by Figure 3.4 in Chapter 3, service use by families was measured across five groups:

1. Simple measures of whether a family had used children's centres;
2. Duration measures of the use of the children's centre at which each family was registered;
3. Use of services over time - anywhere as well as at their registered children's centre:
  - Common *types* of services (health, parent-child activities, family/parenting);
  - Common *individual* services (health-visitor, Stay and Play, organised activities);
4. Use of centre outreach services over time;
5. The use of formal childcare over time (nursery school, class, childminder, playgroup, pre-school).

Impacts linked to these groups are presented sequentially, with an increasingly narrow focus on service use across subsequent pages. The fifth group presents results that contextualise the size of the impacts found here, in that they estimate the impact of the use of formal childcare. The size of the effects from group five can thus be directly compared to those from groups one through four and comparisons can then be drawn.

#### **Any use of children's centre services or children's centres**

Table 4.2 shows the impacts of the three indicators of families' use of children's centres in predicting child behaviour, cognition, and changes in child health. There was only tentative evidence that the use of a families' registered children's centre - for either *anything* (e.g. services, outreach, anything else) or just *services* - predicted greater average *internalising* behaviour at mean child age 38 months as the effects only verged on statistical significance (respectively: ES=0.14,  $p<0.08$ ; ES=0.11,  $p<0.08$ ). Such

associations were not found for children’s cognitive attainment or changes in health where there was no association. Overall then, the evidence linking simple usage to child outcomes is extremely limited. The next section considers more detailed patterns of centre use. The base group or comparison is families making no use of services at their named children’s centre (they may well use services especially childcare elsewhere of course). Analyses of the no user group’s background characteristics in terms of the financial disadvantage measure suggest this group is not significantly different in its profile (equal proportions of low, medium and high disadvantage families were in the no user group).

**Table 4.2 The individual impacts of simple measures of the use of children’s centres on child outcomes**

Use of...	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(estimates versus “used nothing”)</i>												
<b>Registered children’s centre for anything</b>	-0.02	ns	0.14	#	-0.01	ns	-0.08	ns	0.03	ns	0.89	ns
<b>Registered children’s centre for services only</b>	-0.05	ns	0.11	#	0.01	ns	-0.10	ns	0.01	ns	1.01	ns
<b>Any children’s centre for services only<sup>52</sup></b>	-0.06	ns	0.06	ns	0.07	ns	-0.05	ns	0.08	ns	1.20	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns + note small sample size is reference group (see footnote)

### Duration of children’s centre use

Table 4.3 illustrates the impacts of the duration with which registered children’s centres were used by families upon their child’s behaviour, cognitive attainments, and changing health outcomes. Two alternative measures of duration were considered: 1. Categories of distinct use over time (families had a tendency to stop using centres that they were registered at); and 2. Continuous measures of total hours, total months, and total hours per month (‘Intensity’). There was tentative evidence that families who used their registered centre for the longest number of months were also those who had children

<sup>52</sup> It should be noted that this group is very small (n=100), reduced in final models so that significant effects are difficult to achieve. In addition, the sample size was also relatively small for sample of use of the registered children’s centre for services only (n=219), and the registered children’s centre for anything (n=349).

with greater *externalising* behaviour problems (ES=0.09,  $p<0.08$ ) and that their children had significantly lower vocabulary scores (ES=-0.10,  $p<0.05$ ). Further, the families who used their registered centre continuously during the ECCE study were also those whose children showed significantly more *internalising* behaviour problems at age 3 (ES=0.20,  $p<0.05$ ). This is a comparison against the families who didn't use their registered centre at all and their children's' level of *internalising* behaviour problems. There was no significant association between duration (use of registered centre) and changes in child health<sup>53</sup>.

**Table 4.3 The individual impacts of the use of registered children's centres – via measures of duration - on child outcomes**

Measures of Duration	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Categorical</b> ( <i>all estimates versus "no use"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
Stoppers after Wave 1	-0.05	ns	0.11	ns	0.03	ns	-0.04	ns	0.13	ns	0.93	ns
Stoppers after Wave 2	-0.12	ns	0.10	ns	-0.03	ns	-0.01	ns	0.07	ns	0.92	ns
Consistent users	0.01	ns	0.20	*	-0.06	ns	-0.03	ns	0.07	ns	0.86	ns
<b>Continuous</b>	--	--	--	--	--	--	--	--	--	--	--	--
Total months used	0.09	#	0.05	ns	-0.02	ns	-0.10	*	-0.07	ns	1.00	ns
Total hours used	-0.09	ns	-0.01	ns	0.01	ns	0.06	ns	0.05	ns	1.00	ns
Intensity of use (hours per month)	0.02	ns	0.00	ns	-0.01	ns	0.03	ns	-0.04	ns	1.00	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\*  $p<0.001$ ; \*\*  $p<0.01$ ; \*  $p<0.05$ ; #  $p<0.08$ ; Not significant: ns

### Use of services over time

Tables 4.4, 4.5, and 4.6 consider the impacts of service use over time on child outcomes, as measured by distinct yet broad patterns of usage. A distinction is made between broad patterns (Table 4.4) and those that are linked to specific services at either *any* children's centre (Table 4.5) or the centre at which a family was registered (Table 4.6).

Table 4.4 displays the effects of broad patterns of service use in predicting the six child outcomes. Distinct patterns were identified within three areas of broad service use: 1) the use of family services at Wave 1 in 2012 ("at baseline"); 2) the use of services over time

<sup>53</sup> Contextualised models of child health (taking account of background but not prior health) also failed to show any association between duration of centre use and child health at age 3.

as provided by any children’s centre; and 3) the use of services over time as provided by the children’s centre at which a family was registered. The differing patterns of service use by families when their children were 9-18 months of age were not associated with later child outcomes at age 3 years plus. It should be noted that the comparison group was ‘inconsistent users’: comparing to users who showed a more defined pattern of usage (limited and mainly health; heavy and mainly parent-child activities)<sup>54</sup>.

**Table 4.4 The impacts of various patterns in the use of children’s centres upon child outcomes**

Measures of Service Use	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Use of family services at baseline</b> (all estimates versus “no consistent pattern”)	--	--	--	--	--	--	--	--	--	--	--	--
Limited Use (mainly health)	-0.06	ns	-0.04	ns	-0.01	ns	-0.11	ns	-0.02	ns	0.95	ns
Heavy use (particularly of parent-child activities)	-0.08	ns	-0.05	ns	-0.07	ns	0.06	ns	0.01	ns	0.90	ns
<b>Use of services at any children's centre over time</b> (all estimates vs “no consistent pattern”)	--	--	--	--	--	--	--	--	--	--	--	--
Long-term users of Registered children's centre	0.13	*	0.04	ns	0.00	ns	-0.08	ns	-0.08	ns	0.95	ns
Long-term users of other children's centre	0.04	ns	-0.04	ns	0.00	ns	-0.13	**	-0.07	ns	1.13	ns
<b>Use of services at registered children's centre over time</b> (all estimates versus “no use”)	--	--	--	--	--	--	--	--	--	--	--	--
Early Focused Use <sup>†</sup>	-0.09	ns	0.11	ns	0.02	ns	-0.09	ns	0.02	ns	1.06	ns
Persisting Broad Use (multiple services over time)	0.03	ns	0.13	#	-0.02	ns	-0.13	ns	-0.02	ns	0.91	ns

<sup>†</sup> Emphasising baseline usage of health services as well as Stay and Play; ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

Significant differences were however observed between families when considering their use of children’s centre services over time. Long term users of children’s centres at which they were registered were also the families with children who were significantly more

<sup>54</sup> Additional analyses comparing to a null group (considered to be those who did not use any services at baseline) found only one significant finding: Lower *externalising* behaviours were found for children whose family’s pattern of use was categorised as ‘moderate’ (ES=-0.23, p<0.05) or ‘heavy’ (ES=-0.22, p<0.05).

likely to show greater *externalising* problems (ES=0.13,  $p<0.05$ ) as well as greater *internalising* problems (ES=0.13,  $p<0.08$ ). By comparison, families who were long term users of centres at which they were *not* registered, were also those whose children demonstrated significantly lower levels of non-verbal reasoning at 38 months (ES=-0.13,  $p<0.01$ ). There was no significant association between any of the patterns of service use and change in child health<sup>55</sup>. These findings are broadly consistent with those shown in Table 4.3, and indicate that longer term use of children's centres was associated with poorer child outcomes, whereas more limited use showed no association.

Table 4.5 shows the effects of service use on child outcomes as measured by the three most-commonly used types of service over time, and at *any* children's centre (not just at the centre a family was registered at). The long term use of health visitors<sup>56</sup> (on two or more occasions when asked by fieldworkers) was most strongly associated with children who had significantly lower vocabulary scores at age 3 plus (Two time points: ES=-0.22,  $p<0.01$ . Three time points: ES=-0.22,  $p<0.05$ ). There was also a tendency for consistent use of health visitors (i.e. used at each of three Waves when ECCE fieldworkers contacted families) to be associated with lowered *pro-social* behaviour (ES=-0.14,  $p<0.08$ )<sup>57</sup>. This tendency was also found when considering the same pattern of use of Stay and Play over time (ES=-0.14,  $p<0.08$ ). The long term use of Stay and Play was *not* however significantly associated with lower vocabulary scores in children, but it was a significant predictor of increased scores for *externalising* behaviour (Two time points: ES=0.14,  $p<0.05$ . Three time points: ES=0.14,  $p<0.05$ ); and greater likelihood of the child being in poorer health (One time point: OR=1.40,  $p<0.08$ . Two time points: OR=1.42,  $p<0.05$ ). There was no association between the use of organised activities and any of the child outcomes.

Table 4.6 illustrates the impacts on child outcomes of service use over time at the family's registered children's centre. These estimates are linked to the use of the four most-common *types* of service as well as the use of the three most-common *individual* services. Very similar results were found as were noted for the use of these services at any centre (see Table 4.5). First, there was a significant association with the use of health visitors over more than one occasion, and children's lower vocabulary (ES=-0.14,  $p<0.05$ ), as well as a tendency for any use (at all) to be associated with lower vocabulary scores (ES=-0.09,  $p<0.08$ ). Second, similar associations were found between reduced *pro-social* behaviours and families' longer term use of health visitors (ES=-0.17,  $p<0.05$ ), and Stay and Play (ES=-0.16,  $p<0.01$ ). Third, associations were again found between

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<sup>55</sup> Contextualised models of child health (taking account of background but not prior health) found that children using children's centres long term (other than their registered centre) were more likely to be in poor health at age three than 'inconsistent users' (OR=1.27).

<sup>56</sup> Health visitor includes contact with either a health visitor or midwife.

<sup>57</sup> Consistent use of health visitors (across all three data collection time-points) was also associated with having an ECCE child that was categorised as in poorer health at age three when analysed with a contextualised model (Two time points: OR=1.49,  $p<0.05$ . Three time points: OR=1.54,  $p<0.05$ ).

long term use of Stay and Play, and children demonstrating greater *Internalising* behaviours at mean age 38 months (ES=0.15, p<0.05). There were no significant associations between individual services at the registered children’s centre and change in child health<sup>58</sup>.

Two additional significant effects were also found related to the use of these services at registered centres (but not the use at any centres). The first of these was that longer term use of health visitors was weakly associated with greater *externalising* behaviours (ES=0.15, p<0.08). The second novel finding particular to the use of common services at registered centres was that families that use organised activities at their registered children’s centre, at only a single Wave of data collection (rather than over multiple Waves), had children with significantly lower levels of non-verbal reasoning at age 3 years plus.

**Table 4.5 The impacts upon child outcomes of commonly used services at any children’s centre**

Measures of Service Use	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(estimates versus “never”)</i>												
<b>Use of health visitor over time at any centre</b>	--	--	--	--	--	--	--	--	--	--	--	--
1 time point/Wave	-0.07	ns	-0.02	ns	-0.04	ns	-0.11	ns	0.01	ns	1.00	ns
2 time points/Waves	-0.05	ns	0.02	ns	-0.08	ns	-0.22	**	-0.09	ns	1.41	#
3 time points/Waves	0.07	ns	0.13	ns	-0.14	#	-0.22	*	-0.09	ns	1.24	ns
<b>Use of Stay and Play over time at any centre</b>	--	--	--	--	--	--	--	--	--	--	--	--
1 time point/Wave	-0.06	ns	0.04	ns	-0.04	ns	-0.02	ns	0.07	ns	1.40	ns
2 time points/Waves	-0.04	ns	0.14	*	-0.08	ns	0.01	ns	0.07	ns	1.42	ns
3 time points/Waves	-0.03	ns	0.14	*	-0.14	#	0.05	ns	0.10	ns	1.24	ns
<b>Use of organised activities over time at any centre</b>	--	--	--	--	--	--	--	--	--	--	--	--
1 time point/Wave	-0.01	ns	-0.07	ns	0.02	ns	-0.03	ns	-0.01	ns	1.14	ns
2 time points/Waves	-0.04	ns	-0.05	ns	-0.02	ns	0.03	ns	-0.01	ns	1.28	ns
3 time points/Waves	-0.08	ns	-0.05	ns	0.07	ns	0.12	ns	0.08	ns	1.09	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

<sup>58</sup> This is in line with findings from the contextualised models of child health.

**Table 4.6 The impacts upon child outcomes of commonly used services at registered children’s centres**

Measures of Service Use	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>at registered centre</i>												
<b>Use of types of services over time</b>	--	--	--	--	--	--	--	--	--	--	--	--
Health	-0.02	ns	0.02	ns	-0.01	ns	-0.09	#	0.04	ns	1.04	ns
Parent-child	-0.02	ns	0.07	ns	-0.07	ns	0.08	ns	-0.04	ns	1.00	ns
Family/parenting	0.10	ns	0.00	ns	0.02	ns	-0.02	ns	-0.02	ns	1.01	ns
Employment/education/other	0.02	ns	0.08	ns	0.01	ns	-0.03	ns	0.01	ns	0.99	ns
<b>Use of health visitor over time (estimates versus “never”)</b>	--	--	--	--	--	--	--	--	--	--	--	--
1 time point/Wave	-0.05	ns	0.02	ns	-0.01	ns	-0.05	ns	-0.01	ns	1.04	ns
2 time points/Waves	0.01	ns	0.02	ns	0.01	ns	-0.14	*	0.02	ns	1.12	ns
3 time points/Waves	0.15	#	0.05	ns	-0.17	*	-0.11	ns	-0.07	ns	1.02	ns
<b>Use of stay &amp; play over time (estimates versus “never”)</b>	--	--	--	--	--	--	--	--	--	--	--	--
1 time point/Wave	-0.05	ns	0.09	ns	0.01	ns	0.05	ns	-0.02	ns	1.01	ns
2 time points/Waves	0.01	ns	0.15	*	-0.16	**	-0.01	ns	-0.08	ns	1.22	ns
3 time points/Waves	0.03	ns	0.09	ns	-0.06	ns	0.11	ns	0.02	ns	0.86	ns
<b>Use of organised activities over time (estimates versus “never”)</b>	--	--	--	--	--	--	--	--	--	--	--	--
Once	0.05	ns	0.04	ns	-0.07	ns	0.00	ns	-0.10	*	1.01	ns
2 to 3 times/Waves	-0.04	ns	-0.01	ns	0.07	ns	0.14	ns	-0.08	ns	0.82	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

### Use of outreach services over time

Table 4.7 shows the impacts on child outcomes from the use of outreach services over time at the children’s centres at which families were registered. Effects identified were larger for child *externalising* behaviours. Higher scores were found for children of families that reported they used outreach services at both the first and second Wave of data collection (ES=0.16, p<0.05), or the first and third Wave (ES=0.44, p<0.001), or at any two or three Waves of ECCE fieldwork (ES=0.22, p<0.001). Although there were also tendencies for effects linked to *internalising* behaviours (ES=0.11, p<0.08), vocabulary (ES=-0.15, p<0.08) and non-verbal reasoning (ES=-0.21, p<0.08), they were weaker and

only verged on statistical significance. In contrast, there were no significant associations between outreach services and change in child health.

**Table 4.7 The impacts of the use of outreach services over time on child outcomes**

Measures of Service Use	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(Estimates versus "None")</i>												
<b>Use of outreach over time and at registered centres</b>	--	--	--	--	--	--	--	--	--	--	--	--
Wave 1 only	-0.06	ns	-0.03	ns	0.04	ns	0.06	ns	-0.01	ns	0.79	ns
Wave 2 only	0.04	ns	-0.04	ns	-0.03	ns	-0.12	ns	-0.21	#	0.68	ns
Wave 3 only	0.17	ns	0.17	ns	0.11	ns	-0.22	ns	0.05	ns	1.28	#
Waves 1 and 2 only	0.16	*	0.08	ns	0.04	ns	-0.15	#	-0.02	ns	1.01	ns
Waves 1 and 3 only	0.44	***	0.15	ns	-0.08	ns	-0.04	ns	-0.05	ns	0.90	ns
Waves 2 and 3 only	0.15	ns	0.29	ns	0.09	ns	-0.04	ns	0.10	ns	0.98	ns
Waves 1, 2 and 3	0.19	ns	0.10	ns	-0.08	ns	-0.03	ns	0.01	ns	1.18	ns
<b>Outreach amount over time at registered centres</b>	--	--	--	--	--	--	--	--	--	--	--	--
Once	-0.02	ns	-0.01	ns	0.04	ns	0.01	ns	-0.03	ns	0.86	ns
2-3 time points/Waves	0.22	***	0.11	#	0.00	ns	-0.10	ns	-0.01	ns	1.01	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

### Formal use of childcare

Table 4.8 displays the effects identified for formal use of childcare on child outcomes.

Two different ways of measuring the use of formal childcare over time were tested. The first is via detection of differential patterns of formal childcare use via cluster analysis (see Technical Appendix, Section 2.6.2 and Chapter 3) while the second is simply the hours that families reported they use formal childcare. The reference period for the hours spent in childcare is either since beginning of this use (when families were first surveyed at Wave 1), or since families were last contacted (for fieldwork at Waves 2 and 3).

The children of families that had taken up formal childcare for more hours showed lower scores for *internalising* behaviour (various effect sizes), and higher scores for *pro-social* behaviour (various effect sizes). There was also evidence of an association between the intermittent use of childcare and higher attainment for non-verbal reasoning (ES=0.13,

$p < 0.05$ )<sup>59</sup>. In contrast, children of families taking up formal childcare intermittently or longer term were more likely to be categorised as in poorer health (Intermittent: OR=1.35,  $p < 0.05$ . Long term: OR=1.59,  $p < 0.01$ ). When investigated by individual Waves (hours that families spent in formal childcare at Wave 1, Wave 2 and Wave 3) only the number of hours of childcare in Wave 3 was found to be significantly related to a change in child health (OR=1.10,  $p < 0.05$ ). This finding might reflect the age at which children started to attend pre-school; as places are free for 15 hours a week for children over age 3. One plausible reason for increased health problems may be contact with trained staff able to identify these problems.

**Table 4.8 The impact of family use of formal early years childcare (anywhere) on child outcomes**

Measures of the use of formal childcare	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Anywhere and over time – as distinct groups</b> (estimates versus “no use of formal childcare”)	--	--	--	--	--	--	--	--	--	--	--	--
Intermittent use	-0.08	ns	-0.19	**	0.16	**	0.13	*	0.09	ns	1.35	*
Long-term use	-0.08	ns	-0.32	***	0.16	**	0.08	ns	0.09	ns	1.59	**
<b>Anywhere and over time - as 3 continuous measures</b>	--	--	--	--	--	--	--	--	--	--	--	--
Hours at Wave 1	-0.03	ns	-0.04	ns	0.01	ns	-0.07	ns	-0.06	ns	1.00	ns
Hours at Wave 2	0.08	ns	-0.12	*	0.08	ns	0.02	ns	0.02	ns	1.00	ns
Hours at Wave 3	-0.08	ns	-0.15	**	0.09	ns	0.07	ns	0.05	ns	1.01	*
<b>Mean of the 3 continuous measures</b>	--	--	--	--	--	--	--	--	--	--	--	--
Mean of hours across Waves 1-3	-0.02	ns	-0.27	***	0.15	***	0.02	ns	0.01	ns	1.01	#

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; #  $p < 0.08$ ; Not significant: ns

In studying the results in Table 4.8 it must be borne in mind that behaviour and cognitive outcomes are *contextualised*. In other words, the results shown are effects identified *after* taking account of impacts of the influence of other background characteristics that distinguish children, families, and neighbourhoods.

<sup>59</sup> Childcare was not necessarily used by the ECCE child. Information on formal childcare used by families for 0-5 children in the household was collected.

## 4.2.2 Effects of centre characteristics and processes on child outcomes

As illustrated in Figure 3.4 in Chapter 3, six groups were used to measure the characteristics of (and processes within) the centres at which families were registered:

1. Centre effectiveness as defined and assessed by Ofsted inspection at a time-point as close to, but not after 2011<sup>60</sup>;
2. The nature of a centre's *reach* (Smith et al., 2014)
  - either in terms of 'reaching' families from the local area,
  - or, 'reaching' disadvantaged families;
3. The extent of a centre's reported emphasis on child and family health;
4. The extent of a centre's reported emphasis on providing home-based services;
5. The characteristics of centres as measured by ECCE fieldworkers between 2011 and 2013
  - including measures of leadership quality, centre funding, and the nature of a centre's configuration;
6. The services provided by centres as measured by ECCE fieldworkers between 2011 and 2013
  - including named programmes for families, such as those suggested to be well-evidenced through inclusion on Allen's (2011) list. The number of programmes offered in 2012 and then change to 2013 were tested as predictors. This was across two separate lists: A long-list of programmes (including those that can be described as well-evidenced) as well as a short list of only those on Allen's list of 2011.

Associations between the various measures linked to these groups and children's behaviour, cognition and changing health outcomes are presented in three subsections.

### **Ofsted effectiveness, centre reach, and emphasis on health and home-based services**

Table 4.9 (shown at the end of this Chapter due to its size) displays the detailed results of models that test the effects in predicting child outcomes associated with 1) the Ofsted rating of centre effectiveness, 2) the nature of a centre's reach, 3) a centre's emphasis on health, and 4) a centre's emphasis on providing home-based services. Each of the presented measures is shown with a year in brackets (due to Strand 4 analysing data that was gathered between 2011 to 2014 across different strands).

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<sup>60</sup> When baseline assessments were carried out by ECCE researchers.

A number of findings emerge. The centre's Ofsted effectiveness scores did not predict any of the child outcomes at age 3 years plus<sup>61</sup>. As most children did not attend childcare at their registered children's centre and because it was not possible to measure change in behaviour or change in cognitive attainment over time, it seems possible that broad measures of centre functioning or centre use (discussed earlier in Section 4.2.1) may be insufficient to detect small or modest effects. Nonetheless, centres which reported that they placed greater emphasis on the provision of services for health, predicted higher child scores for *externalising* behaviours (ES=0.10,  $p<0.05$ ). This finding is weak but significant. However, it seems plausible that the effect represents differences in service provision that may reflect the centre's views of family need (as we have already shown, poor earlier child health and family functioning predicted child *externalising* behaviour at age 3 years plus). In other words centres may be responding to family needs. Findings for child health also suggest that the effects identified, reflect 'impacts' related to service provision. Children registered to centres that had greater levels of home-based services were more likely to move into poorer health (OR=1.28,  $p<0.05$ ), possibly as a function of better identification of problems, or greater need.

Estimates in Table 4.9 (presented at the end of this chapter) reveal that centres classed as more successful in reaching families from their local area were also more likely to serve ECCE user families with a child who has lower scores for vocabulary (ES=-0.10,  $p<0.05$ ). A very similar effect on non-verbal reasoning was also found for centres which were more successful in reaching disadvantaged families (ES=-0.12,  $p<0.05$ ). We interpret these associations, one where negative effects are identified for measures that reflect positive centre practice, as being indicative of successful, "impact as reach". In other words, centres are better at drawing in families whose children have poorer outcomes.

### **Characteristics of children's centres**

Tables 4.10, 4.11, 4.12, and 4.13 (also presented at the end of this Chapter) show the results of models that test measures of the characteristics of the children's centres at which families were registered and later child outcomes at age 3 years plus. Again, the years in brackets next to each measure indicate when this measure was taken. Table 4.10 considers impacts linked to centre funding and resourcing. First, it should be noted that there was no impact of the total number of staff employed by a centre on children's outcomes. This can be seen as a proxy for centre size, and shows there were no distinctions between smaller and larger centres in their associations with child outcomes. Second, there were also no identifiable effects on outcomes for children in the ECCE

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<sup>61</sup> In contrast, change in health status (poorer health) was associated with centres rated as outstanding by Ofsted. It is possible that this is to do with identification of health problems.

user sample linked to centre expansions or contractions between 2012 and 2013<sup>62</sup>. One exception was health, where children registered to centres categorised as in ‘stasis (with stable funding and services)’ were in better health (OR=0.67,  $p<0.08$ ) compared to ‘reducing’ centres (see Chapter 3 for details). Thirdly, there was a statistically significant effect of the magnitude of a centre’s funding from partner-agency and child outcomes. Being registered at a centre that had more partner-agency funding and resourcing predicted better scores for child *pro-social* behaviour (ES=0.15,  $p<0.05$ ). The effect was similar for non-verbal reasoning, but only verged on significance (ES=0.15,  $p<0.08$ ).

Table 4.11 (presented at the end of this Chapter) summarises effects of a centre’s lead organisation in 2012, and child outcomes (measured in 2014). First, there was no suggestion of impact linking lead organisation to child cognition or child health. There were significant associations with child behaviour. Centres led by an organisation within the education sector were significantly more likely than those led by other local authority agencies to show positive effects on *pro-social* behaviour (ES=0.14,  $p<0.05$ ). However, there was also a tendency for greater *externalising* behaviours to be shown by the children of families who were registered at centres led by an ‘other’ organisation (e.g. children in centres led by social enterprises, as compared to children at local authority-led centres; ES=0.20,  $p<0.08$ ). In other words, children in the ‘catch all’ other category (non-NHS, non-PVI, and non-education) were likely to show more *externalising* behaviours than were children in local authority-led centres.

Table 4.12 (presented at the end of this Chapter) illustrates the results of models testing the effects of centre leadership, staff training, and manager qualifications in predicting child outcomes at age 3 years plus. In terms of centre leadership, there were no significant impacts associated with broad groupings of centres by activities and structures. That said, being registered at a centre that had a higher score on the more detailed *CCLMRS*<sup>63</sup> leadership measure, predicted better *pro-social* behaviour (ES=0.13,  $p<0.01$ ) but lower vocabulary scores (ES=-0.14,  $p<0.01$ ). In terms of staff training, there were no significant effects identified for the measure of the centre’s provision of training for parenting services. There was a suggestion that greater provision of staff training predicted higher scores for children’s *internalising* behaviours but it is weak, only verging on the significant and is not easy to interpret (ES=0.10,  $p<0.08$ ). Finally, in terms of manager qualifications, holding a highest level academic qualification was unrelated to child outcomes, however this was not the case for the two professional qualifications in leadership. Being registered at a centre run by managers who held either the NPQICL<sup>64</sup>

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<sup>62</sup> There was just one significant association between centres described as in ‘Stasis (with stable funding and services)’, i.e. centres who had no cuts but not expanding services, and child health. Compared to those reducing, they were less likely to be in poor health (OR=0.67,  $p<0.08$ ).

<sup>63</sup> Children’s Centre Leadership and Management Rating Scale. Developed as part of ECCE Strand 3 work (see Goff et al., 2013).

<sup>64</sup> National Professional Qualification in Integrated Centre Leadership.

or the NPQH<sup>65</sup>, predicted better vocabulary scores (ES=+0.10, p<0.08). Centres managed by a person with either the NPQICL or NPQH were also significantly more likely to have registered children who were better at non-verbal reasoning (ES=+0.16, p<0.05). Such associations with child outcomes are fairly weak. No significant effects were found for the change in child health outcome and measures of centre leadership.

Table 4.13 (presented at the end of this Chapter) displays the results of models testing the effects of different centre configurations between 2011 and 2013, and child outcomes. Centre configurations were measured through Strand 3 “visits to centres” to account for changes to centre organisation and structure between 2011 and 2013. Previous analyses have shown that children’s centres appear to be moving away from the traditional ‘one centre standalone unit’ towards more complex arrangements such as clusters or ‘hub-and-spokes’ (see Sylva et al., 2015), often due to reorganisation and budget changes. The results shown in Table 4.13 reveal that the nature of a centre’s organisation predicted differences in child outcomes.

In 2013, outcomes for children whose families were registered at centres run as ‘clusters’ rather than ‘one centre units’ showed poorer outcomes for *externalising* behaviour (ES=-0.08, p<0.08) and significantly lower *pro-social* skills (ES=-0.13, p<0.01). Further, this significant association between less *pro-social* behaviour and non-traditional ECCE centre setups was also found for the very small number of centres (N=2) which classified themselves as essentially an administrative address working within outreach sites within the community (ES=-0.28, p<0.05). These effects are not easy to interpret but may reflect the impact of cluster reorganisation on centre work and services at least in the short term. There were no significant impacts on child outcomes that were associated with clustering of service provision.

### **Services provided by children’s centres**

Tables 4.14 and 4.15 (presented next) outline the effects identified between the services that were provided by children’s centres at which families were registered, and child outcomes. Table 4.14 presents results for effects linked to service provision (general as well as specific to parents and parenting) while Table 4.15 shows those linked to multi-agency working and named programmes for families (see the Glossary for a full definition: a list of family programmes including Allen’s list). No significant effects were found for children’s behavioural or cognitive outcomes. Higher number of services provided in 2011 were associated with children showing poorer health outcomes at age 3 years plus, but the effect was weak and only verged on statistical significance (Change in health: OR=1.02, p<0.08).

Considering the results from models testing the effects of ECCE measures of multi-agency working in predicting child outcomes, the results in Table 4.15 suggest only two

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<sup>65</sup> National Professional Qualification for Headship.

tendencies. First, centres that had higher scores for the measures of shared vision and partnership working were also centres that had families whose children were likely to exhibit increased *internalising* behaviours (ES=0.10,  $p<0.08$ ). Second, there was a tendency for centres where there was better multi-agency *management, governance, and infrastructure* to have registered families whose children demonstrated poorer non-verbal reasoning skills (ES=-0.12,  $p<0.08$ ). Again these effects are weak and may reflect pre-existing differences in the needs of children of families registered as users in the ECCE sample (without a child baseline at age 9-18 months enabling a CVA-type analysis, this cannot be determined).

**Table 4.14 The impact of service provision on child outcomes**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
No. of services offered for parents' personal needs (2013)	-0.05	ns	-0.02	ns	0.07	ns	-0.04	ns	0.05	ns	1.01	ns
No. of areas met: parental needs (2013)	-0.05	ns	0.08	ns	-0.02	ns	0.06	ns	0.04	ns	0.99	ns
No. of areas met: family needs (2013)	0.06	ns	-0.01	ns	-0.04	ns	0.00	ns	-0.01	ns	1.03	ns
No. of services offered in 2011	-0.03	ns	-0.07	ns	0.11	ns	-0.06	ns	0.02	ns	1.02	#
Increase in services to 2012	0.01	ns	-0.05	ns	0.02	ns	-0.09	ns	-0.07	ns	1.02	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\*  $p<0.001$ ; \*\*  $p<0.01$ ; \* $p<0.05$ ; # $p<0.08$ ; Not significant: ns

Finally, when considering impacts between the provision of named programmes for families and child outcomes, the results displayed in Table 4.15 show two significant effects. Centres which had increased the overall number of named programmes for families offered between 2012 and 2013 predicted better scores for *pro-social* behaviour (ES=0.18,  $p<0.01$ ). There was one impact on child outcomes associated with named programmes for families solely from the list of Graham Allen MP (2011: termed by Allen as 'EBPs'). Children registered to centres that were offering access to more of the programmes listed on Allen's list in 2012 were more likely to be categorised in poorer health (OR=1.18,  $p<0.05$ ). There was no impact on child outcomes associated with the absolute number of named programmes for families (including Allen's list programmes) that were offered. However, extra caution must be taken with these results. They cannot provide a guide to the effect of attending any named programmes for families (including Allen's programmes) on ECCE child outcomes, because no data is available on whether or not families had engaged with a named programme. Rather, they are an indication that

being registered at a centre that offered more named programmes (potentially an indicator of expansion of services) for families was associated with improved outcomes for *pro-social* behaviour, but changes in terms of poor child health.

**Table 4.15 The impact of multi-agency working and the provision of evidence-based programmes on child outcomes**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Better multi-agency and integrated working (2012)</b>	--	--	--	--	--	--	--	--	--	--	--	--
Vision and partnership working	0.01	ns	0.10	#	0.00	ns	0.01	ns	0.06	ns	0.92	ns
Service delivery and ethos	0.01	ns	-0.08	ns	0.06	.ns	-0.06	ns	0.00	ns	0.98	ns
Management, governance and multi-agency infrastructure	-0.03	ns	-0.03	ns	0.02	ns	-0.09	ns	-0.12	#	0.96	ns
<b>Provision of named programmes for families over time</b>	--	--	--	--	--	--	--	--	--	--	--	--
No. of named programmes for families in 2012	-0.07	ns	-0.03	ns	0.08	ns	0.03	ns	-0.01	ns	1.05	ns
Increase in named programmes for families offered to 2013	-0.08	ns	-0.04	ns	0.18	**	-0.04	ns	-0.07	ns	1.03	ns
<b>Provision of Allen's list programmes (EBPs) over time</b>	--	--	--	--	--	--	--	--	--	--	--	--
No. of Allen's list programmes in 2012	0.02	ns	0.00	ns	-0.04	ns	0.10	ns	-0.05	ns	1.18	*
Increase in Allen's list programmes offered to 2013	-0.02	ns	-0.03	ns	0.04	ns	0.03	ns	-0.05	ns	1.12	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

### 4.2.3 Summary of combined child outcome models

This section presents the results of analyses of impact when children's centre concepts were investigated in combination. Any measures of service use or centre characteristics

identified as statistically significant predictors when tested individually (as reported in Sections 4.2.1 and 4.2.2) were then analysed in combination<sup>66</sup>. Only measures that continued to show significant effects in combination were retained in the combined models (non-significant  $p > 0.08$  measures were removed). This allows for net effects of these predictors to be modelled, allowing better models of the impacts of children's centres in predicting different child outcomes to be identified.

It should be noted that the models described for child behaviour and cognition are contextualised models that cannot adjust for either prior behaviour/cognition at baseline. In addition, the models could only adjust for a few measures of family need at baseline. Because of this they should be interpreted cautiously in terms of associations, and causal conclusions cannot be made. Full models can be found in Technical Appendix 4.2.3.

### Combined models for child behaviour

The following children's centre measures predicted higher scores for *externalising* behaviour when tested in combination:

- Children from families receiving extended outreach (outreach visits across at least two Waves of data collection) compared to other families (ES=0.20,  $p < 0.001$ )<sup>67</sup>;
- Children registered to centres that had a greater emphasis on health services (ES=0.10,  $p < 0.05$ ) compared to a lower emphasis;
- Children registered to cluster model centres compared to one centre units (ES=0.11,  $p < 0.05$ ).

The following children's centre measures predicted lower scores for *externalising* behaviour for children when tested in combination:

- Children from families who used services at baseline (inconsistent way: ES=-0.20,  $p < 0.08$ ; limited way-mainly health: ES=-0.24,  $p < 0.05$ ; heavily-mainly parent-child: ES=-0.24,  $p < 0.05$ ).
- Centres that had more named programmes (ES=0.10,  $p < 0.08$ ) and increased the number of the named programmes (ES=-0.12,  $p < 0.05$ ).

Combined models for *internalising* behaviour found that children from families where formal childcare was used intermittently (ES=-0.20,  $p < 0.01$ ) or longer term (ES=-0.31,  $p < 0.001$ ) had lower levels of *internalising* behaviour than children from families where no

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<sup>66</sup> Inclusion criteria was extended for contextualised outcomes (child cognition and behaviour) to include concepts that were found to be important for mother or family outcomes that met a criteria of  $p < 0.15$  when tested individually.

<sup>67</sup> Other service use concepts were no longer significant when tested in combination.

formal childcare was used, as did children living in the reach area (ES=-0.10, p<0.05)<sup>68</sup>. In addition, the following patterns of centre or service use predicted higher levels of *internalising* behaviour:

- Extended outreach (outreach visits across at least two Waves of data collection) compared to other families (ES=0.11, p<0.08);
- Use of the registered children's centre across all three Waves (ES=0.15, p<0.08) compared to families who did not use the registered centre<sup>69</sup>.

Formal childcare was also associated with better *pro-social* behaviour when used intermittently (ES=0.15, p<0.05) or long term (ES=0.14, p<0.05), compared to those families who used no formal childcare across the three Waves of data collection. In addition, children registered to centres with the following characteristics had greater *pro-social skills*:

- Centres with a greater number of named programmes for families at baseline (ES=0.13, p<0.05), and those that increased the number of these named programmes (ES=0.27, p<0.001);
- Centres that had high levels of partner-agency resourcing (ES=0.16, p<0.05), compared to no partner-agency resourcing;
- Children registered to children's centres that were led by the NHS (ES=0.54, p<0.05), or a school (ES=0.13, p<0.08) compared to those led by the local-authority.

In contrast, the following types of patterns of centre or service use predicted lower levels of *pro-social* behaviours (worse outcomes) for children:

- Extended engagement with a health visitor (at the registered children's centre) compared to other families (ES=-0.19, p<0.05)<sup>70</sup>;
- Children registered to a children's centre that worked as an administrative address with outreach sites (Virtual: ES=-0.45, p<0.05), hub-and-spoke (ES=-0.15, p<0.08) or cluster model (ES=-0.14, p<0.01) compared to families whose registered centre was a 'one centre unit'.

As was found with the other behaviour outcomes, vulnerable families (in this case indicated by extended health visitor contact) had worse outcomes, most likely reflecting

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<sup>68</sup> See the *Reach* report (Smith et al., 2014).

<sup>69</sup> Stay and Play at two Waves (compared to none) was also associated with increases in *internalising* behaviours (ES=0.15, p<0.05) when tested in an alternative model. The effect is inconsistent so should be treated with caution (see Technical Appendix 4.2.3 for more details).

<sup>70</sup> Extended health visitor contact anywhere was also significant but not as strong a predictor of *pro-social* behaviours (ES=-0.10, p<0.08). See Technical Appendix 4.2.3 for more details.

health visitors targeting those most disadvantaged families and reflecting possible impact via greater reach of high risk groups.

Three points are worth noting. Firstly, childcare confers benefits for *pro-social* behaviours and *internalising* behaviours (lower levels). The effect of early years childcare is significant, and from past research it makes sense that it could impact on behaviour related to social skills<sup>71</sup>. Secondly, children in families receiving extended one to one services (either outreach or a health visitor) were more likely to have poorer behaviour outcomes. This is likely to reflect impact via reach (see Glossary). Thirdly, *pro-social* behaviour was the only behavioural outcome that was found to be associated with multiple centre processes or characteristics. It may be that centres being run as one centre units are more conducive to the promotion of *pro-social* skills, or it could be that standalone centres have had less disruption because they did not experience reorganisation into a cluster grouping.

### Combined models for cognition

In the case of vocabulary scores at age 3, combined models found that children from families where formal childcare was used intermittently (ES=0.12, p<0.08) had higher vocabulary scores. In addition, combined models show the following concepts were associated with greater vocabulary:

- Children registered to centres that were school-led (ES=0.15, p<0.08);

The following children's centre measures predicted lower vocabulary scores when tested in combination<sup>72</sup>:

- Long term use of another children's centre was associated with lower vocabulary scores (ES=-0.17, p<0.01)<sup>73</sup>;
- Children registered to centres that had a greater emphasis on health services (ES=-0.12, p<0.05) compared to a lower emphasis;
- Centres with higher quality leadership compared to lower (CCLMRS: ES=-0.17, p<0.05);
- Children registered to centres that attracted more users from their reach area (ES=-0.11, p<0.05).

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<sup>71</sup> The childcare measure was very largely based on data for the ECCE sample child's experiences, but included additional data on family use of childcare that could relate to any siblings aged 0-5.

<sup>72</sup> In addition, outreach just failed to reach significance (ES=-0.10, p<0.10) so was not included in the final model.

<sup>73</sup> Alternative service use measure was also significant but had to be tested separately: the period of use (in months) was associated with vocabulary (ES=-0.12, p<0.05), when tested in combination with intensity and total duration.

Combined models for non-verbal reasoning found that children from families where formal childcare was used intermittently (ES=0.10,  $p<0.08$ ) or longer term (ES=0.10,  $p<0.08$ ) had higher non-verbal reasoning scores. In addition, combined models show the following concepts were associated with higher non-verbal reasoning ability:

- Children registered to centres with high levels of partner-agency funding (ES=0.14,  $p<0.08$ );
- Children registered to centres where the leader has an NPQICL or NPQH qualification (ES=0.16,  $p<0.05$ ).

### Combined models for child health

Combined models show the following concepts were associated with poorer health outcomes (negative change from Wave 1 to Wave 3):

- Families where formal childcare was used intermittently (OR=1.35,  $p<0.05$ ) or long term (OR=1.55,  $p<0.01$ );
- Children engaging in Stay and Play at Wave 1 (OR=1.36,  $p<0.08$ ) and Wave 2 (OR=1.38,  $p<0.08$ ), compared to those not attending Stay and Play;
- Children registered to centres specialising in home-based services during outreach visits (OR=1.28,  $p<0.05$ ).

The child health outcome measure in the ECCE evaluation impact analyses has been shown to be largely driven by reported health problems so it is possible that the patterns may also reflect variations between centres in the needs of the registered families in the user sample, or identification of needs by centre or childcare staff.

Overall the multilevel analyses of child outcomes show only weak to modest effects of our measures of families' use of children's centre services and centre characteristics in predicting differences in six child outcomes measured at age 3 years plus. The lack of baseline control for all but the child health measure mean that only weaker contextualised rather than progress/change models could be run, which means it is not possible to model change in child behaviour or cognitive development over Wave 1 to Wave 3. Nonetheless, it should be noted that the controls for the social-behavioural models did offer some measures relevant to prior behavioural problems (e.g. *Difficult Child*). This means that the effects identified should be interpreted cautiously in terms of making judgements about 'impact'. It should also be noted that children's centres were being encouraged to direct families to other childcare providers, and many centres did not offer childcare services so few children are likely to have attended childcare at their registered children's centre (4% of children in Wave 1, 8% in Wave 3).

**Table 4.9 Impacts on child outcomes linked to Ofsted Effectiveness ratings, children’s centre reach, and centre emphasis on health and home-based services**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
Ofsted effectiveness score (2011) ( <i>estimates versus “Satisfactory/requires improvement”</i> )	--	--	--	--	--	--	--	--	--	--	--	--
No data	0.04	ns	0.10	ns	-0.02	ns	0.10	ns	0.00	ns	1.44	ns
Good	0.05	ns	0.07	ns	0.04	ns	0.00	ns	0.04	ns	1.03	ns
Outstanding	0.08	ns	0.07	ns	0.05	ns	0.00	ns	0.08	ns	1.43	#
Reach from an area (2013): % of registered families from local area	-0.05	ns	-0.07	ns	-0.04	ns	-0.10	*	-0.09	ns	1.00	ns
Reaching the financially disadvantaged (2011): % of registered families also financially disadvantaged	0.00	ns	0.00	ns	-0.02	ns	-0.03	ns	-0.12	*	1.00	ns
Organisational emphasis on health (2012) ( <i>estimate versus “less”</i> ): Greater emphasis	0.00	ns	0.01	ns	0.01	ns	-0.05	ns	0.03	ns	0.96	ns
Service provision emphasis on health (2012) ( <i>estimate versus “less”</i> ): Greater emphasis	0.10	*	-0.01	ns	0.02	ns	-0.07	ns	0.02	ns	1.12	ns
Self-reported emphasis on health (2013) ( <i>estimates versus “low”</i> )	--	--	--	--	--	--	--	--	--	--	--	--
Intermediate	0.00	ns	0.07	ns	-0.07	ns	-0.04	ns	-0.14	ns	1.39	*
High	-0.03	ns	0.03	ns	-0.09	ns	-0.02	ns	-0.01	ns	1.11	ns
Emphasis on home-based services (2012) ( <i>estimate versus “less”</i> ): Greater emphasis	0.06	ns	-0.02	ns	-0.03	ns	-0.04	ns	-0.06	ns	1.28	*

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

**Table 4.10 The impact of centre funding and resourcing on child outcomes**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
Total staff (2012): Total staff employed	0.00	ns	0.00	ns	0.01	ns	0.00	ns	0.01	ns	1.00	ns
Partner-agency (PA) Funding and Resourcing (2012) ( <i>estimates versus "none"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
No data	0.08	ns	-0.05	ns	0.01	ns	-0.05	ns	-0.01	ns	0.79	ns
Moderate PA funding/resourcing	-0.01	ns	-0.10	ns	0.07	ns	0.03	ns	0.06	ns	0.97	ns
Large amount PA funding/resourcing	0.10	ns	-0.05	ns	0.15	*	-0.01	ns	0.15	#	1.05	ns
Expansion and cuts over time (2012-13) ( <i>estimates versus "reducing"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
No data	0.05	ns	0.07	ns	-0.13	ns	-0.08	ns	-0.12	ns	0.66	#
Stasis (with stable funding and services)	-0.04	ns	0.06	ns	0.03	ns	0.00	ns	-0.01	ns	0.67	#
Supported growth	-0.08	ns	-0.06	ns	0.07	ns	0.08	ns	0.01	ns	0.79	ns
Restructuring	0.06	ns	0.12	ns	-0.09	ns	-0.01	ns	-0.04	ns	0.71	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

**Table 4.11 The impact of a centre's lead organisation on child outcomes**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
Lead organisation (2012) ( <i>estimates versus "Local Authority only"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
Other (social enterprise, other)	0.20	#	-0.07	ns	0.04	ns	-0.02	ns	-0.20	ns	1.13	ns
NHS only	-0.21	ns	0.17	ns	0.11	ns	0.22	ns	0.34	ns	0.40	ns
PVI <sup>†</sup> only	-0.01	ns	-0.04	ns	0.06	ns	0.07	ns	0.06	ns	1.11	ns
Education only	-0.08	ns	0.00	ns	0.14	*	0.11	ns	0.13	ns	0.98	ns
Mixed leadership	0.01	ns	0.03	ns	-0.01	ns	-0.09	ns	-0.05	ns	0.96	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures);

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08;

Not significant: ns; †Private, Voluntary or Independent Sector

**Table 4.12 The impacts on child outcomes from centre leadership, manager qualifications, and staff training**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Leadership activities and management structures - as groups (2012)</b> ( <i>estimates versus "poorer"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
CCLMRS score: Intermediate	0.02	ns	0.11	ns	-0.07	ns	-0.06	ns	-0.01	ns	0.95	ns
CCLMRS score: Better	-0.01	ns	0.02	ns	0.08	ns	-0.11	ns	-0.04	ns	1.04	ns
CCLMRS† (2012): mean score	-0.03	ns	-0.01	ns	0.13	**	-0.14	**	0.00	ns	0.98	ns
<b>Parenting services training at registered children's centre (2012)</b>	--	--	--	--	--	--	--	--	--	--	--	--
No data	-0.06	ns	0.04	.787	0.01	ns	-0.06	ns	0.00	ns	0.83	ns
Yes	-0.05	ns	-0.02	ns	0.04	ns	0.08	ns	0.13	ns	0.84	ns
Staff training (2012): Greater on the job training	0.07	ns	0.10	#	0.01	ns	-0.05	ns	-0.02	ns	1.00	ns
<b>Manager qualifications (2012)</b> ( <i>estimates versus "none-NVQ Level 5"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
No data	0.02	ns	0.05	ns	-0.01	ns	-0.15	ns	-0.11	ns	1.46	ns
Degree or higher	-0.04	ns	-0.01	ns	0.01	ns	0.02	ns	0.06	ns	1.25	ns
<b>Manager has NPQICL/NPQH‡ (2012)</b> ( <i>estimates versus "no"</i> )	--	--	--	--	--	--	--	--	--	--	--	--
No data	0.10	ns	0.09	ns	0.01	ns	-0.10	ns	-0.04	ns	1.43	ns
Yes	0.06	ns	0.05	ns	0.04	ns	0.10	#	0.16	*	1.23	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns;

†Children's Centre Leadership and Management Rating Scale: CCLRMS; ‡National Professional Qualification in Integrated Centre Leadership/National Professional Qualification for Headship

**Table 4.13 The impact of centre configurations on child outcomes**

Measures of centres at which families were registered	Behaviour: Externalising Problems		Behaviour: Internalising Problems		Behaviour: Pro-social Behaviours		Cognition: Vocabulary		Cognition: Non-Verbal Reasoning		Health: Changing Health	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Centre configurations (2011)</b> <i>(estimates versus "one centre unit")</i>	--	--	--	--	--	--	--	--	--	--	--	--
No data	-0.42	#	0.15	ns	0.29	ns	0.64	*	0.50	ns	0.76	ns
Cluster/locality model	0.04	ns	-0.01	ns	-0.04	ns	0.06	ns	0.01	ns	0.92	ns
Hub and spoke	0.00	ns	0.06	ns	0.00	ns	-0.08	ns	0.06	ns	1.18	ns
<b>Centre configurations (2013)</b> <i>(estimates versus "one centre unit")</i>	--	--	--	--	--	--	--	--	--	--	--	--
Cluster/locality model	0.08	#	0.05	ns	-0.13	**	0.02	ns	-0.01	ns	0.89	ns
Hub and spoke	-0.03	ns	-0.01	ns	-0.02	ns	0.07	ns	-0.01	ns	1.01	ns
Virtual	-0.14	ns	+0.08	ns	-0.38	*	-0.25	ns	-0.29	ns	0.75	ns
<b>Service clustering over time</b> <i>(estimates versus "no")</i>	--	--	--	--	--	--	--	--	--	--	--	--
Yes in 2011	0.12	ns	0.06	ns	0.04	ns	0.02	ns	-0.08	ns	1.04	ns
Yes in 2013	-0.07	ns	0.03	ns	0.06	ns	-0.07	ns	-0.08	ns	0.93	ns

ES: (standardised) Effect Size (for continuous outcome measures); OR: Odds Ratio (an effect size for binary outcome measures); Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

## 5 Impacts upon Mother Outcomes at child age 3 [Smees]

### Key Findings

Mother's mental and physical health were investigated at the start of the study and again when their children were three years plus. This allowed change in mental and physical health to be investigated:

- Prior mental or physical health, measured when their child was age 9-18 months (14 months on average) were the strongest predictors of later outcomes.
- Once their prior level of mental health was accounted for, older mothers, those mothers experiencing higher financial disadvantage, and those mothers in poorer physical health, all showed relative declines in their mental health. In addition, mothers reporting higher levels of Parental Distress at Wave 1 were also more likely to show poorer mental health outcomes as children with developmental problems were also more likely to see a decline in mental health.
- Once their prior level of physical health was accounted for, mothers experiencing higher financial disadvantage, those in lower Socio-Economic Status (SES) groups, those holding lower educational qualifications, or those who were single/separated were more likely to show poorer physical health subsequently.
- Mothers living in more deprived neighbourhoods were also more likely to be in poorer health.
- Older mothers were less likely to be in poorer health, possibly reflecting the nature of the measure that captured lifestyle and diet-related health.

When aspects of children's centre service use, service provision, children's centre characteristics and families' use of childcare were investigated a few notable associations were found:

- High levels of childcare use (both long term and long hours) predicted poorer mental health outcomes for mothers.
- As found for some of the child outcomes, mothers with poorer mental or physical health had greater contact with health visitors or outreach workers. Health visitor or outreach visits across time predicted poorer mental and physical health, suggesting that health visitors were targeting mothers with the greatest needs.
- Using children's centre services in a more consistent way at baseline (limited or heavily; rather than inconsistently) predicted improved mental health outcomes for mothers later on.

- Mothers who attended centres that were expanding services (in combination with no cuts to services) also showed improving mental health compared to mothers attending centres that experienced budget cuts and were reducing services.
- Fewer impacts were evident for mother's physical health. However, being registered at a centre with a high health emphasis (reported by centre managers) predicted mothers moving out of poor health status.
- Similarly taking children to organised activities (anywhere) also predicted improved mother physical health outcomes, controlling for other influences.

The purpose of this section is to describe the background predictors that have been taken into account before modelling the impact of children's centres on two other outcomes: mental health (via the GHQ-12) and physical health. The models described are the full **Contextualised Value Added models (CVA)** that include prior measures of mental and physical health as well as any other background that was found to predict change in outcome from Waves 1 to 3. The effects described are 'net' effects. Additional contextualised models, modelling outcomes rather than change (e.g. not taking into account prior levels of mental or physical health) were also produced, full details of which are presented in Technical Appendix 5.1.

## 5.1 Identifying the effects of background characteristics: the contextual models

All of the multilevel models used to study the effects of children's centres on mother's outcomes, control for relevant child, parent, family and neighbourhood measures identified as significant (see Chapter 3). These control models are similar to those developed to study child outcomes, and are used to contextualise the various outcomes studied in the impact analyses. They are necessary to identify and take account of effects on outcomes that can be attributed to differences in the characteristics of the users registered at the different children's centres in the Strand 4 sample.

### 5.1.1 Mothers' mental health

Self-reported data was collected on mother's mental health using the *GHQ-12* questionnaire when the ECCE children were aged three plus. Mother's prior scores on the same measure collected at baseline (when children were aged 9-18 months) proved to be the strongest predictors of later mental health outcomes. However, ECCE mothers with the following background characteristics (in terms of child, mother, family and their neighbourhood) also showed poorer mental health when their child was aged 3 (taking into account their baseline scores) suggesting that their mental health had declined:

- Older mothers (compared to younger);
- Mothers with an unhealthy lifestyle or a long-term illness/disability (compared to healthy mothers);

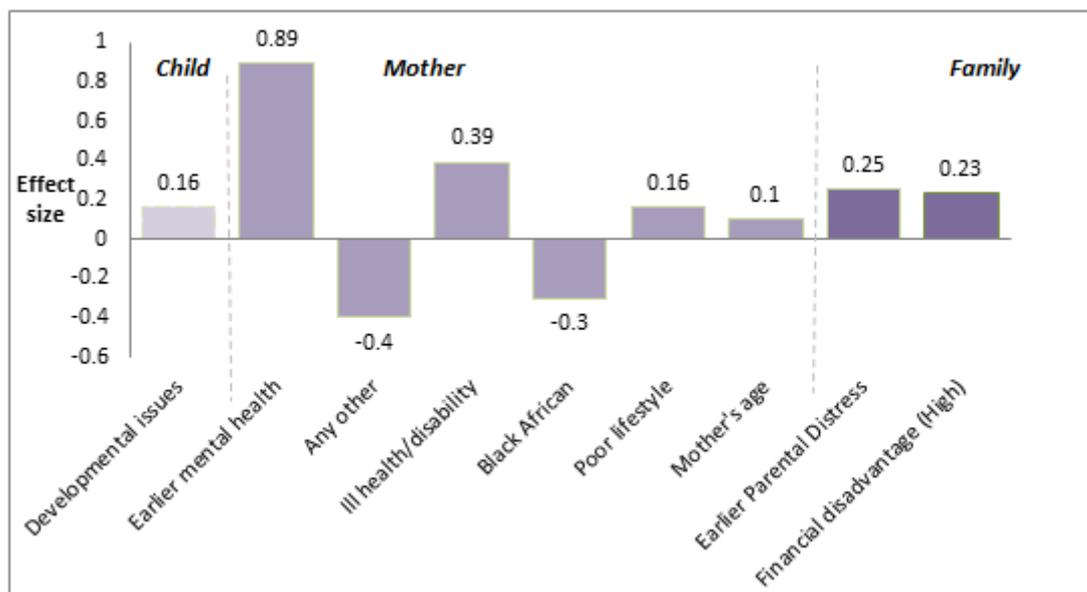
- Mothers from households with higher financial disadvantage;
- Mothers from households with higher *Parental Distress* at Wave 1 (*PSI* subscore).

The following groups showed improvements in mental health, after controlling for their baseline scores i.e. a better *GHQ* (in the CVA model of net effects):

- 'Black African' and 'any other' ethnic heritage mothers (compared to White UK).

The relative influence of background characteristics are measured by Effect Sizes (ES; see Glossary) and shown in Figure 5.1. As expected, earlier levels of mental health showed the greatest influence in predicting later *mental health* (ES=0.89). Other effects were *modest* or *small*. Mother's from two of the ethnic heritage groups (Black African and Other) demonstrated better mental health, compared to the White UK group (Black African: ES=-0.30, Other: ES=-0.40). Weak to moderate effects were found that predicted poorer mental health for a number of other household stressors such as the mother having a poor lifestyle (ES=0.16), or being in ill-health (ES=0.39), financial disadvantage (ES=0.23 for high versus low disadvantage), and having a child with developmental issues (ES=0.16). Prior scores for *Parental Distress* was also a significant predictor of later poorer mental health (ES=0.25).

Figure 5.1 Influences on GHQ-12 Questionnaire scores (CVA)



### 5.1.2 Mother's physical health

Table 5.1 shows the odds of being in poorer health at Wave 3 for different groups of respondents. The three measures of *prior health status* were strong predictors (Poor diet: Odds Ratio [OR]=1.73. Poor lifestyle: OR=2.61. Illness/disability: OR=1.67). *Financial disadvantage* and *SES* also strongly predicted health status (High financial disadvantage was particularly strong: OR=4.12). In addition, families in the most *deprived neighbourhoods* (IDACI) were approximately three and a half times as likely to be in

poorer health than those in the least deprived (OR=3.41). Other moderate predictors were *mother's qualifications* (None: OR= 2.16. Low: OR=1.96. College/higher education: OR=1.51), *marital status* (Single: OR=2.17. Separated: OR=2.07). Older mothers were less likely to be in poorer health than younger mothers (OR=0.97).

**Table 5.1 Predicting Mother's physical health (CVA)**

Characteristic	Predictors	Odds Ratio	Sig
<b>Mother's qualifications</b>	None	2.16	*
	Low	1.96	**
	College/Higher Education	1.51	#
<b>Mother's ethnicity</b>	Mixed race	0.27	*
	Pakistani	0.16	**
	Black African	0.04	**
	Other	0.19	**
<b>Mother's living arrangements</b>	Living with partner	1.82	***
	Single parent	2.17	***
	Separated/widowed/divorced	2.07	*
<b>Mother's health</b>	Poor diet	1.73	**
	Poor lifestyle	2.61	***
	Long term illness/disability	1.67	*
<b>Mother's age</b>	At Wave 1 interview <sup>a</sup>	0.97	*
<b>Family size</b>	1-2 siblings	1.56	**
	3+ siblings	1.86	*
<b>SES</b>	Small employer, own account workers	2.08	**
	Lower supervisory	1.66	*
	Semi-routine and routine	1.66	*
<b>Financial disadvantage</b>	High	4.12	*
	Medium	2.03	**
<b>Neighbourhood deprivation</b>	IDACI <sup>a</sup>	3.41	*

<sup>a</sup> For Mother's age and IDACI neighbourhood deprivation, the Odds Ratio is for each unit difference on the measurement scale. For example, the Odds Ratio for IDACI represents the odds of being in a workless household comparing those with a zero IDACI score (no deprivation) to a score of 1 (maximum deprivation).

Significance values: # p<0.08.\* p<0.05,\*\* p<0.01,\*\*\* p<0.001.

Full CVA models can be found in Technical Appendix 5.1. The use of both **Contextualised** and the **Contextualised Value Added** models allow the impact of children's centres to be assessed on both mother's outcomes at child age 3 (Contextualised models) and change in these outcomes during the study (Contextualised Value Added models).

## 5.2 Identifying the effects of children's centres on mother outcomes

Section 5.1 identified significant child, mother, family and neighbourhood characteristics that were important in predicting mother's mental and physical health (via *GHQ-12* and physical health status). Section 5.2 builds on the results from the Contextualised Value Added models; assessing the effects of different aspects of children's centres, controlling for other significant factors that have been found to shape mother outcomes (the full list of children's centre measures can be found in Section 3.2.4 and are described in more detail in Technical Appendices 2.5 and 2.6).

It should be noted that Section 5.2 summarises the results of analyses of these impacts of children's centres on change in mother's mental and physical health during the study from Wave 1 to Wave 3. Additional analyses were carried out using the contextualised control models that do not control for these prior Waves baseline measures and results are found in Technical Appendix 5.1.1.

### 5.2.1 Effects of service use on mother outcomes

Service use was investigated in three main ways:

- Any use of services or children's centres, versus no use;
- Duration of use;
- Patterns of service use.

#### **Any use of children's centre services or children's centres**

Three different indicators of children's centre use were tested. The first two look specifically at the children's centres at which families were registered: whether the family used the centre *at all* (services or anything else, e.g. outreach, information) versus not; and whether the family used any children's centre *services* versus none used (just assessing use of named services). The last measure examined use of named services at *any* children's centre, not just the centres at which families were registered.

Attending the registered children's centre for *anything* was a weak but significant predictor of increases in scores for mental health problems (ES=0.15,  $p<0.05$ ). This is likely to reflect mothers with difficulties being targeted by children's centres, through outreach and support<sup>74</sup> (see Table 5.2). It should be noted that service use alone did not predict any significant change in scores for mother's physical or mental health (e.g. use of services at their registered centre - Mental health: ES=0.04, ns; Physical health: OR=0.79, ns. Use of services at any children's centre - Mental health: ES=0.03, ns;

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<sup>74</sup> When combined with other measures that potentially identify need (extended health visitor contact, prolonged outreach). This interpretation is confirmed later in this Chapter.

Physical health: OR=0.77, ns). Moreover, changes to physical health were not significantly associated with overall service use (OR 0.74, ns).

**Table 5.2 Simple measures of service use (CVA): mother outcomes**

Use of...	Mental health		Physical health	
	ES	Sig	OR	Sig
<i>(estimates versus "used nothing")</i>				
<b>Registered children's centre for anything</b>	0.15	*	0.79	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

### Duration of use

Duration of use (at the registered centre only) was measured in two different ways:

1. Longitudinally: whether the family stopped using the registered centre after Wave 1 (child 9-18 months old); after Wave 2; or used the centre across all three Waves;
2. As continuous measures of duration used in i) months, ii) total hours, and iii) intensity (amount of hours services used per month).<sup>75</sup>

Consistent use (over time) of the registered children's centre was weakly but significantly associated with increases in mental health problems (ES=0.15, p<0.05) but not associated with a change in physical health status (Table 5.3, 'consistent users'). Again it seems plausible that service use is needs driven, so that mothers with potential mental health issues may be seeking out more services for support or be targeted or signposted to take up children's centre services. This can be interpreted as an indicator of impact in terms of serving the needs of those at greater risk.

**Table 5.3 Patterns of service use at the registered children's centre (duration of use over time) (CVA): family/parenting outcomes**

Measures of Duration	Mental health		Physical health	
	ES	Sig	OR	Sig
<b>Categorical</b> <i>(all estimates versus "no use")</i>				
<b>Stoppers after Wave 1</b>	0.10	ns	0.68	ns
<b>Stoppers after Wave 2</b>	0.13	ns	0.68	ns
<b>Consistent users</b>	0.15	*	0.77	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

### Pattern of service use at baseline

In contrast, some patterns of baseline service use were found to predict improvements in mental health. The group that made limited use of services at baseline (mainly health-related services) showed reductions in mental health problems (ES=-0.16, p<0.05), as did the group that made heavy use (specifically parent-child related, ES=-0.11, p<0.05); when compared with outcomes for the group that had no consistent pattern of service use (see Table 5.4). Although mothers with mental health needs may access more

<sup>75</sup> Based on the duration of use of top 5 services.

services, it seems that only those that access more focused services early show improvements in mental health over time. It should be noted that early research by the evaluation team (Strand 3) revealed that children’s centre staff were concerned that they lacked the specialist skills and training needed to support families with mental health or other complex social needs (see Sylva et al., 2015 for further information).

**Table 5.4 Patterns of service use at baseline (registered children's centre only) (CVA): mother outcomes**

Measures of Service Use	Mental health		Physical health	
	ES	Sig	OR	Sig
<b>Use of family services at baseline</b> ( <i>all estimates versus “no consistent pattern”</i> )				
<b>Limited (mainly health)</b>	-0.16	*	0.98	ns
<b>Heavy (particularly parent-child)</b>	-0.11	*	1.05	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

### Pattern of service and centre use over time

We know that vulnerable families (for example, those being targeted by health visitors or outreach across all 3 Waves) are more likely to use the registered children’s centre longer term, which might link to the small but significant increases in mental health problems found for this group (ES=0.10, p<0.05) see Table 5.5. This is in line with findings on long term use of services in other sections. The evidence suggests these mothers are likely to have been directed to services at their registered children’s centre, as no significant associations were found for use of services at other children’s centres.

**Table 5.5 Patterns of service use anywhere (duration of use over time) (CVA): mother outcomes**

Use of services at any children's centre over time over time	Mental health		Physical health	
	ES	Sig	OR	Sig
<i>Comparison group = Inconsistent users</i>				
<b>Long-term users of registered children’s centre</b>	0.10	*	1.07	ns
<b>Long-term users of other children’s centre</b>	0.03	ns	0.83	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

Early focused use of services (mainly health-related) at the registered children’s centre seems to promote improvements in physical health, although the results only verge on statistical significance (OR=0.72, p<0.10), when compared to those that did not use any services at any Wave of data collection (using a longitudinal measure of registered children’s centre service use).<sup>76</sup>

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<sup>76</sup> Service use was also found to predict better outcomes for other measures: compared to families that used no services at the registered children’s centre, families that used limited services (specifically health at baseline) showed better outcomes in terms of reductions in scores for the CHAOS measure (ES=-0.15, p<0.05). In addition, families using a wider variety of services over time showed significant improvements in the Home Learning Environment measure (ES=0.22, p<0.01).

Use of specific service groups (health, family, employment, education), when looked at in terms of any use versus none, was not a significant predictor for physical health. However, some use of parent-child services at the registered children's centre was found to predict increases in mental health problems, possibly as these are the more accessible services for mothers (ES=0.13,  $p<0.01$ ). Again this may be an indicator of parents with problems accessing or being signposted to certain types of services.

Three named services were investigated separately i) use of health visitors/midwives ii) use of Stay and Play and iii) use of organised activities for children and babies (e.g. Baby Massage). Whether families used these services anywhere or just at the named children's centre was also analysed. Use of Stay and Play services *anywhere* predicted significant but small increases in mental health problems (use over One Wave: ES=0.19,  $p<0.01$ , Two Waves: ES=0.11, ns, or Three Waves: ES=0.14,  $p<0.05$ )<sup>77</sup>.

Few features of service use predicted changes in physical health. Use of Stay and Play, and organised activities for children and babies however, was an exception. Families who used Stay and Play *anywhere* showed significant improvements in mother's physical health (use over Two Waves of data collection: OR=0.64,  $p<0.05$ , use over all Three Waves: OR=0.68,  $p<0.08$ ). In addition, those who engaged in more organised activities with their children showed improvements in mother's physical health (use at One Wave of data collection: OR=0.66,  $p<0.01$ , Two Waves: OR=0.45,  $p<0.01$ , or Three Waves: OR=0.51,  $p<0.08$ ). These findings suggest that mothers' physical health might improve (i.e. reductions in reported problems) when they are more actively involved in such specific parent-child activities.

### **Formal use of childcare**

Long term use of childcare predicted small but significant increases in mother's mental health problems (ES=0.16,  $p<0.05$ ), but not changes in their physical health (OR=0.74, ns) see Table 5.6. It should be noted that there was no difference in mental health for those using lower levels of childcare (intermittent) compared with the no childcare group. In addition, there was no significant difference in the mental health scores between the groups (i.e. between no use of childcare, and long term use of childcare) before controls. It seems possible that mothers using childcare in the longer term may be under greater pressures than mothers not using childcare, perhaps going back to work earlier or having less support from informal carers such as grandparents. Paying for long term childcare may also create financial strains.

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<sup>77</sup> N.B. The measure of Stay and Play at the registered children's centre for one Wave only was also statistically significant although the effect was weak: ES=0.11,  $p<0.05$ , indicating that mothers' who attended Stay and Play at one Wave only, showed slight increases in scores for mental health problems than those who did not attend Stay and Play at all, at the registered children's centre.

**Table 5.6 Patterns of childcare use anywhere (formal childcare over time) (CVA): mother outcomes**

Measures of the use of formal childcare	Mental health		Physical health	
	ES	Sig	OR	Sig
<i>Comparison group = No use of childcare</i>				
<b>Intermittent use</b>	0.06	ns	0.75	ns
<b>Long-term use</b>	0.16	**	0.74	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

## 5.2.2 Effects of centre characteristics and processes on mother outcomes

In general, the various measures of children’s centre characteristics and processes did not predict changes in mother’s mental or physical health outcomes. There was an exception, however: mothers registered at centres that had been restructured, showed greater increases in mental health problems (ES=0.20, p<0.01). These centres have experienced both cuts to services or staff and also sought to restructure or add new services at the same time. The comparison group was those registered at centres which were ‘reducing’ (i.e. had budget cuts and were not putting on new services). Due to budget cuts to local authorities, many children’s centres had experienced restructuring, cuts or closures during the course of the evaluation. The Strand 3 reports from this ECCE evaluation have discussed and documented this problem from the perspective of children’s centre managers and staff (Sylva et al, 2015). It is possible that centres that had experienced cuts and restructuring were spreading resources and services too thinly to be of benefit to those with mental health issues, or have lost staff and made cuts to services that could support such groups.

Measures of children’s centre leadership were not significant predictors of change in any of the mother outcomes. Being registered at a centre that made greater use of on-the-job training was associated with a small but significant increase in mental health problems (ES=0.10, p<0.08). This is not easy to interpret but may be related to staff turnover, lack of specialist training, or in response to local needs. It did not predict any other of the mother outcomes however.

Mothers registered at centres that reported they gave the highest emphasis to health (rank of 1 to 5) showed better health (i.e. were less likely to be in poorer health: OR=0.73, p<0.08), than mothers registered at centres with a lower reported emphasis on promoting health.

### Vulnerable families

Outreach visits can be interpreted as identifiers of vulnerable families. Families that received an outreach visit at all three Waves showed a small but significant increase in mental health problems (ES=0.12, p<0.05) from Wave 1 to Wave 3. They were also more

likely to have scores indicating poorer mental health at Wave 1<sup>78</sup>. Similarly, long-term contact with health visitors (across all 3 Waves, anywhere) predicted increases in mental health problems compared with no contact (Anywhere: ES=0.25, p<0.01). Moreover a similar pattern was found when visits from a health visitor at the registered centre was tested (Registered children’s centre: ES=0.23, p<0.01). Greater contact with health visitors (up to child aged 3 years: even allowing for the possible arrival of new siblings) is associated with poorer outcomes, controlling for background characteristics, suggesting that this small group of vulnerable families (less than 100 overall) were being especially targeted for these additional services, and that such targeting was need-based (see Table 5.7). It can be interpreted as impact in addressing the core purpose of outreach to a high risk group.

**Table 5.7 Services for vulnerable families (CVA): mother outcomes**

Services for vulnerable families <i>(estimates versus “never”)</i>	Mental health		Physical health	
	ES	Sig	OR	Sig
<b>Health visitor: use of service anywhere</b> <i>Comparison group=None</i>	--	--	--	--
One Wave	0.04	ns	0.91	ns
Two Waves	0.03	ns	1.01	ns
Three Waves	0.25	**	0.93	ns
<b>Outreach amount over time at registered centres</b> <i>(Estimates versus “None”)</i>	--	--	--	--
One Wave	0.00	ns	0.95	ns
2-3 Waves	0.12	*	1.39	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

In relation to this finding, it should be noted that nationally services for mental health have been cut in many areas by over 8% between 2010-2015, according to the BBC and Community Care. ([A link to the BBC and Community Care research can be found here.](#)) Such vulnerable families may therefore have had little access to specialist services and this links with earlier findings of concern by children’s centre staff that they did not have training, skills or resources to support complex mental health needs (see Sylva et al., 2015).

### 5.2.3 Summary of combined mother outcome models

After testing measures individually, further analyses were conducted because the different measures of service use, provision and centre characteristics are likely to be interrelated and complex. To get a clearer view of the strongest associations between different predictors and outcomes, the measures were tested in combination. Where

<sup>78</sup> Mother’s mental health: Mean and SD for those not receiving any outreach (Mean=22.11, SD=4.95, n=1,253 compared to Mean and SD for those receiving outreach at 3 time points (Mean=24.81, SD=6.44, n=78).

measures were collinear (such as service use) the strongest measure (in terms of effect sizes and model fit) was taken into the final combined model. Any non-significant measures were then removed from the analyses. The findings presented here represent the net effects for children's centre measures in predicting mother outcomes within the CVA models that accounted for baseline functioning (mental or physical health at Wave 1) and background. Full models can be found in Technical Appendix 5.2.3.

### **Mother's mental health**

In the case on mother's mental health, a limited number of measures were identified as significant predictors of this outcome in combination. Combined models show the following types of children's centres or patterns of use, predicted improvements in mother's mental health from Wave 1 to Wave 3:

- Families using services anywhere either in a limited way (ES=-0.13,  $p<0.05$ ) or heavily at Wave 1 (ES=-0.10,  $p<0.05$ ) rather than inconsistently<sup>79</sup>; and
- Centres that were not experiencing cuts to services. Specifically those centres that were expanding services (ES=-0.10,  $p<0.08$ ) compared with cuts.

In contrast, the following types of children's centres or patterns of use predicted worse outcomes (reductions) in terms of change in mother's mental health:

- Extended health visitor use (up to 3 years) again predicted poorer outcomes when used anywhere (ES=0.22,  $p<0.001$ )<sup>80</sup>; and
- Long term use of childcare predicted poorer mental health (ES=0.15,  $p<0.05$ ) compared with no use.

### **Mother's physical health**

Few individual concepts covered in the previous subsection were found to predict changes in mother's physical health. However, when combined into a single model, two were found to remain significant predictors of better physical health for mothers (change from Wave 1 to Wave 3). Combined models show the following types of children's centres or patterns of use predicted improvements in mother's physical health:

- Being registered at a centre with a high health emphasis (reported by managers) predicted mothers moving out of poor health status (OR=0.72,  $p<0.05$ ); and
- Mothers who took their children to organised activities (anywhere) were more likely to move out of poor health status (One Wave: OR=0.65,  $p<0.05$ . 2 Waves: OR=0.44,  $p<0.01$ . 3 Waves: OR=0.50,  $p<0.08$ ).

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<sup>79</sup> The longitudinal measures of service use failed to be significant in combination with other children's centre measures. It seems likely the effects were linked to the higher levels of need of mothers using greater levels of services (picked up by extended health/visitor use in the combined models).

<sup>80</sup> Outreach (2 Waves or more) was also significant in an additional model (ES=0.10,  $P<0.08$ ). It was not included in the final model due to inconsistent effects across Waves (see Technical Appendix 5.2.3 for alternative model). The model shown was considered the best model.

In addition, mothers from families that had received outreach visits over multiple Waves (two or more) were found to be in poorer health (OR=1.39,  $p<0.05$ ). Overall these results reveal that changes in mother's mental and physical health showed significant links with certain features of children centre service use or centre characteristics.

## 6 Impacts upon Family and Parenting Outcomes at child age 3 [Smees]

### Key Findings

The strongest predictors of later family functioning outcomes (*CHAOS*, *Parental Distress* and *Parent-Child Dysfunctional Interaction*), early *Home Learning Environment (HLE)* and *Household Economic Status (HES)* at Wave 3 were the relevant baseline prior ratings on the same measure collected at Wave 1. Once their prior level of family functioning was controlled, a number of statistically significant effects were identified:

- Mothers in poorer physical health, families experiencing high levels of financial disadvantage, out of work households, larger families, and families where the mother had lower qualifications showed poorer family functioning outcomes.
- Families where the ECCE sample child was a girl showed higher early *HLE* scores and lower levels of *Parent-Child Dysfunctional Interaction* when the child was aged 3 years plus.
- Being an 'out of work' household (*HES*) was predicted by Wave 1 baseline measures of higher financial disadvantage, low income, low maternal qualifications and living in more income deprived neighbourhoods. In addition, marital status (single/separated), poor maternal health and higher *Parental Distress* at Wave 1 also predicted *HES* status.
- When aspects of service use, service provision and children's centre characteristics were investigated, multiple impacts were found particularly for *CHAOS* and early *HLE*. As found for other outcomes, families with poorer family functioning had experienced greater contact with health visitors or outreach workers. In addition, use of childcare (long term only) predicted lower scores for the early *HLE* when the child was age 3 years plus, probably due to less time being spent with the child in the home.
- Service use at the registered centre showed evidence of positive effects on family functioning and early *HLE*. No significant effects of children's centre service use or centre characteristics were found for *HES* when the ECCE child was three years plus.
- Families using services at baseline or longer term showed greater gains in *HLE* and decreases in *CHAOS* compared to no use.
- Service use at Wave 1 (heavy use compared to inconsistent use) predicted reductions in *Parent-Child Dysfunctional Interaction*. Using services more intensely (more hours a week) or engaging in organised activities at the registered centre predicted reductions in *Parental Distress*.

- Families registered at centres where the number of named programmes for families had increased showed improvements in *HLE* and reductions in *Parent-Child Dysfunctional Interaction*. Being registered at a children's centre with higher staffing numbers and also degree-level qualified centre leaders predicted improvements in the *HLE*. However, families registered at a centre where the manager had the NPQICL/NPQH qualification showed poorer outcomes for early *HLE*.
- Families registered at centres not experiencing cuts to services (compared with those registered at centres that had experienced cuts to budgets/staffing) showed reductions in scores for *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction* as well as increases in *HLE*.
- In line with findings for child behaviour, families registered at 'standalone' single unit centres showed significant reductions in *Parental Distress*.
- Centres with mixed leadership (multiple organisations) predicted better outcomes for *Parental Distress* and *Parent-Child Dysfunctional Interaction*, and families attending centres with 'moderate' (rather than zero) partner-agency resourcing showed reductions in *Parent-Child Dysfunctional Interaction*.

This section provides a brief overview of the results of analyses used to test the impact of children's centres on five family outcomes: *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, early *Home Learning Environment (HLE)* and *Household Economic Status (HES)*. The models described are the full **Contextualised Value Added models** (CVA) that include prior family and parenting measures (collected as baselines at the start of the study when families were recruited to the evaluation at Wave 1) and other measures of background characteristics that were found to be significant predictors of change in these outcomes from Waves 1 to 3 (see Figure 3.3 in Chapter 3, for a full list of predictors). The effects described are calculated 'net' of the influence of other measures in the models. Additional contextualised models, predicting variation in these five outcomes as measured at Wave 3, rather than modelling change in outcomes over time were also produced. These do not take into account prior levels of family functioning or HES. Full details of these models are presented in Technical Appendix 6.1.1.

## 6.1 Identifying the effects of background characteristics: the contextual models

All of the multilevel models used to study the effects of children's centres on family and parenting outcomes, control for relevant child, parent, family and neighbourhood measures identified as significant (see Chapter 3). These control models are similar to those developed to study child and mother outcomes, and are used to contextualise the various outcomes studied in the impact analyses. They are necessary to identify and take account of effects on outcomes that can be attributed to differences in the characteristics of the users registered at the different children's centres in the Strand 4 sample.

### 6.1.1 Family functioning: CHAOS, Parental Distress and Parent-Child Dysfunctional Interaction

Self-reported data was collected on three aspects of family functioning when the ECCE children were aged three plus: *CHAOS*, *Parental Distress* and *Parent-Child Dysfunctional Interaction*. As would be expected, the strongest predictor of scores for these outcomes measured in Wave 3 was the prior baseline ratings on the same measure in Wave 1. In the CVA models of change, a number of child, mother, family and neighbourhood background characteristics were also found to be significant predictors of poorer family functioning across all three measures<sup>81</sup>:

- Households where the mother was in poorer health (compared to healthy mothers);
- Families where the ECCE child had health issues (health problems or injuries) or developmental issues (compared to healthy children).

Additionally, other background characteristics were found to be outcome-specific predictors of family functioning:

- Families experiencing high levels of financial disadvantage (compared to the low disadvantage group) had higher *Parental Distress* and *CHAOS* scores;
- Families where the child in the ECCE survey was a girl, reported lower *Parent-Child Dysfunctional-Interaction* scores;
- Families where the mother had lower qualifications displayed greater *Parent-Child Dysfunctional Interaction* behaviours and higher scores for *CHAOS* (compared to mothers with degrees or higher qualifications);
- Families where the mother was older (compared to younger mothers) had increased scores for *Parental Distress*;
- Mother's ethnicity showed only weak associations with *Parent-Child Dysfunctional Interaction* and *Parental Distress* scores, but a number of ethnic groups (Indian, Pakistani, Black Caribbean, Black African, Other) reported lower levels of *CHAOS* than the White British ethnic heritage group, as did those speaking a language other than English at home;
- Households where no one had ever worked (compared with the highest SES group) had higher *Parent-Child Dysfunctional Interaction* and *Parental Distress* scores;

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<sup>81</sup> Poorer outcomes are reflected in higher levels of *CHAOS* in the home, greater *Parental Distress* and more *Dysfunctional Parent-Child Interaction*. The models reported are CVA models, accounting for prior family functioning and other contextualising background variables (child, mother, family and neighbourhood).

- Larger families showed raised scores for *CHAOS* but lower levels of *Parental Distress*;
- Families with higher very early *Home Learning Environment (HLE)* scores at Wave 1 reported lower levels of *CHAOS*;
- Higher earlier *CHAOS* scores predicted greater *Parent-Child Dysfunctional Interaction*;
- Higher earlier *Parental Distress* scores predicted greater *Parent-Child Dysfunctional Interaction* at Wave 3.

The relative influence of background characteristics is measured in terms of Effect Size (see Glossary), and presented in Figures 6.1-6.4. Looking at Figure 6.1, earlier levels of prior *CHAOS* measured at baseline Wave 1 (ES=0.97) showed the greatest association with later *CHAOS* levels. Other more modest influences are *ethnic heritage* (ranging ES-0.28 to -0.36) and *language spoken in the home*, with non-English speaking households and ethnic minority groups reporting lower levels of *CHAOS* (ES=-0.19). Weak effects were found (predicting higher levels of *CHAOS*) for a number of other household stressors including a child with more severe health problems/birth disadvantage (ES=0.13), mother's poor lifestyle (ES=0.16), financial disadvantage (ES=0.15 for high versus low disadvantage), and having a large family (1-2 siblings: ES=0.13. 3+ siblings: ES=0.12, ns). A weaker, but still statistically significant association was found between lower levels of *CHAOS* and a better *Home Learning Environment* in Wave 1 (ES=-0.09).

Somewhat weaker background influences were found for *Parental Distress* behaviours once the strong effect of prior *Parental Distress* had been taken into account (ES=1.13, see Figure 6.2). Nevertheless, mothers' health at Wave 1 (Lifestyle: ES=0.22. Illness/disability: ES=0.22) and age (Older mothers: ES=0.19) remained significant predictors of greater *Parental Distress*. Financial disadvantage (High versus low: ES=0.16. Medium versus low disadvantage: ES= 0.12) and very low *SES* (Never worked versus professional: ES=0.27) were also significant predictors of *Parental Distress*. Larger families showed relatively less *Parental Distress*, once other factors had been taken into account, as did mothers in self-employed households.

Lastly, effect sizes for *Parent-Child Dysfunctional Interaction* are shown in Figure 6.3. Previous ratings of *Parent-Child Dysfunctional Interaction* were strongly predictive of later scores (ES=0.73) in the CVA model. This is followed by moderate effects for Black African heritage mothers (ES=0.38) and *SES* (Families where no one has ever worked: ES=0.36); both showing significantly higher scores for *Parent-Child Dysfunctional Interaction*. A small but significant gender difference was also noted. Families where the ECCE child was a girl, reported lower levels of *Parent-Child Dysfunctional Interaction* (ES-0.13).

Figure 6.1 Influences on CHAOS (CVA)

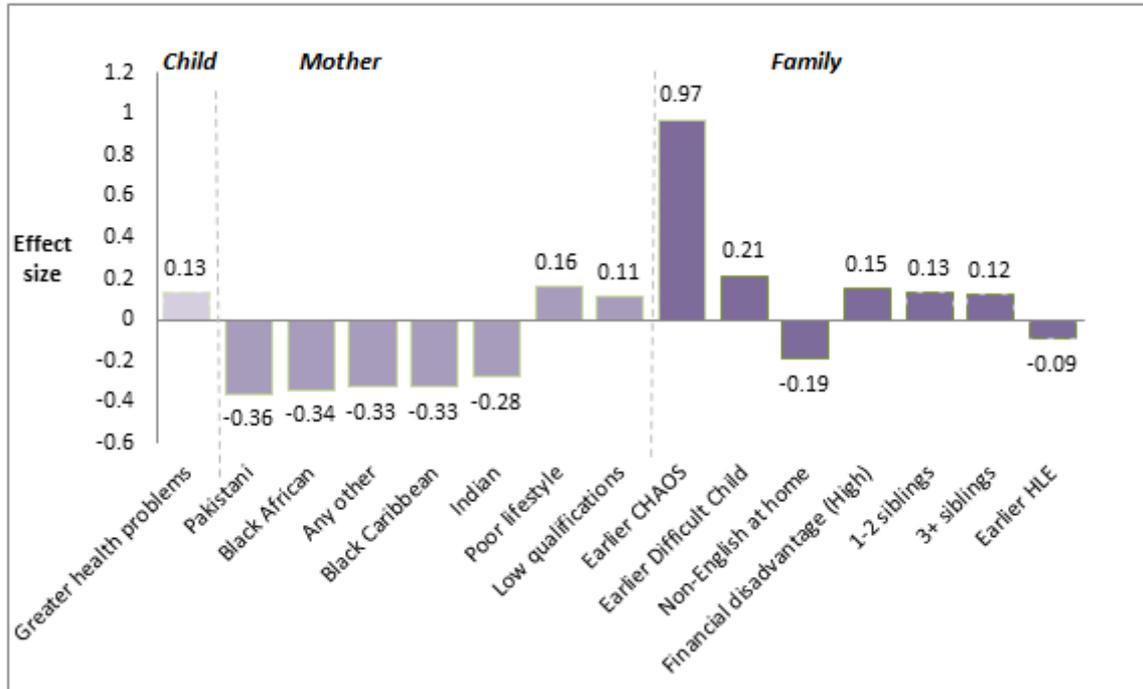


Figure 6.2 Influences on Parental Distress (CVA)

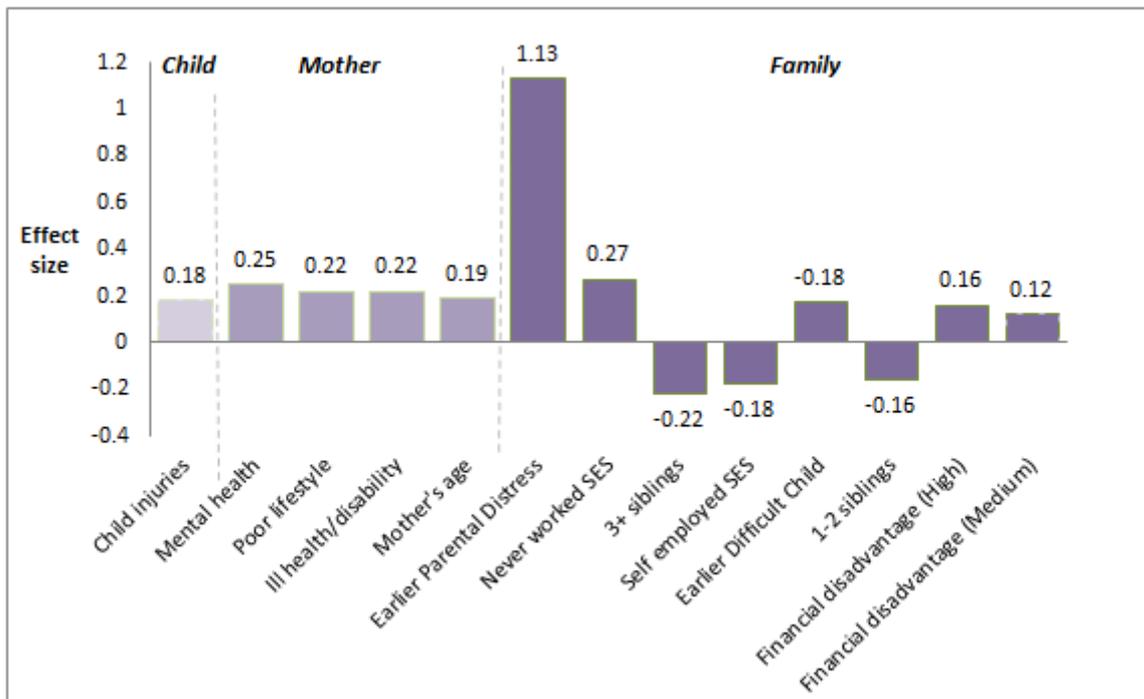
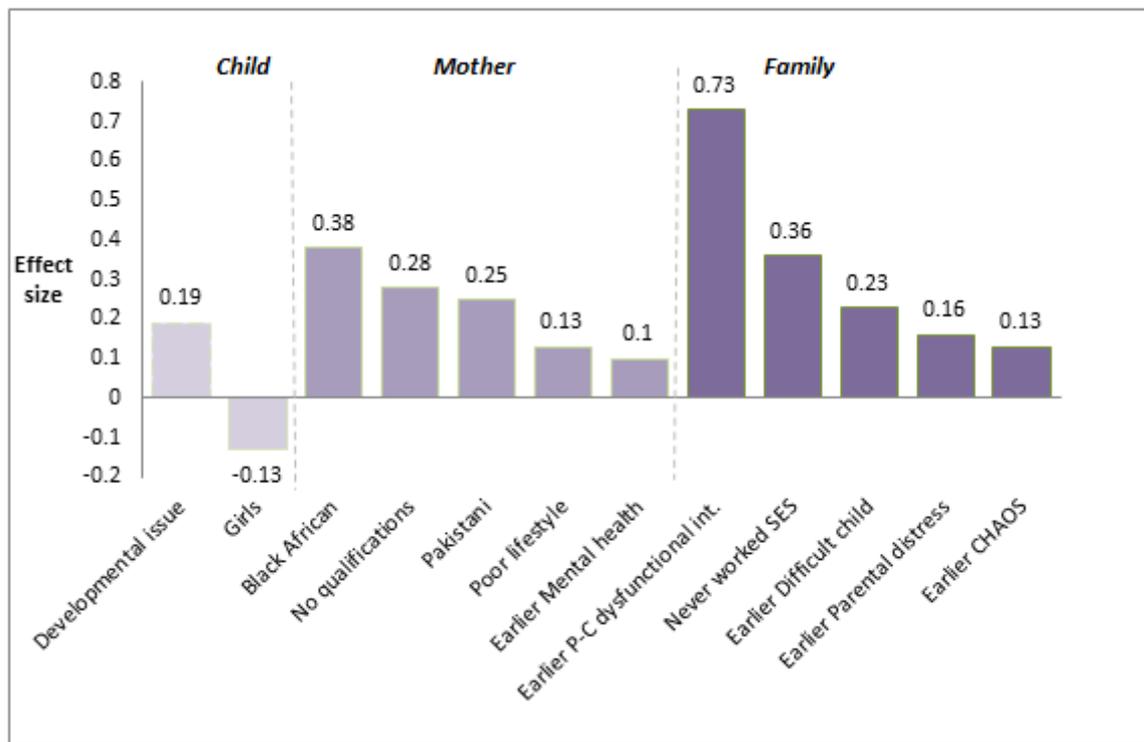


Figure 6.3 Influences on Parent-Child Dysfunctional Interaction (CVA)



### 6.1.2 Home Learning Environment

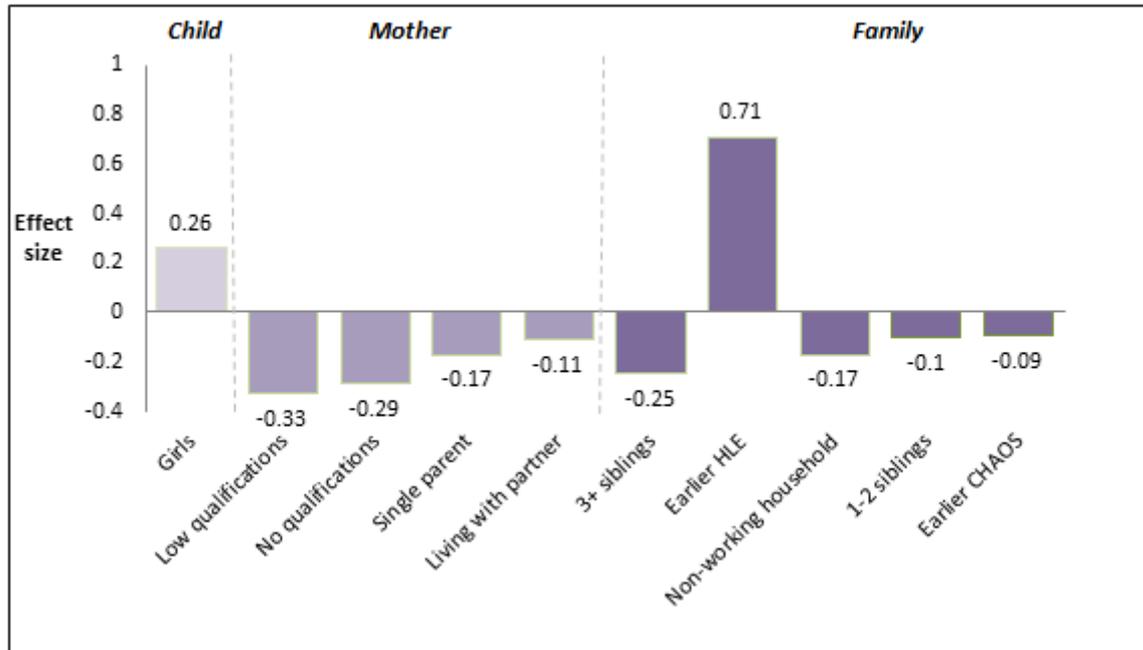
In line with the CVA models of other family functioning measures, the early *Home Learning Environment (HLE)* when the ECCE child was aged three plus, was strongly predicted by very early *HLE* scores during the infant period (ES=0.71). In addition, the following child, mother, family and neighbourhood characteristics also predicted early *HLE* at age 3:

- Households with a female ECCE child (compared to boys) showed higher scores for early *HLE*;
- Households where the mother had little or no qualifications had lower scores for early *HLE*;
- Households with more children in the house showed lower scores for early *HLE*;
- Households where the mother was a single parent or living with a partner (compared to married) showed lower scores for early *HLE*;
- Workless households showed lower scores for early *HLE*;
- Households with higher reported *CHAOS* at Wave 1 showed lower scores for early *HLE* at age 3.

Most of the effect sizes for the early *HLE* were modest or small, once the effects of the very early *HLE* scores had been accounted for (see Figure 6.4). Mother's *qualifications* showed a small but significant influence on early *HLE* (None: ES=-0.29. Low: ES=-0.33)

as did *family size* (3+ siblings: ES=-0.25. 1-2 siblings: ES=-0.10, compared with only child). Smaller but negative effects were also found for *living arrangements* (Single parent: ES=-0.17. Living with partner: ES=-0.11, compared with the married group), *Household Economic Status* (Workless household: ES=-0.17 versus working household) and higher family *CHAOS* in Wave 1 (ES=-0.09).

**Figure 6.4 Influences on early Home Learning Environment (HLE) at age 3**



### 6.1.3 Household Economic Status

Table 6.1 shows the odds of being in a workless household at Wave 3 for different groups of respondents. The outcome is a nominal measure of a working versus not working household, based on interview reports at Wave 3. Prior *Household Economic Status (HES)* was the biggest predictor of *HES* in Wave 3. In addition, earlier *financial disadvantage* and *low income* also predicted workless status. Other strong predictors are mother's qualifications (None OR= 3.06. Low OR=1.63), marital status (Single OR=2.23. Separated OR=2.32) and the mother being in ill-health (OR=2.08). Families living in the most deprived neighbourhoods (IDACI) were approximately two and a half times as likely to be workless than those in the least deprived neighbourhoods (OR=2.69). Only one non-demographic measure predicted out of work status: prior *Parental Distress* at Wave 1 (OR=1.03).

**Table 6.1 Predicting Household Economic Status (CVA)**

Characteristics	Predictors	Odds Ratio	Sig
Mother's qualifications	None	3.06	***
	Low	1.63	#
Mother's living arrangements	Single parent	2.23	**
	Separated/widowed/divorced	2.32	**
Mother's health	Long term illness/disability	2.08	**
Mother's age	At Wave 1 interview <sup>a</sup>	0.97	#
Household economic status	Not working household in Wave 1	7.17	***
Family size	1-2	1.41	#
Household income	Less than 10k	2.64	*
	£10-19.99k	2.67	*
Financial disadvantage	High	2.85	*
Family functioning	Parental Distress <sup>a</sup>	1.03	*
Neighbourhood deprivation	IDACI <sup>a</sup>	2.69	*

a For Mother's age, *Parental Distress* and IDACI neighbourhood deprivation the Odds Ratio is for each unit difference on the measurement scale. For example, the Odds Ratio for IDACI represents the odds of being in a workless household comparing those with a zero IDACI score (no deprivation) to a score of 1 (maximum deprivation).

Significance values: # p<0.08, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Full CVA models are shown in Technical Appendix 6.1. The **Contextualised** and the **Contextualised Value Added** models allow the impact of children's centres to be assessed on both outcomes (Contextualised models) and change in outcomes from Wave 1 to Wave 3 (CVA models).

## 6.2 Identifying the effects of children's centres on parenting/family outcomes

The previous subsection identified significant child, mother, family and neighbourhood characteristics that were important in predicting changes in family functioning and work status (*CHAOS*, early *HLE*, *Parental Distress*, *Parent-Child Dysfunctional Interaction* and *HES*). There was consistent evidence that specific background characteristics help to shape these outcomes, making it vital that robust control models were created before modelling the potential impact of children's centres.

Section 6.2 presents the results from the CVA models that assess the effects of different aspects of children's centres (measures described in Section 3.2.4 and fully in Technical Appendix 3), controlling for other significant factors that predict outcomes. It should be noted that this subsection analyses the impact of various measures of children's centres on change in family functioning and work status. Additional complementary analyses that show impact on outcomes were carried out using just the contextualised control models (see Technical Appendix 6).

## 6.2.1 Effects of service use on family and parenting/family outcomes

Service use was investigated in three main ways:

1. Any use of children’s centre services or children’s centres; versus no use of centre services or children’s centres;
2. Duration of use;
3. Patterns of service use.

### Any use of children’s centre services or children’s centres

This included three different indicators of children’s centre use. The first two measure use specifically at the registered children’s centre: whether the family used the centre *at all* (services or anything else, e.g. outreach, information) versus not; and whether the family used any specific named children’s centre *services* versus none used). The third measure examined use of named services at *any* children’s centre, not just the registered centre.

Table 6.2 Simple measures of service use (CVA): family/parenting outcomes

Use of...	CHAOS		Parental distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(estimates versus “used nothing”)</i>										
<b>Registered children’s centre</b> for anything	-0.20	**	-0.04	ns	-0.08	ns	0.06	ns	1.57	ns
<b>Registered children’s centre</b> for services only	-0.12	#	-0.05	ns	-0.01	ns	0.11	#	1.07	ns
<b>Use of any children’s centre</b> for services only	-0.15	ns	0.11	ns	0.13	ns	0.12	ns	1.43	ns

Significant: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

Attending the registered children’s centre for *anything* predicted significant but small reductions in *CHAOS* (ES=-0.20, p<0.01), as did accessing any *services* at their registered centre (ES=-0.12, p<0.08) or any *services at any* children’s centre (ES=-0.15, p>0.08<sup>82</sup>). There was evidence that attending services at the registered children’s centre also improved the *Home Learning Environment*, although again the effects - though significant - were weak (ES=0.11, p<0.08). Table 6.2 presents the effect sizes for the three measures for all five family outcomes.

<sup>82</sup> This effect size was not significant at the p<0.08 level. It is likely that it failed to reach significance because of the relatively small sample size (less than 100), which formed the comparison group.

## Duration of use

Duration of use (at the registered centre only) was measured in two different ways:

1. Longitudinally: whether the family stopped using the registered centre after Wave 1 (child aged 9-18 months old); after Wave 2; or used the centre across all three Waves;
2. As continuous measures of duration used in i) months, ii) total hours, and iii) intensity (amount of hours services used per month)<sup>83</sup>.

Long term use of the registered children's centre (consistent users across all three Waves of data collection) showed benefits for the *Home Learning Environment*, when compared to families that did not use their registered centre (ES=0.15, p<0.05). Use of the registered children's centre was also predictive of reductions in *CHAOS* compared with no use (Families who stopped using the centre at Wave 1: ES=-0.24, p<0.001, Stoppers after Wave 2: ES=-0.19, p<0.05 versus no use). However, these measures of specific patterns of use were not predictive of *Parental Distress*, *Parent-Child Dysfunctional Interaction* or change in HES status, as demonstrated in Table 6.3.

**Table 6.3 Patterns of service use at the registered children's centre (duration of use over time) (CVA): family/parenting outcomes**

Measures of Duration	CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Categorical</b> (all estimates versus "no use")										
<b>Stoppers after Wave 1</b>	-0.24	***	-0.01	ns	-0.07	ns	0.04	ns	1.29	ns
<b>Stoppers after Wave 2</b>	-0.19	*	-0.02	ns	0.00	ns	0.05	ns	1.05	ns
<b>Consistent users</b>	-0.08	ns	0.05	ns	0.06	ns	0.15	*	1.35	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08. Not significant: ns

When usage measures were tested individually rather than as a group, the measure of intensity of use was found to predict reductions in *Parental Distress* although the effect was weak (ES=-0.09, p<0.05). In addition, duration (amount of total hours) and period of use (number of months) predicted small but significant gains in the *Home Learning Environment* (Duration: ES=0.12. Period: ES=0.10). See Technical Appendix 6 for related tables.

## Pattern of service use at baseline

There was some evidence that heavy use of services at baseline (collected when the ECCE child was approximately 9-18 months old, specifically parent-child services) predicted reductions in *Parent-Child Dysfunctional Interaction* (ES=-0.09, p<0.08), although the size of the effect was weak.

<sup>83</sup> Based on the duration of use of top 5 services.

## Pattern of service and centre use over time

Long term use of the registered children’s centre predicted some improvements in the *Home Learning Environment* when compared to families that were less consistent in their patterns of use (ES=0.22,  $p<0.001$ ). Longer term users of services at other centres also showed a weaker but still positive effect for early *HLE* (ES=0.10,  $p<0.05$ ). Vulnerable families were more likely to use the registered children’s centre longer term<sup>84</sup>, which might explain the rather counterintuitive finding on increases in *CHAOS* that verge on statistical significance (ES=0.10,  $p<0.08$ ). Given their higher use by vulnerable families, this result may be interpreted as a potential indicator of success in reaching more high risk families (in terms of their longer term use of services). Long term use of the registered children’s centre was not predictive for any of the other family outcomes (see Table 6.4).

**Table 6.4 Patterns of service use anywhere (duration of use over time) (CVA): family/parenting outcomes**

Use of services at any children’s centre over time	CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(all estimates vs “no consistent pattern”)</i>										
<b>Long-term users of registered children’s centre</b>	0.10	#	0.05	ns	0.05	ns	0.22	***	1.40	ns
<b>Long-term users of other children’s centre</b>	0.04	ns	0.03	ns	0.06	ns	0.10	*	1.17	ns

Significance: \*\*\*  $p<0.001$ ; \*\*  $p<0.01$ ; \* $p<0.05$ ; # $p<0.08$ . Not significant: ns

Compared to families that used no services at the registered children’s centre, families that used limited services (specifically health at baseline) showed greater reductions in *CHAOS* (ES=-0.15,  $p<0.05$ ). In addition, families using a wider variety of services over time had greater gains in their *Home Learning Environment* (Persisting broad: ES=0.22,  $p<0.01$ ), as shown in Table 6.5.

Use of specific service groups (health, parent-child, family, employment/education), when analysed in terms of any use versus none, did not predict most family outcomes. However, there was one exception because some use of family/parenting services at the registered children’s centre predicted greater gains in home learning, although the effect was weak (ES=0.10,  $p<0.08$ ), compared with none.

<sup>84</sup> In total, 30% of long-term users of registered children’s centres received outreach at multiple time points (two Waves or more) compared to 10% of long-term users of other children’s centres, and 16% of inconsistent users.

**Table 6.5 Patterns of service use at the registered children’s centre (types of services used over time) (CVA): family/parenting outcomes**

Use of services at registered children's centre over time	CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(all estimates versus "no use")</i>										
<b>Early focused use, limited users</b>	-0.15	*	-0.07	ns	-0.04	ns	0.06	ns	1.04	ns
<b>Persisting broad</b>	-0.06	ns	-0.02	ns	0.04	ns	0.22	**	1.19	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

### Use of popular services at the registered CC

Higher levels of Stay and Play at the registered children’s centre predicted greater gains in early *HLE* (Stay and Play: ES=0.15, p<0.05 for those using at all 3 Waves rather than none). In addition greater use of organised activities (used across 2-3 Waves of data collection rather than none) also predicted gains in early *HLE* (ES=0.25, p<0.01). Greater use of organised activities also predicted reductions in *Parental Distress*, though the effect only verges on statistical significance (2-3 Waves: ES=-0.17 versus none, p<0.08). See Technical Appendix 6.2 for details.

### Formal use of childcare

Long term use of formal childcare (typically not provided at a children’s centre for this sample of users) was associated with significant reductions in early *HLE* scores (ES=-0.20, p<0.01), but not to other family outcomes. This effect is fairly small but it seems likely that parents using childcare in the longer term may have less time available to spend on home learning activities with their young children (see Table 6.6)<sup>85</sup>. As childcare showed a significant effect, the Strand 4 impact models control for childcare use in further analyses of the combined effects of different measures of children’s centres in predicting outcomes.

**Table 6.6 Patterns of childcare use anywhere (formal childcare over time) (CVA): family/parenting outcomes**

Patterns of childcare use anywhere	CHAOS		Parental distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>Comparison group=No use of childcare</i>										
<b>Intermittent use</b>	0.02	ns	-0.05	ns	0.01	ns	0.01	ns	1.08	ns
<b>Long-term use</b>	-0.06	ns	-0.09	ns	0.00	ns	-0.20	**	0.85	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

<sup>85</sup> Similar effects were found for childcare when modelled as continuous measures (typical hours per week at Waves 1, 2 and 3, and overall). See Technical Appendix 6.2.1 for more details.

## 6.2.2 Effects of centre characteristics and processes on family and parenting outcomes

Families registered with a children’s centre that had increased the number of named programmes for families on offer (2012-2013) showed decreases in *CHAOS* (ES=-0.15,  $p<0.05$ ), decreases in *Parent-Child Dysfunctional Interaction* (ES=-0.12,  $p<0.08$ ) and an increase in *HLE* (ES=0.23,  $p<0.01$ )<sup>86</sup>. In addition, families attending ‘supported growth’ centres (those centres not affected by cuts to services or staffing, that were expanding their services) showed greater reductions in *CHAOS* (ES=-0.17,  $p<0.01$ ), *Parental Distress* (ES=-0.17,  $p<0.01$ ) and *Parent-Child Dysfunctional Interaction* (ES=-0.20,  $p<0.01$ ) than those families that were registered at centres that had experienced cuts, (see Table 6.7).

Table 6.7 Provision of services by registered children’s centre (CVA): family/parenting outcomes

Services		CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
		ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
Named programmes for families <sup>87</sup>	In 2012	-0.09	ns	-0.01	ns	-0.10	ns	0.12	ns	0.99	ns
	Increase in 2013	-0.15	*	-0.04	ns	-0.12	*	0.23	**	0.96	ns
Service growth	Supported growth	-0.17	**	-0.17	**	-0.20	**	0.10	ns	1.33	ns
	Stasis (with stable funding and services)	-0.01	ns	-0.13	ns	-0.04	ns	0.13	ns	1.12	ns

Significance: \*\*\*  $p<0.001$ ; \*\*  $p<0.01$ ; \* $p<0.05$ ; # $p<0.08$ ; Not significant: ns

Leadership of children’s centres showed few associations with change in family outcomes. However, those families registered at a centre with mixed leadership (multiple organisations), and also those at centres with moderate amounts of partner-agency resourcing (compared with no partner agency resourcing) showed better outcomes. There were reductions in *Parental Distress* and *Parent-Child Dysfunctional Interaction* for families attending centres where the partner-agency resourcing was moderate (*Parental Distress* ES-0.14,  $p<0.05$ ; *Parent-Child Dysfunctional Interaction* ES-0.16); and for families attending centres that had mixed leadership (*Parental Distress* ES-0.18,  $p<0.05$ ; *Parent-Child Dysfunctional Interaction* ES-0.16,  $p<0.05$ ). See Table 6.8. Better leadership, measured via the *CCLMRS* scale was also predictive of reductions in *Parent-Child Dysfunctional Interaction* (ES=-0.10,  $p<0.05$ ), although the effect was weak. Taken together these findings suggest that centres that have certain characteristics (better

<sup>86</sup> In addition, those registered at a centre that offered a greater number of total services showed reductions in *Parent-Child Dysfunctional Interaction* (ES=-0.09,  $p<0.08$ ), and families attending centres where there was greater provision for personal needs showed reductions in *CHAOS* (ES=-0.12,  $p<0.05$ ).

<sup>87</sup> N.B. These were referred to as evidence-based programmes within the first Strand 1 survey of managers in 2011.

leadership, growth rather than cuts in funding and services, and increases in the number of named programmes for families) differ in their ability to promote positive effects on family outcomes.

Leadership qualifications showed few associations with change in family outcomes, although families using centres where the manager was more highly qualified (holding a degree or higher) showed greater reductions in *CHAOS* than other families. In contrast, families using centres where the manager held an NPQICL qualification made less gains in their early *HLE* than other families (ES=-0.15, p<0.05).

**Table 6.8 Patterns of resourcing at the registered children’s centre (CVA): family/parenting outcomes**

Predictors		CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
		ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<b>Partner-agency</b> <i>Comparison group= No partner-agency resourcing</i>	Moderate	-0.09	ns	-0.14	*	-0.16	*	-0.09	ns	0.87	ns
	High	0.02	ns	-0.04	ns	0.04	ns	-0.01	ns	0.98	ns
<b>Leadership</b> <i>Comparison group= LA only</i>	Mixed	-0.10	ns	-0.18	*	-0.16	*	0.05	ns	1.40	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

### Vulnerable families

Outreach visits provide important identifiers of vulnerable families. Children’s centres have been strongly encouraged to use outreach to target the neediest families. Families that received an outreach visit at all three Waves showed significant increases in family *CHAOS* (ES=0.31, p<0.01), *Parental Distress* (ES=0.35, p<0.01) and *Parent-Child Dysfunctional Interaction* (ES=0.21, p<0.08) from Wave 1 to Wave 3 (see Table 6.9). They were also more likely to have shown poorer family functioning at Wave 1 than other families<sup>88</sup>. Similarly, long-term contact with health visitors (across all 3 Waves, anywhere) predicted increases in *CHAOS* (ES=0.16, p<0.08) and *Parental Distress* (ES=0.25, p<0.01) but improvements in early *HLE* (ES=0.15, p<0.08). Heavy contact with health

<sup>88</sup> *Home Learning Environment*: Mean and SD for those not receiving any outreach (Mean=0.21, SD=0.88, n=1,394), compared to Mean and SD for those receiving outreach at all 3 Waves (Mean=-0.33, SD=1.10, n=85);

*CHAOS*: Mean and SD for those not receiving any outreach (Mean=7.92, SD=2.20, 1,397), compared to Mean and SD for those receiving outreach at all 3 Waves (Mean=-8.99, SD=2.56, n=85);

*Parental Distress*: Mean and SD for those not receiving any outreach (Mean=25.50, SD=7.64, 1,357), compared to Mean and SD for those receiving outreach at all 3 Waves (Mean=-28.90, SD=9.12, n=84);

*Parent-Child Dysfunctional interaction*: Mean and SD for those not receiving any outreach (Mean=17.42, SD=5.61, 1,363), compared to Mean and SD for those receiving outreach at all 3 Waves (Mean=19.60, SD=7.18, n=83);

*Difficult Child*: Mean and SD for those not receiving any outreach (Mean=21.64, SD=6.33, 1,351), compared to Mean and SD for those receiving outreach at all 3 Waves (Mean=24.55, SD=7.89, n=84).

visitors (up to 3 Waves) suggests that this small group of vulnerable families (less than 100 overall) were being especially targeted for these additional services due to their higher need.

**Table 6.9 Services for vulnerable families (CVA): family/parenting outcomes**

Services for vulnerable families	CHAOS		Parental Distress		Parent-Child Dysfunctional Interaction		Early HLE		HES	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig	OR	Sig
<i>(estimates versus "never")</i>										
<b>Health visitor: use of service anywhere</b> <i>Comparison group= No use of service</i>	--	--	--	--	--	--	--	--	--	--
One Wave	-0.07	ns	0.13	#	0.07	ns	0.12	ns	1.25	ns
Two Waves	0.01	ns	0.13	ns	0.06	ns	0.11	ns	1.42	ns
Three Waves	0.16	#	0.25	**	0.13	ns	0.15	#	1.46	ns
<b>Outreach amount over time at registered centres</b> <i>(Estimates versus "None")</i>	--	--	--	--	--	--	--	--	--	--
One Wave	0.02	ns	0.02	ns	0.01	ns	0.08	ns	1.23	ns
Three Waves	0.31	**	0.35	***	0.21	#	0.08	ns	1.59	ns

Significance: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; #p<0.08; Not significant: ns

There was some evidence to suggest that vulnerable families may also be accessing Stay and Play more generally (anywhere) than other families. Longer term use of Stay and Play anywhere was associated with increases in *Parental Distress* and *Parent-Child Dysfunctional Interaction* (e.g. using Stay and Play over the 3 Waves of data collection predicted increased *Parental Distress*: ES=0.15, p<0.05, and *Parent Child Dysfunctional interaction*: ES=0.15, p<0.05). Technical Appendix 6.2.1 summarises details of the findings on individual service use. Again the results show that patterns of service use are likely to be shaped by family needs and characteristics. Those with greater needs in our sample of users seem to be more likely to use services in the longer term. This topic will be further discussed in the Conclusions.

### 6.2.3 Summary of combined family and parenting outcome models

The relationship between the different measures of service use, provision and centre characteristics is complex. To get a clearer view of the strongest associations between measures and changes in family and parenting outcomes, the measures found to be significant individually were then tested in combination. Any non-significant measures that no longer showed significant effects in the combined models were then removed from the analyses. The findings presented here represent the net effects for children's centre measures (within the CVA model that accounted for baseline functioning/HES and background) summarised for each outcome. Full models can be found in Technical Appendix 6.2.3.

## CHAOS

Combined models show that certain patterns of service use, and being registered at children's centres with certain characteristics also predicted reductions in family *CHAOS*:

- Families using services (at the registered children's centre) early on when their child was an infant (those who stopped using the service at Wave 1:  $ES=-0.24$ ,  $p<0.01$ ), and up to toddler age (Stoppers at Wave 2:  $ES=-0.20$ ,  $p<0.05$ ) and consistent users ( $ES=-0.14$ ,  $p<0.08$ )<sup>89</sup>;
- Centres that were not experiencing cuts to services; specifically, those centres that were expanding services ( $ES=-0.19$ ,  $p<0.05$ ) versus those that had received cuts;
- Hub-and-spoke centres (at baseline) compared with one centre standalone centres ( $ES=-0.31$ ,  $p<0.01$ )<sup>90</sup>.

Vulnerable families receiving outreach and health visitor targeted services also showed relative increases in *CHAOS* compared with other families across this time period (Prolonged outreach:  $ES=0.23$ ,  $p<0.05$ . Extended health visitor involvement:  $ES=0.15$ ,  $p<0.01$ ). See Technical Appendix 6.2.3 for further details.

## Home Learning Environment

Combined models show the following children's centres experiences predicted better outcomes for early *HLE*:

- Families using children's centre services for longer periods of time (particularly at the registered children's centre) showed greater gains in *HLE* than inconsistent users (Long term use of the registered children's centre:  $ES=0.19$ ,  $p<0.001$ . Long term use of other children's centre:  $ES=0.11$ ,  $p<0.05$ )<sup>91</sup>;
- Families attending a centre where the manager held a degree ( $ES=0.17$ ,  $p<0.05$ );

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<sup>89</sup> Duration and patterns of service use were measured in a number of ways but due to co-linearity could not be modelled together. Three other service duration/use variables were found to be significant when tested with other none service/centre use variables for the *CHAOS* outcome. 1) Use of the registered centre for anything was associated with reductions in *CHAOS* ( $ES=-0.24$ ,  $p<0.01$ ); 2) Services at the registered centre ( $ES=-0.15$ ,  $p<0.01$ ); 3) Early focused or broad persisting use of the registered centre predicted reductions in *CHAOS* (Focused  $ES=-0.17$ ,  $p<0.05$ ).

<sup>90</sup> Qualitative fieldwork in Strand 3 suggested that hub-and-spoke centres *at baseline* may have been set up that way originally and therefore can be substantively different from centres which became hub-and-spokes during the ECCE evaluation period. The reasons for this restructuring are explored in the Strand 3 reports (Goff et al., 2013; Sylva et al., 2015).

<sup>91</sup> Five other service duration/use variables were found to be significant when tested with other none service/centre use variables: 1) patterns of service use at the registered centre over time (Broad persisting use:  $ES=0.19$ ,  $p<0.01$ , compared to no use); 2) Use of Family/parenting services:  $ES=0.10$ ,  $p<0.08$ ); 3) Use of individual services (Stay and Play) anywhere predicted increases in *HLE* (3 Waves:  $ES=0.14$ ,  $p<0.05$ ); 4) Use of organised activities at the named children's centre (1 Wave:  $0.11$ ,  $p<0.05$ . 2-3 Waves:  $ES=0.18$ ,  $p<0.01$ ); 5) Use of organised activities at the named children's centre (1 Wave:  $0.12$ ,  $p<0.05$ ); Duration in Waves of using services at the registered centre for anything (Stoppers after Wave 1, stoppers after Wave 2, consistent use) was no longer significant when tested in combination with other children's centre concepts. See Technical Appendix 6.2.3 for more details.

- Families attending centres where the number of named programmes for families increased between 2012 and 2013 (ES=0.22,  $p<0.01$ );
- Families attending centres with more staff (ES=0.12,  $p<0.05$ );
- Centres that were not experiencing cuts to services (Stasis, with stable funding and services: ES=0.22,  $p<0.05$ ).

In addition, although intermittent use of childcare was not associated with any changes in *HLE*, long term use (at quite a high level) predicted poorer outcomes in the CVA change model compared with no use of childcare (ES=-0.18,  $p<0.001$ )<sup>92</sup>.

Families attending a centre where the manager had an NPQICL showed less gains in *HLE* than those from centres where the manager did not hold an NPQICL qualification (ES=-0.20,  $p<0.05$ ). It is possible that this may reflect a difference in service emphasis or manager characteristics (e.g. those without an NPQICL qualification may be more likely to come from the education sector). This would require further exploration. Technical Appendix 6 displays the full details.

### Parental Distress

The combined models identified the following features of children's centre service use and characteristics which predicted reductions in *Parental Distress* (see Technical Appendix 6):

- Intensity of service use (hours per month at the registered children's centre) predicted reductions in *Parental Distress* but the effect was small (ES=-0.08,  $p<0.08$ );
- Families using organised activities over multiple Waves had lower levels of *Parental Distress* (two or more Waves compared to none: ES=-0.19,  $p<0.08$ );
- Centres with 'mixed leadership' (ES=-0.15,  $p<0.08$ ), and where there was some partner-agency resourcing also predicted better outcomes in terms of reduced *Parental Distress* (ES=-0.16,  $p<0.05$ );
- Centres that were not experiencing cuts to services. In particular, those centres that were expanding services (ES=-0.16,  $p<0.05$ ) compared with those making cuts.
- One centre units were associated with greater reductions in *Parental Distress* than hub-and-spoke centres and the effect was moderate (ES=-0.35,  $p<0.01$ ).

Vulnerable families receiving outreach and health visitor targeted services also showed relative increases in *Parental Distress* compared with other families across this time

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<sup>92</sup> Total childcare (typical hours per week across three Waves) was also significant (ES=-0.22,  $p<0.001$ ) when tested in an alternative model. For consistency with other outcomes the childcare cluster was used.

period (Prolonged outreach:  $ES=0.35$ ,  $p<0.01$ . Extended health visitor involvement:  $ES=0.15$ ,  $p<0.05$ ).

### **Parent-Child Dysfunctional Interaction**

Combined models show the following features of service use and centre characteristics predict reductions in *Parent-Child Dysfunctional Interaction* (see Technical Appendix 6):

- Families using services (anywhere) heavily at Wave 1 ( $ES=-0.10$ ,  $p<0.05$ );
- Families attending centres with a higher number of named programmes ( $ES=-0.12$ ,  $p<0.08$ ) and where the number of named programmes for parents and children had increased ( $ES=-0.18$ ,  $p<0.01$ );
- Families attending centres with moderate (compared to zero) partner-agency resourcing ( $ES=-0.14$ ,  $p<0.05$ ), and those with mixed leadership ( $ES=-0.15$ ,  $p<0.05$ );
- Centres that were expanding services ( $ES=-0.12$ ,  $p<0.05$ ) compared with centres that had to make cuts.

Vulnerable families receiving outreach also showed relative increases in *Parent-Child Dysfunctional Interaction* compared with other families across this time period (Prolonged outreach:  $ES=0.20$ ,  $p<0.10$ ).

Overall the combined models confirm that a number of features of service use and characteristics of children's centres continue to predict change in parent and family functioning for the Impact sample. Taken together the results suggest that children's centres can promote better outcomes (in terms of reductions in negative outcomes and promotion of the *HLE* in the early years). The findings show similar patterns to those found for mother outcomes.

## 7 Improving outcomes and meeting the needs of the most disadvantaged families [*Smees and Sammons*]

### Key Findings

Further analyses examined the effects of engagement with children's centres on outcomes for different groups of users according to the level of disadvantage of families (high, medium or low) because high levels of financial disadvantage were found to be a very strong predictor of poor outcomes for children, mothers and families.

- Families experiencing high levels of financial disadvantage had significantly poorer family functioning, poorer health, and experienced a greater number of stressful life events at both Waves 1 and 3 than less disadvantaged families. Lone parent status in the early years of the ECCE child's life was much more prevalent in disadvantaged families (at Wave 1, 53% of high disadvantaged families were lone parents, compared with just 1% of low disadvantage and 11% of medium disadvantage families).
- Children from families experiencing high levels of financial disadvantage already showed poorer levels of development at aged 9-18 months than their more affluent peers, and also showed poorer health, cognitive and behavioural development at age 3.
- There was no difference by financial disadvantage in terms of whether families had ever used a service, used Stay and Play, or used health visitor/midwife services at the registered children's centre.
- In contrast, there were differences between financially disadvantaged families and other families in certain patterns of service use:
  1. High disadvantage families were more likely to use the registered children's centre long term (5 months longer than low disadvantage families), and for more hours in total (38 hours more than low disadvantage families);
  2. High disadvantage families were more likely to access specialist services aimed primarily at parents and families (e.g. family support, employment, and education) than other families, but less likely to engage in organised activities at the registered children's centre;
  3. High disadvantage families were less likely to focus on specific services (either health or family services) than other families when their child was very young (9-18 months), showing a less consistent pattern of service use at this time point;
  4. High disadvantage families were less likely to use services outside the registered children's centre than other families, especially organised activities.

- There was evidence of positive effects on four of the five outcomes investigated, related to children's centre service use and provision measures for high disadvantage families:
  1. Decreases in *Parental Distress* when families used services at the registered children's centre (particularly early focused use);
  2. Decreases in *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, and increases in *HLE* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
  3. Decreases in *CHAOS*, *Parent-Child Dysfunctional Interaction* and increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.
- A number of positive effects on outcomes were also found for selected service use and provision measures for families in the medium disadvantage group:
  1. Decreases in *CHAOS* when families used services at the registered children's centre (particularly early focused use);
  2. Decreases in *Parent-Child Dysfunctional Interaction* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
  3. Increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.

In contrast, one negative effect was found. Long term use of the registered children's centre (persisting broad use) was associated with poorer mental health for mothers from high disadvantage families. Highly disadvantaged mothers showed more mental health problems at baseline which may be difficult to support appropriately in a children's centre setting.

The measure of financial disadvantage used in the main impact analysis identified three types of families:

- **High financial disadvantage** (20% of the impact sample): these families generally rented (83%), and were in receipt of some kind of benefit (e.g. 59% were on income support), and a large proportion received housing benefit (69%). Over three quarters (78%) were classed as workless households.
- **Medium financial disadvantage** (48% of the impact sample): Most families were supported by tax credits of some kind, about half rented their home (56%) but none received out of work benefits. The vast majority included at least one parent in work (96%).

- **Low financial disadvantage** (33% of the impact sample): This group were financially independent: they did not receive any benefits or tax credits. In addition, all of them owned or were in the process of buying their property (100%). Almost all were in work (99%).

Of particular interest is the high financially disadvantaged group, who could be considered to be in greater need of targeted provision.

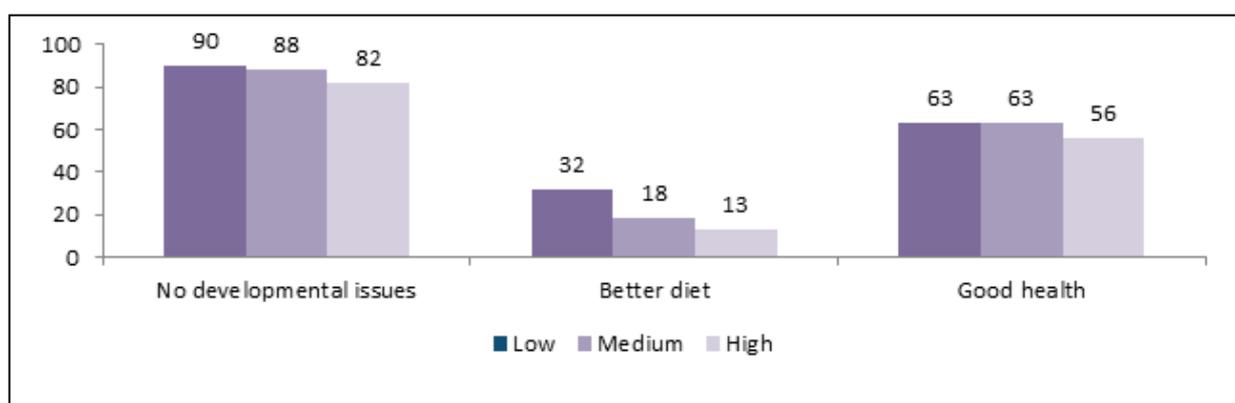
## 7.1 How do families with different levels of financial disadvantage differ?

This section reports on the association between financial disadvantages and selected child, mother and family measures, collected at Waves 1 and 3 (for the impact sample, n=2,608 families).

### 7.1.1 Child development and financial disadvantage

Children from families experiencing high financial disadvantage were more likely to have a developmental issue<sup>93</sup>, and less likely to be in good health at aged 9-18 months than other children (see Figure 7.1). For example, 10 per cent of children from low disadvantage families had a developmental issue compared to 18 per cent from the high disadvantage group.

**Figure 7.1 Child health and development at age 9-18 months**



In addition, children from the low disadvantage group were nearly three times more likely to have a good diet<sup>94</sup> than children from high disadvantage families at this age (32% compared to 13%). For example, four out of five children (80%) from low disadvantage families ate fresh fruit every day, compared to 57 per cent of children from high disadvantage families.

<sup>93</sup> Developmental issue = developing less quickly than other children of the same age, or the parent had concerns over their development (minor or major concerns).

<sup>94</sup> Cluster analysis revealed two strong groupings of diet: labelled of better and poorer diet. Those with a better diet were more likely to have a high intake of fruit, vegetables and salad.

By the age of three, children from high disadvantage families exhibited poorer behaviour (higher *externalising* and *internalising* behaviours, poorer *pro-social* skills, see Table 7.1), and had lower cognitive skills (especially for *naming vocabulary*, see Table 7.2) than their more affluent peers. Cognitive differences were more pronounced for *naming vocabulary* than *non-verbal ability*.

**Table 7.1 Child behaviour at age 3**

Financial disadvantage	Externalising (SDQ)			Internalising (SDQ)			Pro-social (SDQ)		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Three groups:</i>									
Low disadvantage	839	5.38	3.00	839	2.38	2.16	839	7.70	1.80
Average	1218	6.21	3.35	1218	2.85	2.39	1218	7.30	1.92
High disadvantage	504	7.02	3.76	503	3.59	2.83	504	7.20	2.16

Note: Problems coded high for *Externalising* and *Internalising* behaviours, and low for *Pro-social* behaviours.

**Table 7.2 Child cognitive ability at age 3**

Financial disadvantage	Naming Vocabulary BAS			Non-verbal BAS		
	N	Mean	SD	N	Mean	SD
<i>Three groups:</i>						
Low disadvantage	789	0.32	0.82	789	0.20	0.90
Average	1118	-0.06	0.99	1139	-0.04	1.01
High disadvantage	452	-0.40	1.11	458	-0.24	1.06

As was found when the children were very young, children from high disadvantage families remained in poorer health (physical health and diet) than more affluent children at age 3. For example, nine out of ten children (89%) from low disadvantage families ate fresh fruit every day, compared to 64 per cent of children from high disadvantage families. In addition, nearly a third (31%) of children from high disadvantage families were classified as in poorer health compared to one in five (21%) children from low disadvantage families.

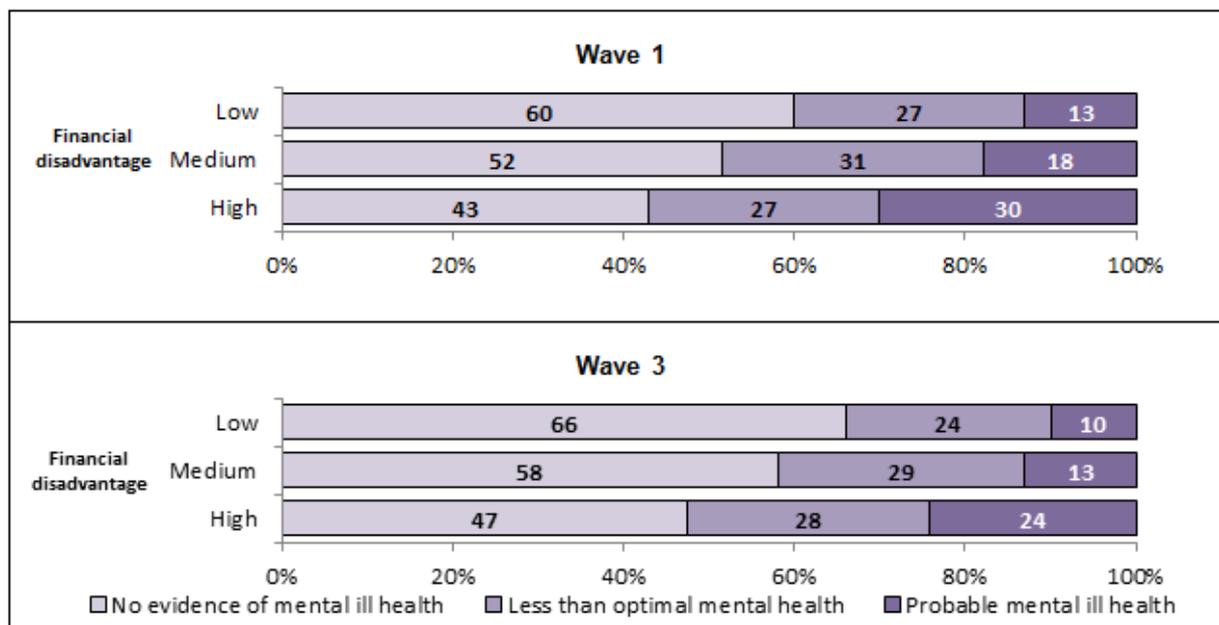
### 7.1.2 Mother's wellbeing and financial disadvantage

Mother's mental health was substantially lower for mothers from more disadvantaged families. For example, using the *Health Survey for England* classification (Health and Social Care Information Centre: HSCIC, 2013), nearly a third (30%) of mothers from high disadvantage families were classified as having 'probable mental ill health' in Wave 1 compared to approximately one in eight (13%) from low disadvantage families (see Figure 7.2). Similar levels still remained by Wave 3.

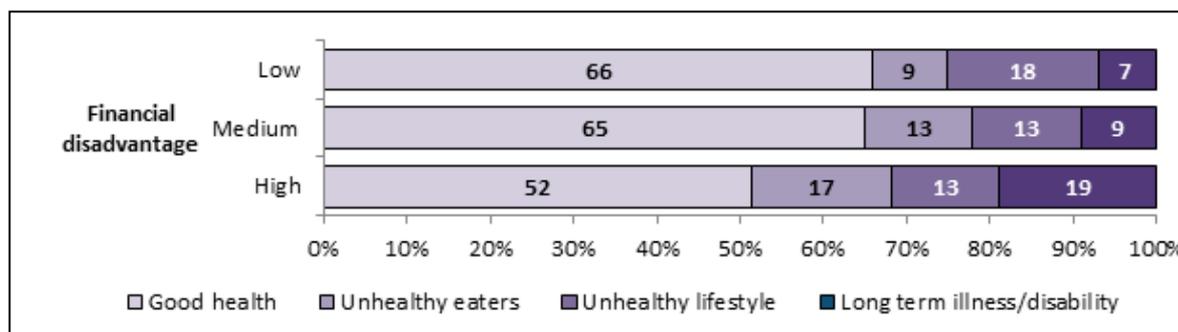
In both Wave 1 and Wave 3, inequalities in physical health were also evident. Less than one in ten (7%) of mothers from low disadvantage families reported they had a long term illness or disability at Wave 1, compared to nearly a fifth (19%) of mothers from high

disadvantage families (see Figure 7.3). Unhealthy eating was also more prevalent in high disadvantage mothers.

**Figure 7.2 Mother’s mental health and financial disadvantage**



**Figure 7.3 Mother’s physical health and financial disadvantage at Wave 1**



Mother’s lifestyle health in Wave 3, measured mother’s alcohol consumption, drugs usage and smoking: only 4 per cent of low disadvantage mothers were in poorer health (i.e. with higher levels of alcohol consumption, drugs usage and smoking) compared to just under a third (31%) of the high disadvantage mothers.

### 7.1.3 Family functioning and financial disadvantage

Families experiencing high levels of financial disadvantage had poorer scores for family functioning than more affluent families for all four measures shown in Tables 7.3 to 7.6 (at both time points). Higher *CHAOS*, *Parental Distress* and *Parent-Child Dysfunctional Interaction* scores represent poorer family functioning.

**Table 7.3 Family functioning (CHAOS) and financial disadvantage**

<b>Financial disadvantage</b>	<b>Wave 1</b>			<b>Wave 3</b>		
<i>Three groups:</i>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Low disadvantage	844	7.55	2.02	843	8.04	2.09
Medium	1238	8.13	2.20	1240	8.45	2.28
High disadvantage	514	8.78	2.69	513	9.10	2.75

**Table 7.4 Family functioning (HLE) and financial disadvantage**

<b>Financial disadvantage</b>	<b>Wave 1</b>			<b>Wave 3</b>		
<i>Three groups:</i>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Low disadvantage	843	0.45	0.72	844	32.32	8.56
Medium	1233	0.02	0.95	1238	30.12	9.19
High disadvantage	516	-0.23	1.05	515	28.92	9.18

**Table 7.5 Family functioning (Parental Distress) and financial disadvantage**

<b>Financial disadvantage</b>	<b>Wave 1</b>			<b>Wave 3</b>		
<i>Three groups:</i>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Low disadvantage	832	24.74	7.31	839	24.86	7.06
Medium	1198	26.01	7.60	1213	25.80	7.71
High disadvantage	490	28.51	9.01	495	27.68	8.60

**Table 7.6 Family functioning (Parental-Child Dysfunctional Interaction) and financial disadvantage**

<b>Financial disadvantage</b>	<b>Wave 1</b>			<b>Wave 3</b>		
<i>Three groups:</i>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Low disadvantage	839	16.66	4.84	839	17.49	4.84
Medium	1216	17.76	5.88	1216	18.64	5.88
High disadvantage	504	19.37	7.01	504	20.30	7.01

### 7.1.4 Stressful life events and financial disadvantage

Details of four major life events were collected at Wave 1 and Wave 3 (see Tables 7.7 and 7.8). Respondents from disadvantaged families were found to have more challenging life circumstances, and were more likely than other families to experience divorce/separation or lose their job when the ECCE child was very young<sup>95</sup>.

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<sup>95</sup> In total, 53 per cent of high disadvantage families were lone parents at Wave 1, compared to just 1 per cent of low disadvantage families, and 11 per cent of the medium disadvantage group.

**Table 7.7 Stressful life events and financial disadvantage (collected at Wave 1)**

Financial disadvantage	Death of a close family member		Close family member went to prison		Someone in household got divorced/separated		Someone in household lost their job	
	N	%	N	%	N	%	N	%
<i>Three groups:</i>								
Low disadvantage	120	14.2	2	0.2	11	0.8	41	4.9
Medium	214	17.2	14	1.1	99	4.0	95	7.7
High disadvantage	102	19.8	11	2.1	190	11.6	86	16.7

**Table 7.8 Stressful life events and financial disadvantage (collected at Wave 3)**

Financial disadvantage	Death of a close family member		Close family member went to prison		Someone in household got divorced/separated		Someone in household lost their job	
	N	%	N	%	N	%	N	%
<i>Three groups:</i>								
Low disadvantage	127	15.0	1	0.1	17	2.0	36	4.3
Medium	225	18.1	9	0.7	59	4.8	87	7.0
High disadvantage	120	23.3	12	2.3	46	8.9	31	6.0

High disadvantage families were significantly more likely than the low disadvantage families to have experienced at least one life event (44% compared to 19%) up to the assessment at child age 3+. A similar pattern was found for life events at Wave 3 (37% compared to 20%, since the last Wave 1 interview).

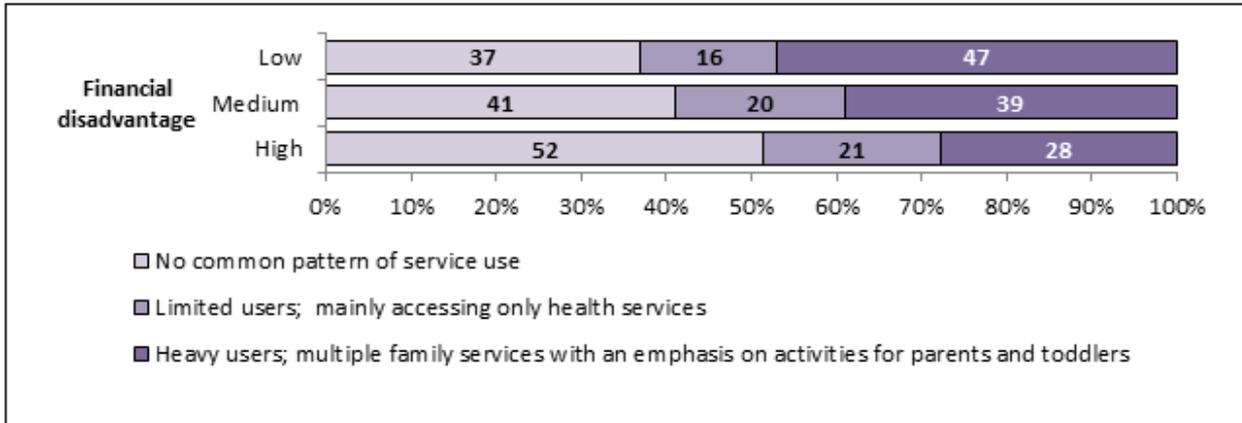
## 7.2 How do families with different levels of financial disadvantage use services?

This section outlines how services (both at children’s centres and elsewhere) were used for high, medium, and low financial disadvantage families using selected service use measures.

### 7.2.1 Use of services at baseline

Figure 7.4 describes how the three groups of families used services at baseline, when the ECCE child was 9-18 months old, and includes use of multiple types of service use, inside and outside the registered children’s centre (e.g. health, family, formal childcare; see Maisey et al, 2013 for full details of the measure). The least disadvantaged group (low) were more likely to be heavy users of services at baseline, engaging in lots of activities especially related to parent and toddlers (47% of families). In contrast, the majority of the high disadvantage group showed no consistent pattern of use (52% of families).

**Figure 7.4 Patterns of general service use (anywhere at baseline)**



### 7.2.2 Total time spent at the registered children’s centre

By the time the ECCE child was age three, highly disadvantaged families had spent significantly longer (an average of 38 hours, and four and a half months extra) at the registered children’s centre than families experiencing low financial disadvantage (see Table 7.9). There was no significant difference in the intensity of use (amount of hours per month) for the three groups of families, however. This ranged from 5.4 to 6.2 hours on average per month.

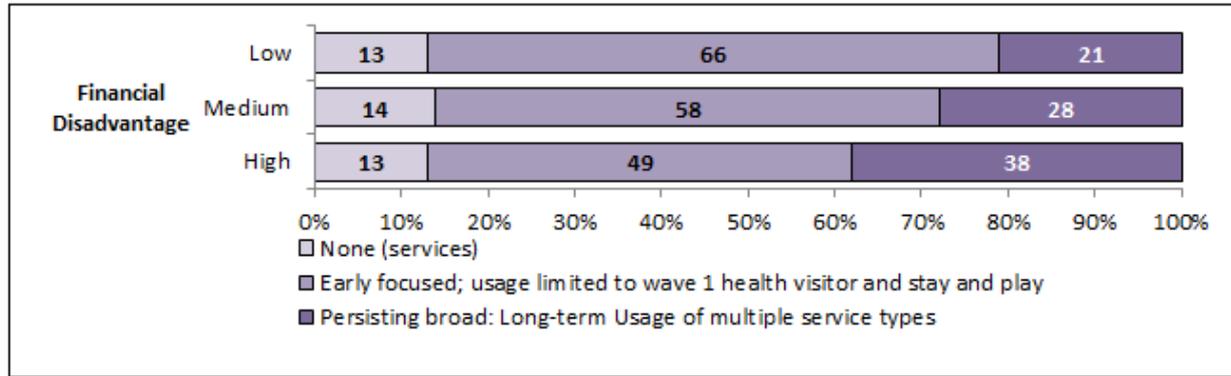
**Table 7.9 Total time spent at the registered children’s centre**

Financial disadvantage	Total hours			Total months			Hours of use per month		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Three groups:</i>									
Low disadvantage	844	122.89	262.25	844	17.92	13.50	844	5.41	9.80
Average	1241	140.17	279.53	1241	20.82	16.40	1241	5.61	8.21
High disadvantage	516	160.67	280.29	516	22.55	19.27	516	6.15	8.71

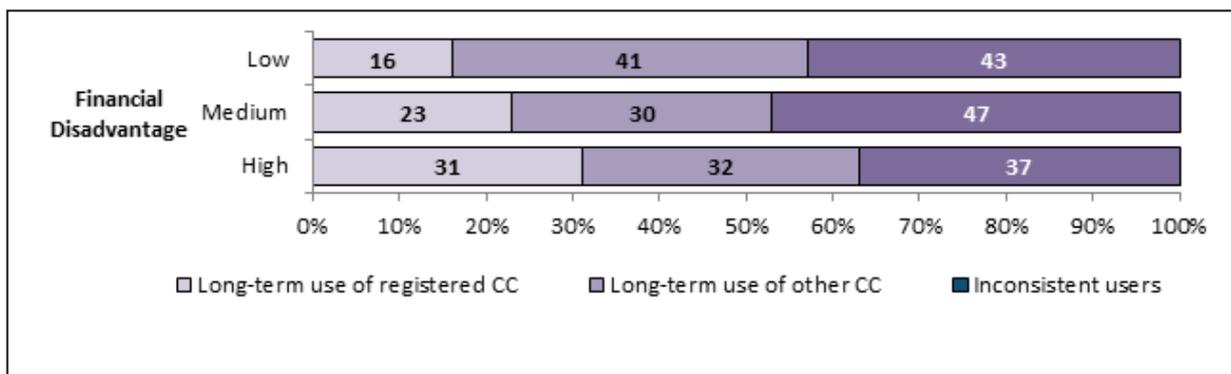
### 7.2.3 Patterns of service use over time

Use of the registered children’s centre over time is shown in Figure 7.5 for the three groups of families. The least disadvantaged families were most likely to use services at Wave 1 only, specifically health and Stay and Play (‘early focused use’= 66% of families), with just one in five (21%) using the registered centre longer term (persisting broad, 21%). The most common pattern of use for the most disadvantaged families was also the early focused use (49%), but these families were more likely to be ‘persisting broad users’ of services than other families, with over a third using services longer term (38% of families). In addition, families experiencing high disadvantage were more likely to use their registered children’s centre exclusively (long term, 31%) than other families (see Figure 7.6).

**Figure 7.5 Patterns of registered children’s centre service use (over time)**

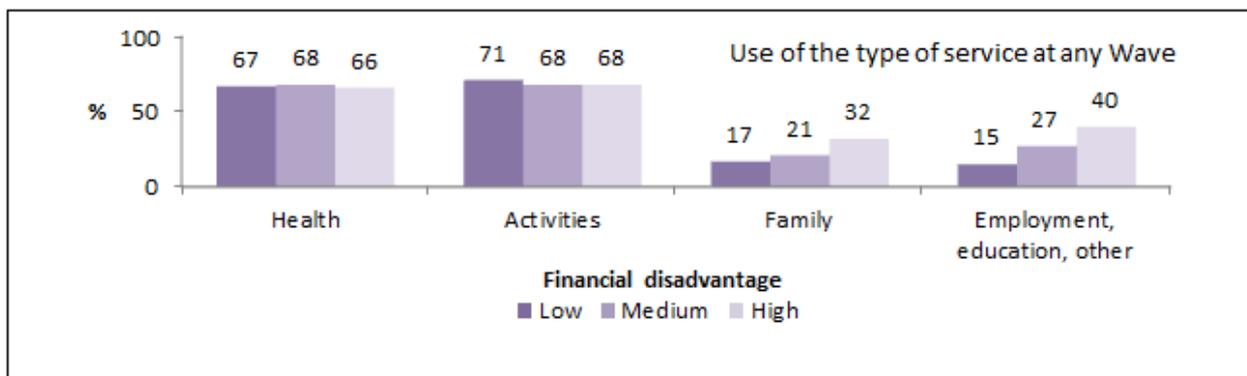


**Figure 7.6 Location of service use (over time)**



No significant difference was found between families in their use of the registered centre for services related to ‘health’ (e.g. health visitor/midwife, SALT) or ‘activities’ (e.g. Stay and Play, organised activities, see Figure 7.7: use at any Wave, yes/no). In contrast, high disadvantage families were much more likely to have used specialist services (e.g. family support services, employment//education/other services) at their registered centre than less disadvantaged families (e.g. 32% of the high disadvantage families used family support services compared to 17% of the low disadvantage families). It should be noted that this is a simple indicator of use at any time point and does not measure number of visits or hours spent in the specific services.

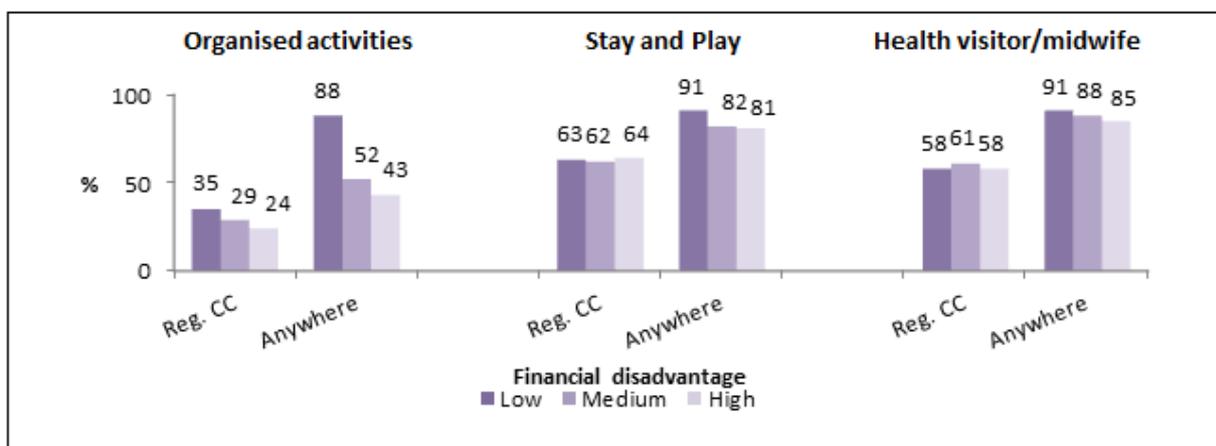
**Figure 7.7 Use of different types of services at the registered centre (at any Wave)**



## 7.2.4 Use of the three most popular services

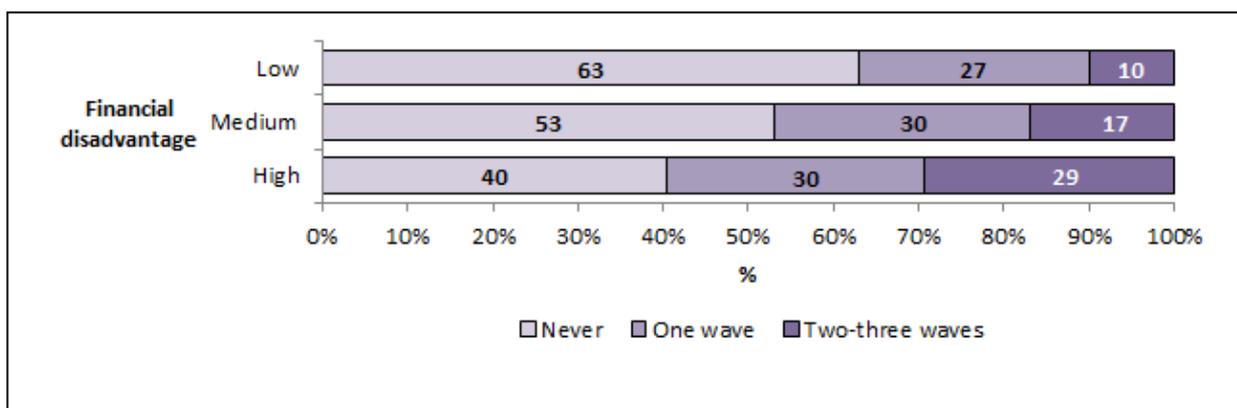
The three most commonly used individual services were: Stay and Play, health visitor/midwife drop in sessions and organised activities for babies and children. Figure 7.8 shows the uptake of these services (used at any time point) at the registered children’s centre and elsewhere for comparison. The first thing to notice is that low disadvantage families use services more than high disadvantage families overall (anywhere), especially for organised activities. At the registered centre, services related to Stay and Play and health (Health visitor/midwife) were taken up equally by low, medium and high disadvantage groups; whereas organised activities (for children and babies) were taken up less by the most disadvantaged families (35% low disadvantage; 24% high disadvantage families).

**Figure 7.8 Use of three common individual services (use at any Wave)**



Although families from all backgrounds received outreach visits, those families who experienced high levels of financial disadvantage were nearly three times as likely to receive visits over three time points (see Figure 7.9) than families experiencing low levels of financial disadvantage (29% versus 10%).

**Figure 7.9 Number of Waves outreach visits received (from the registered children’s centre)**



## 7.3 What are the benefits of children's centres for the most disadvantaged families?

This section reports the findings from the sub-group analyses, investigating the impact of four service use/centre provision measures on five outcomes (*CHAOS*, *HLE*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, and mother's mental health<sup>96</sup>). The specific service use/centre provision measures used in this analysis were:

- Use of any services at the registered children's centre over time (vs. none);
- Use of services at the registered children's centre over time in either a focused way, early or persisting broad use (vs. none);
- Increase in the number of named programmes at the registered children's centre;
- Expansion/cuts of services at the registered children's centre.

The analysis investigated whether the effects on outcomes of these aspects of service provision and service use were statistically significant for the high financial disadvantage group.

### 7.3.1 Children centre impacts for disadvantaged families

The following positive impacts were found (reductions in *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, and *GHQ*; increases in *HLE*) for high disadvantage families:

- Reductions to *Parental Distress* were identified for service use (any use of services:  $ES=-0.28$ ,  $p<0.05$  vs. none. Early focused service use:  $ES=-0.32$ ,  $p<0.05$  vs. none) and being registered at a children's centre that was not experiencing cuts (Positive stasis:  $ES=-0.22$ ,  $p<0.08$ . Supported growth:  $ES=-0.37$ ,  $p<0.05$ ).
- Improvements in the early years *HLE* were identified for high disadvantage families registered at centres that had not experienced cuts (Positive stasis:  $ES=0.40$ ,  $p<0.01$ . Supported growth  $ES=0.24$ ,  $p<0.05$ ) and those centres that had increased the provision of named programmes ( $ES=0.35$ ,  $p<0.01$ ).
- Reductions in *Parent-Child Dysfunctional Interaction* were found for high disadvantage families who were registered at centres that had not experienced cuts (Supported growth:  $ES=-0.24$ ,  $p<0.05$ ) and at centres that had increased the provision of named programmes ( $ES=-0.24$ ,  $p<0.05$ ).
- Reductions in family *CHAOS* related to service use for families who were registered at centres that had not experienced cuts (Supported growth:  $ES=-0.24$ ,

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<sup>96</sup> The outcomes were selected using two criteria: 1) they had a baseline measure allowing change to be modelled, and 2) they had shown multiple impacts in the main analysis.

p<0.05) and at centres that had increased the provision of named programmes (ES=-0.25, p<0.05).

One negative effect was found for mother's mental health (*GHQ*). Increases in mental health scores (poorer mental health) from Wave 1 to Wave 3 were associated with persisting broad use of services at the registered children's centre by families experiencing high levels of disadvantage (ES=0.32, p<0.05). Again it may be that such mothers were encouraged to stay more engaged as part of outreach or targeting need.

The following positive results were for families experiencing medium levels of financial disadvantage:

- Improvements in *Home Learning Environment* for medium disadvantage families registered at centres that had increased the provision of named programmes (ES=0.13, p<0.08);
- Reductions in *Parent-Child Dysfunctional Interaction* were found for medium disadvantage families who were registered at centres that had not experienced cuts (Positive stasis: ES=-0.22, p<0.05. Supported growth: ES=-0.18, p<0.05);
- Reductions in family *CHAOS* related to service use (Any use of services: ES=-0.25, p<0.01 vs. none. Early focused service use: ES=-0.27, p<0.01. Broad use ES=-0.20, p<0.05 vs. none).

Full details of the models can be found in the Technical Appendix.

## 7.4 Conclusions

Social inequalities are well documented (Murali and Oyebode, 2004; World Health Organization: WHO, 2014; Yang, Eldridge and Merlo, 2009), and were identified in our sample for most outcomes. As anticipated from past studies, outcomes related to family functioning, health and child development were found to be poorer for the more disadvantaged families (especially the high disadvantage but also for the medium disadvantage groups) at both Waves of data collection. Disadvantaged families were also likely to have experienced a greater number of stressful life events. A number of key inequalities were identified:

- **Mental health inequalities:** a third (30%) of mothers from high disadvantage families were likely to have a mental illness at Wave 1 (compared to 13% of low disadvantage mothers). These inequalities still remained at Wave 3;
- **Physical health inequalities:** 19 per cent of mothers from high disadvantage families had a long term illness or disability in Wave 1 (compared to 7% of low disadvantage mothers). Similarly, 31 per cent of mothers from high disadvantage families had an 'unhealthy' lifestyle (reporting higher drugs usage, alcohol consumption, or smoking) in Wave 3 (compared to just 4% of low disadvantage mothers);

- **Life stressors:** Over four in ten (44%) of high disadvantage families had experienced at least one negative life event by Wave 1 (compared to 19% of low disadvantage families), and 53 per cent were lone parents at Wave 1.

By 9-18 months, infants from high disadvantage families were falling behind their more affluent peers in terms of behavioural development, and had poorer outcomes (behavioural, cognitive and health) at age 3. Vulnerable families (those in high financial disadvantage) were accessing more services at their registered children's centre than other families (including more of the specialist services such as employment and family support), and using services for longer, suggesting that centres were being successful in targeted provision for high need families. Such families were also accessing services in a less focused way when their child was very young (less likely to just use a few common services like health, and Stay and Play) than more affluent families, perhaps also an indicator of greater use of a wider range of services.

Certain services were underutilised by disadvantaged families. Organised activities (sports for babies and children) were not taken up as much by disadvantaged families, either in the registered children's centre or anywhere. Cost or accessibility may be a factor in the lower uptake of these services, especially outside registered children's centres. In addition, these families were less likely to use other specific services (health visitor/midwife, Stay and Play) outside of their registered children's centre, suggesting they were a less mobile group.

General engagement with children's centres was linked to improvements in *Parental Distress* for the most disadvantaged families. Disadvantaged families attending more stable centres (not experiencing cuts) and those that had increased the number of more specialised services (named programmes) showed improvements across a range of family functioning measures. Specifically:

- Service use was associated with reductions in *Parental Distress*;
- Increases in the provision of named programmes at the registered centre was linked to reductions in *Parent-Child Dysfunctional Interaction*, reductions in household *CHAOS*, as well as increases in the *Home Learning Environment*;
- Expansion of services at the registered centre more generally was associated with better outcomes (*Parental Distress*, *Parent-Child Dysfunctional Interaction*, *HLE* and *CHAOS*).

There was also evidence that children's centres were making positive impacts on outcomes for families experiencing 'medium' levels of disadvantage. Specifically:

- Decreases in *CHAOS* when families used services at the registered children's centre (particularly early focused use);
- Decreases in *Parent-Child Dysfunctional Interaction* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);

- Increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.

One area of concern was mother's mental health. In contrast to the positive effects noted above, broad use of services long term (at the registered children's centre) was associated with increases in mental health issues for mothers in the most disadvantaged group. As noted earlier, mothers from families experiencing high levels of financial disadvantage had much poorer mental health at baseline, perhaps requiring more specialist support than is available in most children's centres. The fact that these vulnerable mothers are using the centre long term suggests centres are targeting families well but may not have the capacity or appropriately trained staff to support parents with mental health issues. However, children's centres were able to promote better family outcomes for the most disadvantaged group.

## 8 Discussion and Conclusions [Sammons, Hall, Smees and Goff]

The ECCE evaluation is based around a number of linked Strands and has produced a series of reports. This report describes and summarises the main results from the *Impact study*. The impact results are based on analyses involving over 2,000 families registered at 117 Phase 1 and 2 children's centres serving disadvantaged communities.

The ECCE research seeks to provide formative evidence on practices in the provision, delivery and use of children's centres and their services between 2011 and 2013, and has explored perceptions of their impact from stakeholder groups, including both users and providers. Interviews with children's centre staff in 2013 suggested that children and adults attending 'Play and Learning' activities received a number of benefits as a result of their participation (Evangelou et al., 2014). For example, children were reported to develop skills which supported their 'Personal, Social and Emotional Development', 'Physical Development', and 'Understanding of the World'; as well as school readiness and social interaction. Adults were reported to benefit from improved parenting skills, greater knowledge of child development, and increased confidence in parenting, as well as receiving more general support for their personal needs. Parents attending the children's centres in 2013 also gave similar examples of perceived benefits for their children (including improved 'Personal, Social, and Emotional Development', as well as improved 'Physical Development'). There were also high levels of satisfaction within children's centres, with the vast majority of interviewed parents indicating that they were "very happy" with the services that they received (92% of parents, see Evangelou et al., 2014 for further information).

This report builds upon previous ECCE research by evaluating the impact of children's centres in improving measured outcomes for a broader sample of user families. These outcomes were chosen to reflect the aims of children's centres regarding improving family functioning and providing children with a better start to school. The outcomes were measured through a longitudinal survey design (Strand 2 of the evaluation) that recruited a sample of registered users: families were registered at a named children's centre with a child recruited at age 9-18 months (mean age 14 months) and followed up to age 3 plus (mean age 38 months).

The underlying rationale for the introduction of children's centres was to support all children and families living in particular areas by providing a wide range of services tailored to local conditions and needs. This evaluation has only focused on children's centres that were set up under Phase 1 and 2 of the programme, and which targeted the most disadvantaged areas. The original intention of children's centres was to maximise reach, and many services were intended to be available to all families with young children who were living in such neighbourhoods. Children's centres would thereby have an inclusive purpose rather than being available to only those families regarded as the 'most needy'. Thus, potential users would not be stigmatised by attendance because at least some services were open to all families and children (see Sylva et al., 2015).

Having said this, children's centres were also intended to assess local needs by studying the characteristics of local communities, and undertake outreach to attract and serve the 'most needy' families. Towards this aim, some services were therefore targeted to particular groups of high-risk families (e.g. teenage parents, workless families etc.) The definition of 'needs' and factors that might be deemed to make families vulnerable is open to a range of interpretations (high financial disadvantage; family or child characteristics including parental needs such as mental health problems, or parent-child relationships; ethnic minority status; child health or behaviour problems, see Lord, Southcott and Sharp, 2011, for further information).

## 8.1 Investigating Impact

As demonstrated in Chapter 1, past research has not provided strong or consistent evidence about the impact of children's centres or similar types of programmes in other contexts. Previous research, particularly the NESS evaluation of Sure Start Local Programmes (the precursor to the current children's centre programme in England) identified a number of weak to modest positive effects for parents, families and some for child outcomes. However, the results of the NESS study also suffered from some methodological limitations: it was not possible to focus on a user group to assess changes in their outcomes due to the area-based focus of Sure Start Local Programmes. The longitudinal ECCE evaluation has adopted a different but complementary design to investigate 'impact' based upon a sample of families that show different patterns of use of children's centre services.

Investigating 'impact' is a difficult task because children's centres have a variety of objectives and were set up to vary in function, and in their organisation and provision of services tailored to their neighbourhoods (see Chapter 1). Children's centres thus cannot be seen as a single 'intervention'. They vary widely in terms of the type and mix of services that they offer. Moreover, families vary widely in the extent to which they may choose or be guided (signposted or referred) to make use of the services on offer. Families were not randomly allocated to a single children's centre intervention and so an RCT design is inappropriate. It is not possible to compare an intervention group with a control group because children's centres were intended to be open to all families and flexible patterns of service use have remained a fundamental feature of children's centre policies. Establishing 'impact' is therefore not a matter of identifying a *single* effect but rather, identifying and summarising a *range* of effects, across the sample of users and centres, and covering the variety in centre characteristics and provision that existed between 2011 and 2013.

To investigate impact, Strand 4 has studied naturally occurring variation in the take-up and use of children's centres and their services amongst a sample of centre-registered users. It links together quantitative data about children's centres and their characteristics, and the use of children's centre services by children and families collected from the first

three Strands of the project (Strand 1: “*Survey of children’s centre leaders*”, Strand 2: “*Visits to families*”, and Strand 3: “*Visits to children’s centres*”).

**Strand 4 sought to answer the overarching question “How far does engagement with children’s centres promote better outcomes for families, parents, and children?”**

The analyses tested two main hypotheses: that greater use of services may support better outcomes; and that certain features of children’s centres (e.g. better scores for leadership, parenting services and multi-agency working) may predict better outcomes.

These were addressed in two sets of analyses that identify:

1. Families’ use of children’s centre services over 3 time points; and
2. Children’s centre characteristics and processes (quality of provision in terms of leadership, organisation and management structures, working practices, services offered, and reach) that predict outcomes.

Taken together the results enable us to establish “What aspects of children’s centres (management structure, working practices, services offered, and services used) promote better family, parent, and child outcomes?” A number of more specific research questions have been investigated using multilevel statistical analyses that help us to answer the overarching question and test the two main hypotheses.

- ‘Do some patterns of families service use (e.g. mix and intensity) have differential effects on child and family outcomes?’
- ‘Are some models of centre organisation (service delivery) more effective than others in fostering better outcomes?’
- ‘Which centre characteristics (e.g. location, leadership and management processes and structures, financial arrangements) predict better outcomes for children and families?’
- ‘What are the effects of the most commonly used services?’
- ‘Is there any evidence that services used through children’s centres have differential effects than the use of similar services provided by other organisations?’
- ‘Does impact vary for families and children with different socio-economic profiles?’

To address the overarching research question required linking data about the children’s centres at which families were registered to data about families and children over time (from Strand 2: “*Visits to families*”). Based on the survey responses from the three occasions that families were contacted, it was therefore possible to identify and document the main patterns of: 1) variation in families’ engagement with children’s centres in the ECCE sample, and 2) variations between families in their use of various children’s centre services over time. These measures were then tested to see how far engagement predicted better outcomes.

### 8.1.1 Creating measures and indicators

Chapter 2 outlined the overall mixed methods design of the ECCE evaluation, and focused on the educational effectiveness methodology that is used to investigate impact (by identifying effects) on selected child, parent and family outcomes. It described how a set of measures was created on the patterns of use in children's centre services for the sample of registered user families included in the evaluation. It also outlined the measures of features of children centre characteristics (organisational models and processes) that were created, and described the analysis techniques used to produce these. Both sets of measures (features and usage) were then tested in the impact analyses. Chapter 3 then outlined the characteristics of centre-registered families that were the focus of the *Impact study*. It analysed the patterns of variation in their use of different services, following the sample across the three time points where they were interviewed by Strand 2 fieldworkers (as their children aged from 9-18 months to 3+ years).

## 8.2 Modelling the effects of children's centres

Evidence of 'impact' has been provided by establishing how far engagement with children's centres and use of their services shows measurable 'effects' in statistical models that predict outcomes for the sample of children and families in this research. Further, these estimates were obtained while controlling for the effects of important individual child, parent, family and neighbourhood characteristics that also influence (predict) such outcomes. In addition, some other descriptive analyses explore how far service use is driven by different characteristics of the children and families, for example, addressing the question of whether 'more needy' families make greater use of certain services.

Impacts and effects have been presented in three chapters. Chapter 4 describes the various outcomes for children at age 3 plus, and the models that were developed to show what characteristics and factors predicted these. Chapter 5 goes on to present the statistical models that were developed to predict outcomes for mothers, while Chapter 6 presents the models for family functioning and parenting outcomes.

Here we summarise some of the main issues that affect the interpretation of results, and present a summary of the main findings and their interpretation.

### 8.2.1 Reaching the disadvantaged

It is important to note that earlier ECCE analyses of the reach of children's centres confirmed that they tended to serve those predominantly drawn from disadvantaged neighbourhoods (Smith et al., 2014). The Impact Strand further investigates the sample of families who were registered users of children's centres. Compared with families who participated in baseline (Wave 1) fieldwork, those registered users who were followed up across the three Waves of family fieldwork were somewhat less disadvantaged. This is a

common problem in longitudinal surveys. Nonetheless the Impact user sample included a broad range of families in terms of their SES, income and overall financial disadvantage. The loss of more disadvantaged families restricts some of the sub-group analyses (e.g. young mothers, never worked group) that can be conducted.

The creation of the *financial disadvantage* measure produced a three group categorisation (low financial disadvantage; medium financial disadvantage; high financial disadvantage). This measure was based on information on household receipt of benefits, tax credits and housing tenure. For example, the *low disadvantage group* were owner/occupiers not in receipt of any benefits or tax credits, whereas the *high disadvantage group* were in receipt of benefits and largely lived in rented accommodation. Overall, the results showed that the majority of registered families in the final Impact sample were experiencing either high (20%) or medium levels of financial disadvantage (48%). In line with the earlier and broader study of *reach* based on postcodes (Smith et al., 2014), this result shows that children's centres in our sample were serving a broad spectrum of users but largely reaching those who were relatively disadvantaged. This is in line with the original intention of the Sure Start policy.

### 8.3 Overview of main findings for the user sample

As shown in Chapters 3-6, the Impact models explored the effects of various child, family and neighbourhood background influences on outcomes measured when the children were age 3 years plus. The summary of our main findings are 'net effects', identified once other significant child, family and neighbourhood background characteristics were controlled, and those that remained significant in the combined models that tested simultaneous impacts from multiple centre features and/or services used. It must be remembered that children's centres offer services for different stakeholder user groups (child, parents, families). The evaluation has considered each of these three groups and the findings show different patterns of effects for these three groups. Therefore we provide a summary of the main findings for each group of users. Following this the discussion attempts to provide an overview of the main impacts of children's centres in relation to the stated aims of the policy, and the shift in emphasis towards a core purpose (as outlined in Chapter 1) to address the overarching research question and hypotheses. The extent to which the findings support or differ from those obtained in earlier studies of similar kinds of programmes and interventions described in the review of literature is also explored. Finally we discuss the main implications of the findings.

#### 8.3.1 Influences on Child Outcomes

##### Background effects on child outcomes

- Girls had better behavioural, cognitive and health outcomes than boys.
- Early health and developmental problems at baseline (mean age 14 months) predicted poorer outcomes at age 3 plus.

- Greater financial disadvantage and lower maternal education level predicted poorer behavioural and cognitive outcomes.
- In addition, a more enriched very early *HLE* score predicted better cognitive attainment (*vocabulary* and *non-verbal reasoning*) and *pro-social skills*.
- Other aspects of early family functioning measured at baseline also predicted child outcomes. Higher *Difficult Child* and *CHAOS* scores predicted poorer behaviour; and higher *Parent-Child Dysfunctional Interaction* scores predicted higher levels of internalising, poorer pro-social behaviours and poorer cognitive attainment<sup>97</sup>.

When aspects of service use (including childcare), service provision and children's centre characteristics were investigated, a few notable associations were found. It should be noted that the analysis of children's behavioural and cognitive outcomes cannot measure progress due to the unfeasibility of collecting comparable baseline measures for 9-18 month old children. Thus findings can only show what predicts outcomes at one time point (associations) rather than change in outcomes over time using CVA models applied for other outcomes.

### **Service use and children's centre impacts on child outcomes**

- Higher levels of childcare use by a family predicted better child outcomes in terms of higher cognitive attainment, lower levels of *internalising* behaviours and greater *pro-social skills*.
- Vulnerable families had greater contact with children's centres via one to one contact or long term service provision. Extended outreach or health visitor contact (received by only a very small minority of families) predicted poorer child behaviour, suggesting that contact is being maintained with families identified as experiencing more complex problems. In addition, long term use of children's centres predicted poorer behavioural outcomes (*internalising* and *externalising* behaviours). This also suggests that the neediest families were maintaining contact with centres long term, and made more use of services.
- Lower levels of *externalising* behaviour were identified for children whose families were registered at centres that increased the number of named programmes for families.
- Children whose families used services (compared to none/very little) at baseline Wave 1 showed lower levels of later *externalising* behaviour at age 3 years plus.
- More favourable outcomes in *pro-social behaviour* were identified for children whose families were registered at 'standalone' one centre units, school-led centres, centres running higher levels of named programmes, and those with higher levels of partner-agency resourcing.

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<sup>97</sup> Other associations were also found but were specific to only individual child outcomes.

- There was little evidence that the measures of children’s centre service use or centre characteristics predicted variation in children’s cognitive attainments at age 3 years plus. Only inconsistent or weak effects were found.
- Health status included parent-reported health problems, diet, injuries and developmental issues, so includes some aspects of health that are less open to influence by children’s centres than other outcomes. Change into poorer health status was associated with greater levels of childcare, greater levels of Stay and Play, and attending centres with home-based outreach services. This may well reflect greater contact with trained staff leading to the identification of previously undetected health problems or an increased awareness of health problems when parents are able to make comparisons with other children of a similar age. Preliminary work on child diet suggests that children’s centres can have more of an influence on improving this outcome.

### **8.3.2 Influences on Mother Outcomes**

Mother’s mental and physical health (diet and lifestyle) were investigated at the start of the study (Wave 1) and again when their children were three years plus (Wave 3). This allowed change in mental and physical health to be investigated.

#### **Background effects on mother outcomes**

- Prior mental or physical health measured at baseline when their child was age 9-18 months (14 months on average) were the strongest predictors of later outcomes.
- Once their prior level of mental health was accounted for, older mothers, those experiencing higher financial disadvantage, and those in poorer physical health showed relative declines in their mental health. In addition, mothers reporting higher levels of *Parental Distress* at Wave 1 were also more likely to show poorer mental health outcomes.
- Once their prior level of physical health was accounted for, mothers experiencing higher financial disadvantage, those in lower Socio-Economic Status (SES) groups, those holding lower educational qualifications, or those who were single/separated were more likely to show poorer subsequent physical health.
- Mothers living in more deprived neighbourhoods were also more likely to be in poorer health.
- Older mothers were less likely to be in poorer health, possibly reflecting the nature of the measure that captured lifestyle and diet-related health.

#### **Service use and children’s centre impacts on child outcomes**

When aspects of children’s centre service use, service provision, children’s centre characteristics and families’ use of childcare were investigated, a few notable effects were found.

- High levels of childcare use (both long term and long hours) predicted poorer mental health outcomes for mothers.
- As found for some of the child outcomes, mothers with poorer mental and physical health had greater contact with health visitors or outreach workers. Health visitor or outreach visit contact across time predicted poorer mental and physical health. This suggests that health visitors were targeting mothers with the greatest needs.
- Using children's centre services either in a more directed way at baseline (moderate or heavily), rather than inconsistently, predicted improved mental health outcomes for mothers later on.
- Mothers who attended centres that were expanding services (in combination with no cuts to services) also showed improved mental health compared to mothers attending centres that had experienced budget cuts and were reducing services.
- Fewer impacts were evident for mother's physical health. However, being registered at a centre with a high health emphasis (reported by centre managers) predicted mothers moving out of poor health status.
- Similarly, taking children to organised activities (anywhere) also predicted improved mother physical health outcomes, controlling for other influences.

### 8.3.3 Influences on Family outcomes

The strongest predictors of later family functioning outcomes (*CHAOS*, *Parental Distress* and *Parent-Child Dysfunctional Interaction*), early *HLE* and *HES* at Wave 3 were the relevant baseline prior ratings on the same measure collected at Wave 1. Once their prior level of family functioning was controlled, a number of statistically significant effects were identified.

#### Background effects on mother outcomes

- Mothers in poorer physical health, families experiencing high levels of financial disadvantage, out of work households, larger families, and families where the mother had lower qualifications, showed poorer family functioning outcomes.
- Families where the ECCE sample child was a girl showed higher early *HLE* scores and lower levels of *Parent-Child Dysfunctional Interaction* when the child was age 3 years plus.
- Analyses of Household Economic Status (*HES*) when their child was age 3 years plus revealed that being a workless household was predicted by Wave 1 baseline measures of higher financial disadvantage, low income, low maternal qualifications and living in more income deprived neighbourhoods. In addition, marital status (single/separated), poor maternal health and higher *Parental Distress* at Wave 1 also predicted *HES* status.

## Service use and children centre impacts on mother outcomes

When aspects of service use, service provision and children's centre characteristics were investigated, multiple impacts were found, particularly for *CHAOS* and early *HLE*.

- As found for other outcomes, families with poorer family functioning had experienced greater contact with health visitors or outreach workers. In addition, use of childcare (long term only) predicted lower scores for the early *HLE* when the child was age 3 years plus, probably due to less time spent with the child in the home.
- Service use at the registered centre showed evidence of positive effects on family functioning and early *HLE*. No significant effects of children's centre service use or centre characteristics were found for HES when the ECCE child was three years plus.
- Families using services early or longer term showed greater gains in *HLE* and decreases in *CHAOS*.
- Service use at Wave 1 (heavy use compared to inconsistent use) predicted reductions in *Parent-Child Dysfunctional Interaction*, and using services more intensely (more hours a week) or engaging in organised activities, predicted reductions in *Parental Distress*.
- Families registered at centres where the number of named programmes for families had increased showed improvements in *HLE* and reductions in *Parent-Child Dysfunctional Interaction*. This is in line with findings for *externalising* behaviours. Being registered at a children's centre with higher staffing numbers and also degree-level qualified centre leaders predicted improvements in the *HLE*. However, families registered at a centre where the manager had the NPQICL/NPQH qualification showed poorer outcomes for early *HLE*.
- Families registered at centres not experiencing cuts to services (compared with those registered at centres that had experienced cuts to budgets/staffing) showed reductions in scores for *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction* as well as increases in *HLE*.
- In line with findings for child behaviour, families registered at 'standalone' one centre unit setups showed significant reductions in *Parental Distress*.
- Centres with mixed leadership predicted better outcomes for *Parental Distress* and *Parent-Child Dysfunctional Interaction*, and families attending centres with 'moderate' partner-agency resourcing (compared to none) showed reductions in *Parent-Child Dysfunctional Interaction*.

### 8.3.4 What are the effects of the most commonly used individual services?

In addition to considering patterns of service use by families in the main impact analyses, the effects of the three most commonly used individual services were also investigated. These were midwife/health visitor services (used by 88% of the sample at any wave of the three survey); Stay and Play (used by 85%); and organised activities (used by

59%).<sup>98</sup> Extended contact with health visitors/midwife services was associated with negative effects indicating poorer functioning for many outcomes and most likely indicates higher and persisting or emerging needs for those families. We interpret this as evidence of impact as reach (see Glossary). In contrast, significant positive effects of Stay and Play and of organised activities on the *early years HLE* (improvements), mother health (improvements) and *Parental Distress* (reductions) were found, suggesting that such practical activities involving parents and children may be of general benefit for specific outcomes.

These findings show that different services can have different effects for different user groups. Our main analyses (summarised above) also show it is important to consider the dynamic nature of children's centre service use by families over time, and the effects of services used elsewhere.

## 8.4 Improving outcomes and meeting the needs of the most disadvantaged families

Further analyses examined the effects of engagement with children's centres on outcomes for different groups of users according to the level of disadvantage of families (high, medium or low) because high levels of financial disadvantage were found to be a very strong predictor of poor outcomes for children, mothers and families.

- Families experiencing high levels of financial disadvantage had significantly poorer family functioning, poorer health, and experienced a greater number of stressful life events at both Waves 1 and 3 than less disadvantaged families. Lone parent status in the early years of the ECCE child's life was much more prevalent in disadvantaged families (at Wave 1, 53% of high disadvantaged families were lone parents, compared with just 1% of low disadvantage and 11% of medium disadvantage families).
- Children from families experiencing high levels of financial disadvantage already showed poorer levels of development at aged 9-18 months than their more affluent peers, and also showed poorer health, cognitive and behavioural development at age 3.
- There was no difference by financial disadvantage in terms of whether families had ever used a service, used Stay and Play, or used health visitor/midwife services at the registered children's centre.
- In contrast, there were differences between financially disadvantaged families and other families in certain patterns of service use:

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<sup>98</sup> The percentage figures for use represent families reporting use at least one or more time points in the surveys.

1. High disadvantage families were more likely to use the registered children's centre long term (5 months longer than low disadvantage families), and for more hours in total (38 hours more than low disadvantage families);
  2. High disadvantage families were more likely to access specialist services aimed primarily at parents and families (e.g. family support, employment, and education) than other families, but less likely to engage in organised activities at the registered children's centre;
  3. High disadvantage families were less likely to focus on specific services (either health or family services) than other families when their child was very young (9-18 months), showing a less consistent pattern of service use at this time point;
  4. High disadvantage families were less likely to use services outside the registered children's centre than other families, especially organised activities.
- There was evidence of positive effects on four of the five outcomes investigated, related to children's centre service use and provision measures for high disadvantage families:
    1. Decreases in *Parental Distress* when families used services at the registered children's centre (particularly early focused use);
    2. Decreases in *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, and increases in *HLE* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
    3. Decreases in *CHAOS*, *Parent-Child Dysfunctional Interaction* and increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.
  - A number of positive effects on outcomes were also found for selected service use and provision measures for families in the medium disadvantage group:
    1. Decreases in *CHAOS* when families used services at the registered children's centre (particularly early focused use);
    2. Decreases in *Parent-Child Dysfunctional Interaction* were identified for families registered at a children's centre that was improving or maintaining services (supported growth, positive stasis);
    3. Increases in *HLE* were identified for families registered at a children's centre that was increasing the provision of named programmes.

In contrast, one negative effect was found. Long term use of the registered children's centre (persisting broad use) was associated with poorer mental health for mothers from high disadvantage families. Highly disadvantaged mothers showed more mental health problems at baseline which may be difficult to support appropriately in a children's centre setting.

## 8.5 Children's centres impact: drawing the findings together

Strand 4 sought to establish how far engagement with children's centres promotes better outcomes for families, parents, and children. As shown in the summary of findings presented earlier, the research has identified a range of evidence of significant effects, and the number of effects identified was more than might be anticipated by chance (one in 20 at the 95% confidence interval).

Figure 8.1 provides an illustration of an overview that draws together the main positive effects identified in the combined models. Although a number of positive effects were identified for the majority of outcomes, no statistically significant effects were identified for either 1) change in child health, or 2) Household Economic Status, in terms of being in a workless household at Wave 3.

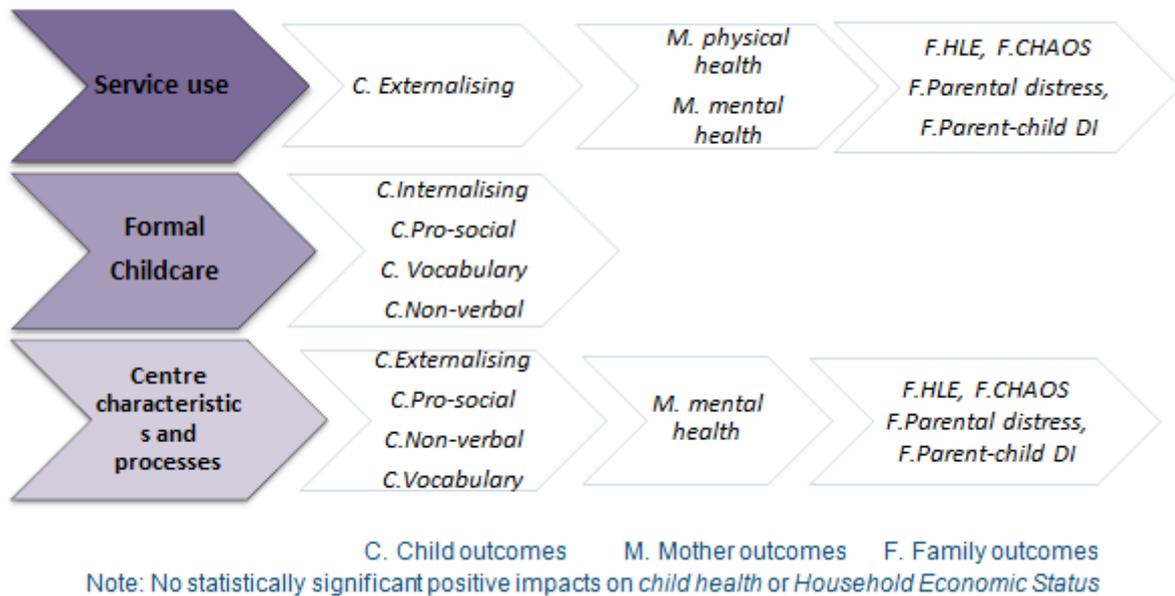
As noted earlier in the report, there were also a number of negative effects identified. We have interpreted these as evidence of impact via reach (Glossary) and conducted further analyses which have confirmed the interpretation. It is important to note that centres were actively encouraged to focus their efforts on identifying and targeting the most vulnerable at-risk families and to try to engage with them to meet their needs. This evaluation has found that the small number of families that received more visits from outreach, midwife and health visitors did indeed show more problems and their negative outcomes are likely to reflect their difficulties.

By contrast, the positive effects relate to larger numbers of families and more typical patterns of service use, and general centre characteristics and processes. Figure 8.1 highlights findings that service use and centre characteristics and processes can predict improvements in outcomes for families, and to a lesser extent, for mothers. Child outcomes show effects related to childcare use and some for centre characteristics and processes: but only one for service use. Child outcomes were more likely to show positive effects where families indicated they made greater use of formal childcare over the longer term. These positive impacts show on both cognitive outcomes, and two social behaviours.<sup>99</sup> However, elsewhere we have noted that greater use of childcare was linked to poorer outcomes for mothers (perhaps reflecting the difficulties and pressures in combining work and family responsibilities with young children).

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<sup>99</sup> It should be noted that these effects relate to the families use of childcare, and do not necessarily reflect childcare use for the named child in the ECCE evaluation, although in many cases this is likely to have been the named child.

Figure 8.1 Overview of Positive Impacts



It is important to note that only a very small proportion of families used childcare at their registered centre (4% at Wave 1, and 8% at Wave 3). Many children’s centres did not offer childcare: indeed their remit was often to direct or signpost families to private or voluntary providers of childcare. These findings show that it is important to take account of families’ patterns of use of different services, wherever they are located. Past research on the longitudinal EPPSE project has shown that pre-school can help to improve child outcomes, and that such effects can last up to age 18<sup>100</sup>. If children’s centres provided high quality childcare as well as other services, this might have a stronger potential to have direct effects on children’s outcomes.

Service use and certain children’s centre characteristics and processes also showed positive effects on children’s outcomes, suggesting the potential for children’s centres to influence child outcomes even though most were not providing childcare. Effects were not strong however, and it should be recognised that children’s centres were typically emphasising parenting and family services. It is perhaps unsurprising therefore that more of the significant effects were found for family functioning and parenting outcomes.

In line with results from NESS, fewer effects were found for child outcomes and more for family outcomes. Positive impacts of both service use and centre characteristics and processes were identified for the early years *HLE* measure (which past EPPSE and

<sup>100</sup> See Anders, Sammons, Taggart, Sylva, Melhuish, and Siraj-Blatchford., 2011; Hall, Sylva, Melhuish, Sammons, Siraj-Blatchford and Taggart., 2009 and 2013; Sammons, Elliot, Sylva, Melhuish, Siraj-Blatchford, Taggart and Smees., 2004; Sammons, Anders, Sylva, Melhuish, Siraj-Blatchford, Taggart, and Barreau., 2008; Sammons, Hall, Sylva, Melhuish, Siraj-Blatchford and Taggart., 2013; Sammons, Sylva, Melhuish, Siraj, Taggart, Toth and Smees with Welcomme., 2014; Sylva, Melhuish, Sammons, Siraj-Blatchford and Taggart., 2010; Sylva, Melhuish, Sammons, Siraj and Taggart, with Smees, Toth and Welcomme., 2014.

Millennium Cohort research indicates is a strong predictor of child outcomes). Thus it is possible that children's centres may benefit future child outcomes indirectly, through intermediate effects on the quality of the early *HLE*. A further follow up would be needed to test this on child outcomes when children enter primary school, or up to the end of Key Stage 1.

The ECCE results show parallels with NESS in terms of the effects on family functioning including improved *HLE*, and reductions in family disorganisation (reflected in the *CHAOS* measure). Reductions in *Parental Distress* and *Parent-Child Dysfunctional Interaction* were also noted within this report. The Strand 3 fieldwork provided more detail on children's centre emphasis on various services. This showed that many sought to provide named programmes for parents and parenting support. The results also point to some positive effects on outcomes for mothers in terms of mental or physical health.

Nonetheless, it should be noted that children's centres typically did not have highly qualified specialist staff to support complex mental health or social problems. Moreover, the external context of cuts to mental health provision may make referral and signposting for high need families difficult. Children's centres may be better placed to provide services to support families and parents, but may struggle to support those with complex social or mental health problems. This was an issue of concern noted in previous ECCE reports from Strand 3 (Sylva et al., 2015).

## 8.6 What children's centre features influence families' outcomes?

Taken together the impact analyses have identified a number of characteristics and processes of children's centres that predict better outcomes. Again the results do not show one simple pattern of associations, but point to various features that predict specific outcomes that can vary across the three user groups. Nonetheless, a number of communalities are found. Most of the characteristics of centres that were found to predict better outcomes relate to:

- **The ability to provide more services** (number of named programmes, expansion in named programmes, number of staff, including partner agency resourcing that typically involves staff).

In addition, a number of more specific characteristics predicted particular outcomes, but did not show consistency in effects across outcomes. These relate to centre configurations (organisation and structure) and changes in these. In relation to two of our sub-questions, therefore, these findings allow us to conclude that:

- Some models of centre organisation (service delivery) are more effective than others in fostering specific outcomes, but this does not generalise across most outcomes; and that

- More specific centre characteristics (e.g. location, leadership and management processes and structures, financial arrangements) are shown to predict some outcomes but again not most outcomes.

An important finding related to the ability to provide services was the way children's centres varied in their experience of budget changes, and consequent restructuring of services over the course of this evaluation. Some centres had expanded or increased budgets, others had experienced cuts to budgets and/or staff, or both cuts and restructuring. There were also some centres with stable funding. The impact analyses shows that better family and mother outcomes were identified for those who were registered at a centre that was growing (had an increased budget and expanded services), rather than centres that had budget cuts and had restructured. It is perhaps unsurprising that reductions in services or staffing, and restructuring, predicted poorer outcomes. Lack of stability in a centre and the time required to restructure provision, plus the loss of services or experienced staff may well affect the ability of centres to deliver services. Such adverse impacts are likely to be compounded by the wider context of cuts in benefits or services that linked with the austerity programme in operation while the ECCE evaluation took place. It should be noted that the evaluation of impact has been based upon fieldwork data collected within children's centres between 2011 and 2013. Budget cuts and restructuring post 2013 have also become common features in many local authorities, and this is likely to affect service provision and the potential to promote better outcomes for children, mothers and families - both now and in the future (see DfE 2013b; 2014b; 4Children Annual report, 2014). The impact analyses of child, mother and family outcomes also point to other potential children's centre and service effects that we think are most plausibly interpreted as evidence of impact via reach (see Glossary). We know that children's centres have been encouraged to target high risk or vulnerable families, and that the change in core purpose in 2011 increased the policy emphasis on this. Some of the measures provide evidence of targeting those most in need (e.g. outreach and health visitor home visits). Extended health visitor support was received by families with higher levels of: *CHAOS*, *Parental Distress*, *Parent-Child Dysfunctional Interaction*, out of work status, lifestyles associated with poorer health and higher maternal mental health problems. There are relatively small numbers of families in these groups but they do show worse outcomes in terms of the *CHAOS* measure, mother's mental health, *Parental Distress* and child *externalising* behaviour. We think this shows that centres were attempting to identify and support high-risk families that were experiencing difficulties.

## 8.7 Conclusions and Implications

The ECCE research has faced many challenges in seeking to identify and study the impacts of children's centres on child, mother and family outcomes. These include complexities in the nature of children's centres, variations in their offer and families' uptake of services, plus policy and contextual changes that have affected centres during the study. It is not possible to examine effects for many individual services as too few

families used specific services (except for the main five services which we were able to test). Given that families vary in the patterns and combinations of services they used, it is important for the analyses to reflect this reality in the way children's centres operate and families behave by identifying and examining different patterns of service use and how this changes over time. As well as service use we have sought to study centre characteristics and processes that can also shape outcomes.

We have only had a relatively short time scale for the study of impact (mean period of 24 months from baseline to outcome measures). We have sought to study change in mother and family outcomes over this time period but for child outcomes this was only possible for health status, as no comparable measures of cognition could be taken at baseline. The relatively short term nature of the analysis of change may mean we have missed some potential longer term effects. A further follow up would be required to address this. In addition, it is possible that there may be indirect impacts on children's later cognitive or social development in school (through effects on the early years *HLE* in particular).

The ECCE results support and extend those of the earlier NESS study. They demonstrate that children's centres do have the potential to promote better outcomes for families and to a lesser extent, for children and mothers. However, direct effects on children are more likely to happen if children are engaged in specific services provided by children's centres (such as high quality education and care). At present the focus of provision is on family and parenting services and, perhaps unsurprisingly, such outcomes show more evidence of impact in this evaluation.

In addition, centres that experienced budget increases and service expansion between 2011-2014 showed better effects on outcomes than those that experienced cuts and restructuring. This is an important message given the context in which children's centres were operating when this evaluation took place.

Children's centres seem to be targeting high need families (impact as reach). They are thus addressing a crucial feature of their core purpose. Nonetheless, do children's centre staff have the expertise and training to address complex needs? We found this to be a matter of serious concern to centre managers, and centre staff. Children's centres may find it hard to deliver services if they do not have the financial and staffing resources to meet needs. It may be that greater attention is needed to provide tailored services: making sure vulnerable mothers/families get directed or structured support at children's centres or via specialist providers (such as mental health services, child psychologist, etc.) for the relatively small number of high-risk families. Centre staff often expressed concerns about their expertise and capacity to support such families. They may be better placed to support parenting as the positive effects identified on their impact on family outcomes such as the early *HLE*, the organisation in homes and the parent-child relationship.

As a whole, the ECCE research suggests that children's centres can have positive impacts especially on family functioning and parenting, and that children's centres are

highly valued by parents. They are not a universal panacea, however, and it is unlikely they can pick up and address complex social needs especially if there are major cuts to other public services that affect children and families. There may be a need to re-assess the role and capacity of children's centres in supporting vulnerable or high need families. How should such families be identified and do centres have the resources and capacity to offer appropriate services that meet needs? Health visitors are likely to play an important role in supporting such families longer term with issues such as: learning difficulties, drug/alcohol abuse and domestic abuse.

In addition to trying to reach and support the most vulnerable, children's centres have the capacity to improve outcomes more broadly for families and, as with universal pre-school, access to health services, or schools, there are very good arguments for provision to be available for all families with young children living in disadvantaged areas (note that ECCE has only studied Phase 1 and 2 children's centres). This seems especially important in order to avoid stigmatising high-risk families. Moreover it seems likely that supporting a broader group of families will have a better chance of promoting small benefits, but because of large numbers, nonetheless worthwhile benefits for families that may show longer term positive effects on outcomes in the future.

The Strand 3 component of the ECCE evaluation has demonstrated that users of children's centres value their services highly, and evidence from both providers' and users' perspectives suggest various benefits. The users' surveys of Strand 2 likewise found that parents were very satisfied with children's centre services (78%). This softer evidence has been added to in this impact report where we have examined in detail a wide range of child, mother and family outcomes. Despite the difficulties in measurement and complexities in analyses reflecting the real life variation in children's centre provision, and characteristics and range of patterns of families' use of different services, the results of the statistical analyses suggest a number of positive, but generally weak effects, more notable for family outcomes such as the early years *HLE* and *CHAOS* measures. The findings are in broad accord with the earlier NESS evaluation findings for Sure Start.

It should still be recognised that the main drivers of outcomes identified in the impact analyses reflect the strong influence of background. The financial disadvantage measure and mother's educational qualifications are especially strong predictors of outcomes. Their effects are larger than those we have identified for our measures of children's centres (service use, characteristics and processes). For child outcomes the very early *Home Learning Environment* (measured at average child age 14 months) is also important, and the finding that children's centres can support improvement in early *HLE* outcomes is an encouraging one because this may lead to later benefits for child outcomes at school age.

The impact analyses provide new evidence that children's centres can promote better outcomes, especially for family functioning linked to parenting but these effects are only likely to ameliorate the effects of disadvantage. While they may help to reduce the equity gap, they are not strong enough to overcome the adverse effects of being part of a

disadvantaged family. Further subgroup analyses have been conducted to establish how far children's centres are able to address the needs of the most disadvantaged families (see Chapter 7). The results demonstrate that children's centres are able to target and support such groups (impact as reach) and provide evidence that they can promote better outcomes for the most disadvantaged families. Children's centres are thus able to help to ameliorate but not overcome the effects of high financial disadvantage. In this connection it is worth noting that more disadvantaged families made greater use of children's centres (Maisey et al., 2015). Moreover, the impact analyses have shown that children's centres are targeting high-risk families with the greatest needs via health visitor contact and outreach visits, which we interpret as evidence of impact via reach (see Glossary).

The findings in this report raise some important questions about children's centres' ability to adequately support families with very challenging problems. In terms of implications for policy and practice it will be important to try and establish the children's centres role in local Early Help strategies. For example, are there clear protocols for deciding locally how families with different types and levels of needs should be supported by different local agencies, and are there staff, resources and also clear pathways for ensuring this happens?

Earlier evaluation reports by ECCE provide more detail on the organisation of centres and features of families use of services, which are of interest to both policy and practice. The Impact strand of the evaluation provides important new evidence that children's centres can and do have positive effects in promoting better outcomes for families, mothers and children. It also sheds some light on the characteristics and features of centres that help to promote these.

## **NOTE: Some limitations of the Impact Analyses**

As noted earlier in the report, great challenges were posed to evaluating the impact of children's centres due to their varied nature, the varied patterns of family use of services, and the way the policy changed over time. The latter led to children's centres changing and restructuring during the period of time that we were conducting the evaluation and seeking to measure impact. Therefore, it was necessary to use complex statistical modelling techniques to estimate 'net effects'. While a good set of measures of child, parent, family and neighbourhood were obtained to act as statistical controls in the multilevel models, it is always possible that some other unmeasured factors were at work which could have influenced the results. Having said this, the controls (the background measures which lead to the 'net effects' suggesting impact) are robust and similar, or more extensive than those found in many other educational or social research studies. Moreover, the effects of the controls operate in similar ways to those found in past research. In addition, the impact results are in line with those found by the earlier NESS research, but the focus on a user sample adds new evidence to complement and extend the NESS findings of SSLPs.

Some specific limitations are summarised next:

1. It was not possible to analyse the impact of many of the individual specialist services due to low numbers of families taking up these services in the user sample. However, it was possible to test the effects of the most commonly used services.
2. Service use and need: service use by nature is individualised. It is also needs driven, and both complicate the analysis. The Contextual Value Added (CVA) approach that was used is robust, but could also have some limitations. For example, families experiencing more stress/life events after baseline testing could show negative change in outcomes that may lead to them to access more services. This would be expected to influence outcomes that are likely to be affected more by stress such as mother's mental health, or Parental Distress.
3. Children's centres have been encouraged to target 'needy' families (sometimes termed as vulnerable or 'at-risk' groups), however there are various interpretations of what factors should be used to identify such groups. The identification of vulnerable families or those families with additional needs is not possible directly from the evaluation data collected by ECCE, but a number of measures such as extended health visitor contact or extended outreach visits can be viewed as indirect indicators of higher needs. These data have allowed the impact analysis to investigate the outcomes for such families and their children, but the interpretation of the effects is more plausible as likely to reflect impact in terms of 'reach' rather than in terms of improving outcomes.
4. Different patterns of service use by families were identified: both of services at registered children's centres and of services elsewhere. Looking at service use more broadly (incorporating children's centre use and elsewhere) allows investigation of possible indirect children's centre effects through signposting and also the impact of families using services generally on outcomes.
5. The ECCE evaluation took place at a time of reductions in many public services, reductions in benefits, high unemployment and austerity policies (2011-2013). This affected service provision elsewhere even though children's centres budgets were intended to be maintained. Many centres in the study experienced restructuring and/or budget cuts leading to changes or reductions in services or staff<sup>101</sup> (as documented in evidence to the [House of Commons Education Select Committee \(2013\) presented via this link](#)).<sup>102</sup> Nationally, mental health services were also

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<sup>101</sup> Sam Gyimah MP in March 2015 reported that, as of December 2014, 142 children's centres had closed (leaving 2816 centres remaining). [Gyimah \(2015\) can be found through this link](#).

<sup>102</sup> In April 2011 the Government removed the ring-fence from Sure Start funding and introduced the Early Intervention Grant (EIG), with the result that it is not possible to put a figure on central government funding for Sure Start from 2011/12 onwards. From April 2013 EIG was transferred to the Department for Communities and Local Government to include in its Business Rates Retention scheme. Funding for the two year old offer was initially included in the EIG but has been transferred to the Dedicated Schools Grant.

reducing: see Chapter 4). This broader socio-economic context is likely to have had a greater impact on vulnerable families and those living in disadvantaged areas (as disadvantaged local authorities experienced greater budget cuts). Children's centre staff interviewed for Strand 3 fieldwork expressed concerns about budget cuts affecting staff and services, and also about their training and capacity to deal with families with more complex social or health needs (Sylva et al, 2015). The impact analyses could not investigate the effects of these contextual changes, although one measure was created that identified whether centres had experienced stasis (no change), expansion or increases in budget, cuts to budgets or staff, or cuts and restructuring.

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The EIG, excluding the two year old offer, is decreasing, meaning that there is less money available to spend on children's centres. Information provided by the LGA, based on DfE returns, shows a total planned expenditure by local authorities on Sure Start and children's centres of £1.0 bn in 2011/12, falling to £0.95bn in 2012/13: a decrease of 4.6%... Policy Exchange estimates that in 2013/14, spending on children's centres will fall to around £0.854bn, a total reduction of 28% from 2010... Prospects for local government funding to 2015 suggest that further significant reductions should be expected.' House of Commons Education Select Committee (2013).

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## 10 Glossary of Terms

**Age standardised scores:** Assessment scores adjusted to take account of the pupil's age at testing, enabling comparisons between the cognitive/academic outcome of an individual pupil, and the achievement of a nationally representative sample of pupils in the same age group or, in this case, the achievement of the ECCE sample.

**Baseline Measure:** Measures which describe a participant's score/categorisation at the beginning of Wave 1.

**Basic Clusters:** A *basic cluster* is a model of children's centre as defined within Strand 3 ECCE fieldwork. This is the simplest form of cluster possible. It is defined by a single manager or lead, with formal responsibility for the management of two or more sites or children's centres. Managers sometimes referred to basic clusters as 'groups' or 'sub-clusters'. The term 'groups' may have been used in response to new Ofsted legislation allowing children's centres to be inspected as 'a group' rather than a single individual centre (Ofsted, 2014).

**Birth weight:** In the ECCE research, babies born weighing 2500 grams (5lbs 8oz) or less are defined as below normal birth weight; foetal infant classification is below 1000 grams, very low birth weight is classified as 1001-1500 grams and low birth weight is classified as 1501-2500 grams (Scott and Carran, 1989). When ECCE uses this measure in analyses, the categories foetal infant (<1000g) and very low birth weight (1001-1005g) are often collapsed into one category due to small numbers in the former group. Birth weight was analysed in conjunction with other child health measures to create an overall measure of child physical health, at Wave 1.

**British Ability Scales (BAS):** This is a battery of assessments specially developed by NFER-Nelson to assess very young children's abilities from age 3. The assessments used at Wave 3 in the ECCE study were:

- Naming Vocabulary – Expressive language and knowledge of names.
- Picture Similarities – Non-verbal reasoning.

**CCLMRS:** The Children's Centre Leadership and Management Rating Scale is an interview and document-based assessment that measures the quality of management-level practices within a children's centre, as evidenced by documentation and interview. The scale is administered by a trained researcher who rates the centre using a set of statements (or indicators) which form an incline of quality. The CCLMRS consists of 20 items, grouped under five domains of quality (i.e. *Vision and Mission, Staff Recruitment and Employment, Staff Training and Qualifications, Service Delivery, Centre Organisation and Management*). Items are rated on a 6-point scale from '0=*Inadequate*' to '1=*Adequate*' to '3=*Good*' to '5=*Outstanding*'.

**Centre configurations:** When visited in 2013, centre managerial staff chose the organisational models which they believed to most closely resemble their centre both in

September 2011 and in 2013. Centres were categorised as falling into one of the following centre configurations: One Centre Units (traditional standalone model), Clusters, and Hub-and-Spoke models.

**Centre level variance:** The proportion of variance in a particular child/mother/family outcome measure (e.g., BAS naming vocabulary) attributable to the differences between individual centres rather than differences between individual families.

**Child background characteristics:** Child background characteristics include age, physical health, gender, and ethnicity.

**Cluster Model:** A *cluster* model is a model of children's centre as defined within Strand 3 ECCE fieldwork. A 'cluster manager' formally manages two or more children's centres (or **Basic Clusters**), and is responsible for coordinating the delivery of these. There may or may not be a middle manager or lead staff member in place at each children's centre – in some cases this position is filled by a 'centre coordinator' or 'administrative' person. Sometimes lead staff members may work across the different children's centres rather than at one site.

**Comparative Fit Index (CFI):** The CFI is an index of a statistical model fit that takes into account sample size. Values close to 0.95 indicate good fit (Hu and Bentler, 1999).

**Compositional effects:** The influence of the centres user composition (for example, in terms of socio-economic status, deprivation levels) on families' individual outcomes. For example, the influence of attending a children's centre where a high percentage of families are from income deprived neighbourhoods (IDACI). This influence is irrespective of the characteristics (IDACI status) of the individual families in question. For further details see Harker (2001).

**Confidence intervals (at 95 or 99%):** A range of values which can be expected to include the 'true' value in 95 or 99 out of 100 samples (i.e., if the calculation was repeated using 100 random samples).

**Confusion, Hubbub, and Order Scale (CHAOS):** The scale captures aspects of family organisation/disorder, routine and generally the presence or absence of a calm home environment. The four-item version used within the ECCE study included the following items: *it is really disorganised in our home; you can't hear yourself think in our home; the atmosphere in our home is calm; first thing in the day, we have a regular routine at home*. A higher score represents characteristics of a more chaotic home environment, and scores range between 5 and 20 (based on a 5-point Likert scale).

**Continuous measures:** Numerical/Scale variables. In this report, continuous outcome measures include BAS Naming Vocabulary, BAS Picture Similarities, CHAOS, GHQ, HLE and Parenting Stress Index (PSI) subscales (*Parental Distress, Parent-Child Dysfunctional Interaction, and difficult child*).

**Contextualised models:** Cross-sectional multilevel models exploring individuals' outcomes while controlling for individual, mother, family and home learning environment (HLE) characteristics (but not prior baseline model).

**Controlling for:** Several variables may influence an outcome and these variables may themselves be associated. Multilevel statistical analyses can calculate the influence of one variable upon an outcome having allowed for the effects of other variables. When this is done the net effect of a variable upon an outcome controlling for other variables can be established.

**Correlation:** A correlation is a measure of statistical association ranging from + 1 to -1.

**Cost benefit analysis:** Strand 5 of the Evaluation aims to assess the cost-effectiveness and cost benefit of children's centre services based on integrating the impact findings of children's centre effects obtained from Strand 4, with cost data collected from 24 case studies carried out in children's centres (investigating the costs of services and provision).

**Cronbach's alpha ( $\alpha$ ):** A measurement of the internal reliability (or consistency) of the items on a test or questionnaire that ranges between 0 and 1 showing the extent to which the items are measuring the same thing (Reber, 1995). A value greater than 0.7 ( $\alpha > 0.7$ ) suggests that the items consistently reflect the construct that is being measured.

**Dichotomous measures:** Categorical variable with only two possible values (1 defining the existence of a characteristic and 0 defining the inexistence). In this report, dichotomous measures include Household Economic Status (whether anyone in the house works or not), and physical health at Wave 3 (in better or poorer health).

**Effect size (ES):** Effect sizes (ES) provide a measure of the strength of the relationships between different predictors and the outcomes under study. For further information see Elliot and Sammons, (2004).

**ECCE:** The Evaluation of Children's Centres in England is being carried out by a consortium of organisations (NatCen Social Research, the University of Oxford and Frontier Economics), that were commissioned by the Department for Children, Schools and Families (DCSF, now Department for Education: DfE). The six year study aims to provide an in-depth understanding of children's centre services, including their effectiveness for children and families; and to assess their economic cost and value for money in relation to different types of services. The evaluation will run until 2017 and has a number of different elements (entitled Strands: see **Strand 1-Strand 5**) carried out by the different ECCE consortia organisations.

**EPPE/EPPE 3-11:** The Effective Provision of Pre-school Education (EPPE) project was designed to explore the impact of pre-school on children's cognitive/academic and social-behavioural outcomes as well as other important background influences (including family characteristics and the home learning environment). EPPE was the original phase of the

EPPSE study, funded by the Department for Education and Employment and ran from 1997-2003. The EPPE 3-11 project was an extension, investigating child outcomes up to the end of Key Stage 1 (2003-2007). For further information see Sylva, Melhuish, Sammons, Siraj-Blatchford and Taggart (2004, and 2008).

**Eudaemonic mental health:** Aspect of mental health covering psychological functioning such as concentration, decision making, facing up to problems, and feeling useful.

**Externalising behaviours scale:** An outcome in the impact analysis made up from two subscales of the **Strengths and Difficulties Questionnaire**: *Conduct Problems* and the *Hyperactivity* scale. Items specifically measure the following: *Often has temper tantrums or hot tempers; generally obedient, usually does what adults request; often fights with other children or bullies them; often argumentative with adults; can be spiteful to others; restless, overactive, cannot stay still for long; constantly fidgeting or squirming; easily distracted, concentration wanders; can stop and think things out before acting; sees tasks through to the end, good attention span.*

**Evidence-based practice:** The extent to which a centre implemented evidence-based practice was measured by the number and type of programmes that they used (and whether these were classified as well-evidenced according to Allen, 2011). Strand 4 considers whether centres offered named programmes for families: the list of 'named' programmes includes those that are described as 'well-evidenced' based upon their inclusion on Allen's list (2011).

**Factor Analysis (FA):** An umbrella term covering a number of statistical procedures that are used to identify a smaller number of factors or dimensions from a larger set of independent variables or items (Reber, 1995). Procedures used by ECCE include:

- **Exploratory Factor Analysis (EFA)** – a type of analysis where no prior (theoretical) knowledge is imposed on the way the items cluster/load.
- **Principal Components Analysis (PCA)** – a procedure that converts a set of observations of possibly correlated items into a set of values of uncorrelated items called principal components.
- **Confirmatory Factor Analysis (CFA)** – a type of factor analysis used where the measure of a factor/construct are tested against a prior (theoretical) knowledge.

**Family characteristics:** Examples of family characteristics are mother's highest qualification level, family financial disadvantage, and family Socio-Economic Status (SES).

**General Health Questionnaire (GHQ):** The 12 item self-report version of the General Health Questionnaire assesses minor, short-term psychiatric disorders within a general population (experienced in the last 4 weeks prior to testing) on a 4-point Likert scale. The questions cover both 'Eudaemonic' and 'Hedonic' aspects of mental health.

**Hedonic mental health:** Aspect of mental health covering the affective side such as feelings of happiness/unhappiness, confidence, worth, and enjoyment of day to day activities

**Hierarchical nature of the data:** Data that clusters into predefined sub-groups or levels within a system (i.e., children, pre-schools, local authorities).

**Home Learning Environment (HLE):** Measures derived from reports from parents (at interview or using respondent questionnaires) about what children do at home (with/independent of their parents). There are two HLE measures: Very early (mean child age=14 months) and early (mean child age=38 months).

**Household Economic Status:** This is a binary measure (yes/no) that measures whether any parent in the household was in work. Collected at baseline and outcome.

**Hub:** The hub is an element of a **Hub-and-spoke Model**. The hub is commonly where the lead of a cluster is based, or where staff working across the **spokes** were based: it is not presented in terms of line-management. The hub may have little or no direct management over spokes, or may provide strategic input only (they may in fact be independent children's centres with their own governing bodies).

**Hub-and-spoke model:** A hub-and-spoke is a model of children's centre as defined within Strand 3 ECCE fieldwork. It follows a non-hierarchical structure where one centre or **basic cluster** was chosen as the **hub** (sometimes referred to as the 'enhanced centre') with other centres or delivery points as the **spokes** (sometimes referred to as 'outreach centres' or 'gateways'). This was commonly a specific form of a **Cluster Model** but where which the hub does not necessarily have line management over the spokes. The *hub-and-spoke* model was seen as a method to allow provision to be sufficiently and appropriately targeted across the locality.

**Impact via Reach:** A type of impact identified in this report which was found to be driven primarily by the efforts of centres, services, and professionals to engage with certain families (those most vulnerable). It involved greater contact with outreach, health visitor and midwife visits. At first appearance, findings on negative effects on a number of outcomes appear counter-intuitive, such as longer-use of health visitor services being associated with poorer family functioning. However, the most plausible interpretation is that staff continue to reach out to those families showing the greatest problems. Such families are at higher risk of poor outcomes. Follow-on analyses demonstrated that these effects were largely driven by health visitors work with families with more complex and longer-term needs (e.g. domestic violence, drug/alcohol abuse, family break up, prison, children with behaviour problems). Thus the results are not interpreted as suggesting negative impacts on families because of the use of services, but rather services being successful in reaching the most vulnerable families that they are seeking to target. See the technical appendix for more information.

**Income Deprivation Affecting Children Index (IDACI):** The IDACI represents the percentage of children in each neighbourhood (or Lower Super Output Area: LSOA) that live in families that are income deprived. An LSOA is a small geographical area in England made up of approximately 1500 people or at least 400 households. There were 32, 482 LSOAs in 2010. For further details see Noble et al., (2008) and Communities and Local Government (2011).

**Internal Reliability/Consistency:** The degree to which the various parts of a test (items) or other instrument (e.g., questionnaire) measure the same variables/construct (Reber, 1995). An example measure would be **Cronbach's alpha**.

**Internalising behaviours scale:** An outcome in the impact analysis made up from two subscales of the **Strengths and Difficulties Questionnaire**: *Emotional Symptoms* and *Peer Problems* scales. Items specifically measure the following: *Often complains of headaches, stomach-aches or sickness; many worries, often seems worried; often unhappy, down-hearted or tearful; nervous or clingy in new situations, easily loses confidence; many fears, easily scared; rather solitary, tends to play alone; has at least one good friend; generally liked by other children; picked on or bullied by other children; and gets on better with adults than with other children.*

**Intra-centre correlation:** The intra-centre correlation measures the extent to which the outcomes from families in the same centre resemble each other as compared with those from children/families at different centres. The intra-centre correlation provides an indication of the extent to which unexplained variance in children's/families' outcomes or progress may be attributed to differences between centres. This gives an indication of possible variation in children's centre effectiveness.

**Likert scale:** Likert-type scales use multiple response categories (often 5 or more) along an ordinal continuum to measure an underlying construct or experience such as an attitude or belief. The assumption is that the construct/experience is linear, such as categories ranging from strongly agree to strongly disagree.

**Mean average:** A measure of central tendency that is calculated by summing a set of values (or scores) and then dividing by the number of values or scores (Reber, 1995).

**Multiple regression:** A method of predicting outcome scores on the basis of the statistical relationship between observed outcome scores and one or more predictor variables.

**Multi-agency working:** The extent to which children's centres offer services by other agencies or specialist workers (health visitors, speech and language therapists, adult education workers, etc). The extent to which a centre shares its vision, management, or buildings with other agencies.

**Named Programmes:** The fieldwork of ECCE Strand 3 researched the programmes that centres were offering to children, parents and families. To do this, managers filled in a

questionnaire that asked about a number of programmes by name; for example, whether or not a centre offered families the 'Positive Parenting Programme' ('Triple P'). The named programmes covered included those that featured on the list produced by the Allen review (2011) as 'well-evidenced', but also included others that were commonly offered and thought by practitioners to be beneficial. Finally, the questionnaire also included the option for centre staff to self-report named programmes that were not included in the list provided. For more information see the ECCE Strand 3 Reports (Goff et al, 2013)

**National Statistics Socio-Economic Classification (NS-SEC):** Classification of occupation was used to clarify family occupational status into one of 5 groups: 1) higher managerial administrative and professional occupations, 2) intermediate, 3) small employers and own account workers, 4) lower supervisory and technical, 5) semi-routine and routine occupations. An additional 'Never worked' category was also included.

**Net effect:** The unique contribution of a particular variable upon an outcome while other variables are controlled.

**Null model:** Multilevel model with no predictors.

**Odds Ratio (OR):** Odds Ratios represent the odds of achieving certain benchmark performance indicators given certain characteristics relative to the odds of the reference group.

**Ofsted:** The Office for Standards in Education, Children's Services and Skills (Ofsted) inspect and regulate services that care for children and young people, and those providing education and skills for learners of all ages. See Matthews and Sammons (2004) and the [Ofsted website \(via this link\)](#) for further details.

**One Centre Unit:** A *one centre unit* is a model of children's centre as defined within Strand 3 ECCE fieldwork. It is characterised by a single centre with a manager or lead, which may or may not have associated satellite sites or additional venues. This model encompasses the traditional standalone centre model.

**Parent-Child Dysfunctional Interaction:** A subscale from the **Parenting Stress Index** which measures the parent's perception of closeness between parent and child, levels of positive interaction and child positivity.

**Parental Distress subscale:** A subscale from the **Parenting Stress Index** which measures self-reported levels of distress in everyday life and in relation to child rearing, support from others and relationship with partner, and perceived parenting ability.

**Parenting Stress Index:** Intended for use as an early identification tool for problem parenting and family functioning (Abidin, 1995). It consists of three subscales (**Parental Distress**, **Parent-Child Dysfunctional Interaction**, and **Difficult Child**) The index is devised primarily for families with a pre-school child, but can be used for parents with a

child aged from one month to 12 years (each scale contains 12 items, with a 5-60 potential score).

**Pro-social skills:** An outcome in the impact analysis drawn from one subscale of the **Strengths and Difficulties Questionnaire**: *Pro-social* scale. Items specifically measure the following: *Considerate of other people's feelings; shares readily with other children (treats, toys, pencils etc.); helpful if someone is hurt, upset or feeling ill; kind to younger children; and often volunteers to help others (parents, teachers, other children).*

**Randomised Control Trial:** A study in which units (often people in the case of social science research) are randomly allocated to one of several groups participating in the trial of a new programme or intervention (be this educational, medical, social etc.). At least one of the groups will not receive the intervention (either at all, or for part of the study) and this group is referred to as the control group.

**Reach:** Two measures of centre reach are considered in this report; both limited to the centres at which families in the Impact sample were registered. Although both the reach measures refer to a percentage of the total families that were registered at each children's centre (not just those followed by the ECCE study), these percentages differ; 1) The first captures the proportion of centre users who came from inside the centre's reach area; 2) The second captures the proportion of families using the centre who were identified as financially disadvantaged (living in income deprived neighbourhoods). Reach within Smith et al., (2014) has a geographical basis, with children's centres being expected to serve families within a defined geographical area.

**Root Mean Square Error of Approximation (RMSEA):** The RMSEA is an index measure of statistical models; values less than 0.06 are an indication of a good fit.

**Sampling profile/procedures:** ECCE used a nested fieldwork design, with a **random stratified sample** of centres selected for Strand 1, being used to create the smaller focused samples of centres for Strands 2, 3 and 5. There were eligibility criteria for centres which were to be classed as a Phase 1 or 2; intended to be located within one of England's 30 per cent most deprived areas; designated as such for a minimum of two years before fieldwork, and running the full 'core offer' for three or more months before fieldwork. Eight hundred and fifty centres were selected as a random stratified sample for Strand 1, of which 509 centres took part. Three hundred of these were selected for Strand 2 (of which 128 took part). These 128 Strand 2 centres were invited to take part in the first Wave of Strand 3 fieldwork in 2012 (n=121 centres participated), and again in 2013 (n=117 centres participated). Alongside this, 72 Local Authorities (containing one or more of the original 128 Strand 2 centres) were surveyed for the 'Reach' Wave of fieldwork.

**Significance level:** Criteria for judging whether differences in scores between groups of children, families or centres might have arisen by chance. The most common criteria is the 95% level ( $p < 0.05$ ), which can be expected to include the 'true' value in 95 out of 100

samples (i.e., the probability being one in twenty that a difference might have arisen by chance).

**Socio-Economic Status (SES):** Occupational information was collected by means of a respondent interview/questionnaire at different time points. Family SES was obtained by assigning the SES classification based on the father; if no father is in the household or they are not working; mother's occupational status was taken.

**Spokes:** The Spokes are an element of the **Hub-and-spoke Model**. Spokes are centres or service delivery points, which may be joined through a similar lead agency, staff or line management.

**Standard deviation (SD):** A measure of the spread around the mean in a distribution of numerical scores. In a normal distribution, 68% of cases fall within one standard deviation of the mean and 95% of cases fall within two standard deviations.

**Strand 1:** Strand 1 utilised multiple surveys with children's centre leaders. Leaders from a sample of 509 centres were interviewed on key aspects of service provision, including management, staffing, services, users, and finance (Tanner et al., 2012). A second survey was carried out with children's centre leaders from the subset of 128 centres sampled for Strands 2-4 (Poole, Fry and Tanner, 2015).

**Strand 2:** Strand 2 involved a number of repeated surveys with families registered at 128 of the children's centres taking part in the Strand 1 survey (those same 128 centres also visited in Strand 3). The first family survey was carried out in 2012 to collect information regarding families' service use, demographics, health, and wellbeing: approximately 5,700 families (with children aged between 9-18 months) were interviewed in 2012 (Maisey et al., 2013). A further 3,600 families of the original family sample were surveyed again via telephone when their child reached the age of two years (in 2013). A final survey of approximately 2,600 families from the initial sample was carried out in 2014 when the child reached the age of three years to profile their development (via child assessments of cognitive and social development), as well as investigating families' use of children's centre services over time (Maisey et al., 2015).

**Strand 3:** Strand 3 involved visits to 121 of the 128 children's centres sampled for Strand 2. The first of two Waves of fieldwork was carried out by the research team in 2012, to assess the range of activities and services that centres delivered, partnership working methods, leadership and management, and Evidence-Based Practice (EBP: see Goff et al., 2013). One hundred and seventeen of the 121 centres were revisited in 2013 to assess the services available for parents and families, and to investigate the views of parents attending children's centre sessions (see Evangelou et al., 2014). Strand 3 also involved an area profiling exercise to assess the 'reach' of children's centres. Data on centre users was compared with data from the local area served by the centre (see Smith et al., 2014). A final report synthesising the organisation, delivery of family services, and reach of children's centres has been produced (Sylva et al., 2015).

**Strand 4:** Strand 4 explores data collected from the first three strands of the project (Strand 1: survey of children's centre leaders, Strand 2: visits to families, and Strand 3: visits to children's centres). Overall Strand 4 aims to answer the question: "*What aspects of children's centres (management structure, working practices, services offered, and services used) affect family, parent, and child outcomes when their child is aged three?*" Subsequently, children's Foundation Stage Profiles will be used to explore the impact of children's centres on child school readiness at age five.

**Strand 5:** Strand 5 aims to assess the cost-effectiveness and **cost benefit** of children's centre services based on the impact findings in Strand 4 and cost data from 24 case studies in children's centres. Case studies were carried out in 12 children's centres in 2012 (see Briggs et al., 2012), with a further 12 visited at the end of 2013-early 2014.

**Stratified random sample:** A method of sample selection based upon apriori division of a population into distinct strata before equal or proportional random sampling from each.

**Strengths and Difficulties Questionnaire (SDQ):** Goodman's SDQ is made up of five scales (each with 5 items), developed to be in line with the Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition (DSM-IV; American Psychiatric Association, 1994). These five scales are *Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems* and *Pro-social*.

**Value added models:** Longitudinal multilevel models exploring individuals' progress over time, controlling for prior attainment/attitude/behaviour as well as significant individual, family and HLE characteristics.

**Z score:** A Z score is a statistical method for standardising data so that the mean equals zero and the standard deviation equals one.

# Appendix A – Children’s centre literature (Introduction)

## A1 The historical development of children’s centres

The historical development of children’s centres has been detailed in reports produced both by ECCE and other authors (Goff et al., 2013; Sylva et al., 2015; Eisenstadt, 2011; Johnson, 2011; Waldegrave, 2013; Evangelou, Goff, Sylva, Sammons, Smith, Hall and Eisenstadt, 2015). Sure Start Local Programmes (SSLPs) were a policy initiative informed by research evidence, and developed after discussions with leading researchers and research institutes, seminars exploring key debates, and visits by Treasury officials to learn about established programmes within both the United States and England (Eisenstadt, 2011). Eisenstadt describes the development of a Comprehensive Spending Review on provision for young people, and how the move towards Sure Start focused on both a political desire to develop policies via new methods, and most importantly, reaffirming the government commitment to young children and reducing disadvantage. Johnson (2011) described Sure Start as a case study for evidence-based policy making.

Starting as 250 SSLPs providing universal services for families with children aged under four in the most disadvantaged areas, Sure Start was designed to be both area-based and accessible. Sure Start attempted to mix policy, politics and evidence, taking into consideration the features of already-established services which were described as making a difference (Glass, 1999; Eisenstadt, 2011). Johnson (2011) described how later elements of the intervention were more likely to be guided by current policy interests in contrast to the heavy influence of research during start-up; for example, their move towards a community-based focus and autonomous provision; and the doubling of SSLPs in 2000 with a hope to ‘*create evidence on the ground*’ (Johnson, 2011: pg. 19). In a similar way, Eisenstadt discussed the employability and childcare agenda within Sure Start with high aspirations. Indeed, Eisenstadt (2011: p.48) reported on the ‘pressure to expand’ and how this resulted in greater numbers of children being reached by the intervention, although a smaller proportion of those living in disadvantage.

In 2002, Sure Start Children’s Centres (SSCCs) were introduced having developed from the original SSLPs. Again they were aimed at the most disadvantaged areas (Lewis, 2011; Bagley, 2011; and Johnson, 2011 discuss changes to policy and social capital during this period). A policy shift in 2004 took children’s centres away from their original focus on disadvantaged areas, towards creating a network of 3,500 centres which were meant to be accessible in every community and provide a range of services for families. *Choice for Parents the Best Start for Children, a ten year strategy for childcare* (HM Treasury, 2004) set out a broad range of policies on early years and childcare, including the intention to create 3,500 Sure Start Children’s Centres. This Government report was highly influenced by findings from the Effective Provision of Pre-School Education (EPPE) project showing that pre-school settings combining education and care scored

highest on quality (Sylva, Melhuish, Sammons, Siraj-Blatchford, Taggart and Elliot, 2003) and that pre-school benefited all children.

SSCCs were rolled out in three phases throughout England (with all SSLPs, Early Excellence Centres and Neighbourhood Nursery Initiatives falling into Phase 1 and 2 centres: Waldegrave, 2013). All children's centres were tasked to deliver a 'core offer' of services which focused also on supporting employment for families as a means to reducing poverty, and introduced childcare for centres in the most deprived areas, however Rallings (2014) described how the funding and development of the three stages were different thereby resulting in some diversity across England.

The Coalition Government in 2011 changed the role of children's centres, removing the requirement for employment and childcare support. Furthermore, the new government became increasingly interested in early intervention based on risk factors in individual families. This meant rather than focusing on particular geographical areas of poverty, children's centre services became targeted on families deemed to be in 'greatest need' of early intervention. A revised 'core purpose' was introduced in 2011 with further revisions again in 2012: this focused more centrally on child and family outcomes, and reducing inequalities experienced by the most needy families (DfE, 2013a), by focusing on those most at risk of poor outcomes (Lupton, with Burchardt, Fitzgerald, Hills, McKnight, Obolenskaya, Stewart, Thomson, Tunstall and Vizard, 2015; Stewart and Obolenskaya, 2015). The House of Commons Education Select Committee (2013) and a report by Rallings (2014) both raised questions regarding the lack of clarity of the children's centre 'core purpose'. Rallings suggested that, while they clearly have a relevant role for early intervention, centres might benefit further from tighter guidelines surrounding the age of children that they work with and the focus of their work at specific developmental stages. The Education Select Committee recommended that the 'core purpose' could be revised to focus on '*achievable outcomes for children's centres to deliver for children and families*' (2013, pg. 12).

## **A2 Past research on the effects of children's centres/similar early interventions**

### **A2.1 Sure Start Local Programmes (NESS Study)**

The first Impact study of the NESS evaluation involved a cross-sectional study of children aged 9 and 36 months drawn from SSLP areas and comparison communities (which were designed to become SSLP areas at a later date). SSLP areas had been identified and funded for three years. The fourth (and last) Impact study of the NESS evaluation followed seven year olds and their families in 150 SSLP areas; through the ages of nine months, three and five years old. The comparison group of non-SSLP children and families were drawn from the entire Millennium Cohort Study (MCS) and chosen as living in areas with similar characteristics to the SSLP areas (such as economic and demographic factors) but without offering SSLP services. The researchers sought to take

into account pre-existing family and area background characteristics.<sup>103</sup> The evaluation was intended to be both formative and summative, feeding into future rollouts of the intervention as well as evaluating the provision (Johnson, 2011). The NESS evaluation demonstrated mixed results. While overall there were improvements in parent measures including employment, these did not translate into measurable and sustained child improvements over the years of the study. This section reports on findings from both phases of the study, and results are drawn from NESS reports written by the NESS Research Team (2005, 2008, 2010, and 2012) for comparison with the data reported in this current *Impact* study of children's centres.

There were mixed findings from the first *Impact* study suggesting that the majority of families in Sure Start areas (86% of the sample) were achieving some small positive outcomes (in terms of children with fewer behavioural problems and greater social confidence; mothers displaying less negative parenting). However, a smaller group of children from the most disadvantaged families (those with teen mothers, or from workless or lone-parent households), were doing less well than their peers in non-Sure Start areas (NESS Research Team, 2005). Early findings suggested that children from very disadvantaged backgrounds (young, workless or lone parents) living in SSLP areas were scoring significantly lower on vocabulary and behavioural problems than children not in SSLP areas; although there were some positive effects on parenting and household 'CHAOS'. The NESS researchers concluded that parents with better 'human capital' or those living in relatively less disadvantaged areas might have been more able to access SSLP services, and received more benefits of SSLP use. The effects identified through the Phase 1 study were however relatively small and suggested that SSLPs needed longer than three years of operation to have a sufficient impact on families.

Phase 2 of the study, which included three further *Impact* reports followed children at ages three, five, and seven (Melhuish, 2013). The 2008 *Impact* report suggested that families encountered a more established SSLP programme with better programme exposure and quality. Melhuish suggested that the improved child (socio-emotional and health) and family (improved parenting and early HLE) outcomes at age three might reflect programme impact, a greater attention to vulnerable families and greater exposure. At age three, while there were positive impacts of fewer accidental injuries and higher likelihood of recommended immunisations, there were no statistically significant effects on children's vocabulary as measured on the British Ability Scales (BAS) *Naming Vocabulary*, and no reduction in negative social behaviour. Families were recognised to

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<sup>103</sup> The NESS Research Team (2008) note a methodological caveat regarding their use of the MCS group as a comparison sample. Data from the NESS and MCS samples were collected two years apart by two different research teams. This may mean that any changes could be an artificial effect of general community change or data collection differences. Randomised Control Trials (RCTs) were also not feasible for this study due to the intervention being targeted towards areas rather than specific groups of individuals, and the early rollout and rapid expansion of the SSLP intervention. Johnson (2011) noted that there were also practical and political concerns regarding deciding whether or not localities would be designated as a Sure Start area for an RCT design. Eisenstadt (2011) provides a detailed discussion on the NESS evaluation and relevant design issues.

be using more services for supporting child and family development (NESS Research Team, 2008).

At age 5, the prior benefits on child social and emotional development were not evident, despite the SSLP influence on positive parenting at ages three and five (NESS Research Team, 2010). Melhuish (2013) suggested that this may in part be due to free childcare places taken up by the majority of three and four year olds (97%) which may have meant that developmental advantages at age three were not detected. The universal provision of early education meant that the differences between Sure Start area children and non-Sure Start area children became increasingly detected on parent, rather than child measures. For example, at age 5, there were no effects of living in an SSLP area on child educational development (in terms of teaching ratings using Foundation Stage Profiles: FSPs), although child cognition and language was not analysed at this age<sup>104</sup>. However, NESS researchers did find that children from SSLP areas were less likely to be overweight (in terms of lower Body Mass Indexes: BMIs) and more likely to have better general health. In terms of the effects on families at age five, these were slightly more mixed with a couple of small adverse effects (NESS Research Team, 2010). Mothers reported greater life satisfaction and provided more positive parent and family functioning in terms of less harsh discipline, a less chaotic and more cognitively stimulating home environment for their children; however, they also reported experiencing more depressive symptoms and were less likely to have attended their child's school for arranged meetings.

There were no consistent effects of child outcomes at age 7 (in terms of educational development, social and behavioural outcomes, or health: NESS Research Team, 2012). The authors again cited the widespread availability of pre-school early years programmes and Government free early education places as a possible reason: Pre-school education, (especially if of higher quality) has been shown to predict better cognitive and social development for all children (Sylva, Melhuish, Sammons, Siraj-Blatchford, and Taggart, 2010) and therefore might be influencing the developmental outcomes of children overall. Comparatively, at age 7, SSLPs appeared to be successful in promoting better outcomes for very vulnerable families (in terms of lone-parent and workless households). Lone parent and workless households reported significantly better life satisfaction, while mothers in general reported less use of harsh discipline and a more stimulating home learning environment; and families of boys reported a less chaotic home environment.

A NESS cost effectiveness study also considered benefits of SSLPs on top of any potential impact of the free early education offer. Meadows and the Ness Research Team (2011) particularly reported that when the children of the SSLP families had reached the age of five, workless families living in SSLP areas were more likely to move into employment than their counterparts living in non-SSLP areas; gaining approximately 20

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<sup>104</sup> The child's cognitive and language development was not included in analysis for this age group due to researcher concerns about the quality of the data collected.

per cent to their income as a result (around £50 a week). The economic benefits of SSLPs to improving the worklessness agenda were reported to range from £279 and £557 per eligible child given that parents were moving towards employment more quickly. The benefits reflected both higher incomes for families, and linked benefits to taxpayers in terms of higher tax receipts and lower benefit payments.

## **A2.2 Other research on the impact of children's centres**

Very few studies of children's centres in England have been able to evaluate effects on user outcomes. Those studies that have attempted this often do so on a very small scale. For example, a small study discussed by Blewett, Tunstill, Hyssein, Manthrpe and Cowley (2011) showed possible improvements in child outcomes after family contact with a children's centre. An attempt was made to measure changes in child outcomes for these 53 families, using a researcher-developed rating scale to review family progression between 1) their first encounter with the centre and 2) their last date of service use at the centre or the date their case was closed. Results appeared to show a general picture of '*children doing better*' after working with centres, in terms of reduced levels of need. The report can however only draw very cautious conclusions of child outcomes within Action for Children centres, on the basis of the very limited sample size (n=5 centres, n=53 families), short time scale for outcomes, and data collection using a researcher-developed high inference tool.

### **A2.2.1 Children's centres in the United Kingdom**

Aside from the Sure Start Children's Centre programme in England on which this report will focus, the children's centre intervention has also been rolled out to other UK countries including Wales, Scotland and Northern Ireland. Their remit is broadly similar, although they are not fully comparable to centres in England.

A mapping exercise carried out in Sure Start Scotland (Cunningham-Burley, Jamieson, Morton, Adam and McFarlane, 2002) aimed to identify services for children aged nought to three which had developed through Sure Start Scotland funding. The programme was launched in 1999 to offer services for children's social and emotional development, health, learning capacity, and community cohesion. Cunningham-Burley et al. (2002) classified the programme in terms of a number of features which are similar to children's centres: integrated services, outreach, parenting support, early education, play and educational resources and targeted groups. The report acknowledged that there had been little evaluation of Sure Start Scotland services to that point. A reviewed mapping exercise in 2005 highlighted that the numbers of children supported by Sure Start Scotland had risen greatly from 3,387 children in 1999-00, to 15,400 children in 2003-04 (Cunningham-Burley, and Carty, with Martin and Birch, 2005). Cunningham-Burley et al. (2005) again acknowledged the difficulty of evaluating such a community-based intervention: instead the authors cited case studies and local monitoring data procedures in their evidence of improvement to child behaviour and development, parental self-esteem, health improvement and social care involvement.

Sure Start services in Northern Ireland focus on the health of the family, early years care and education, parenting support and improved wellbeing for all children aged pre-birth to four, living within the 20 per cent most disadvantaged areas in Northern Ireland. Core services again resemble English children's centres, encompassing outreach and home visits; family support; health care and advice; good quality play, learning and childcare; and speech, language and communication (NI Direct, 2015). A report by the Education and Training Inspectorate of Northern Ireland (ETI: 2010), evaluated the early days of provision for two-year-olds in these SureStart Centres. The evaluation was carried out in 2009 across nine SureStart centres (comprising 18 programmes) collecting information from a range of stakeholders (staff, parents, specialist staff, schools and pre-schools) along with observations of practice. The majority of the provision from this sample was reportedly *good* or *very good* (56%): a significant minority of the provision was only satisfactory (44%). Alongside the detailed ratings for various categories of provision (including achievements and outcomes, provision for learning, leadership and management), a range of areas for improvement were identified by the report authors including training and development, disseminating good practice, external specialist advice and effective collaborative working (ETI, 2010).

In Wales, 'Cymorth – the Children and Youth Support Fund' exists in place of a number of previous grants and interventions, which include Sure Start. As part of this revision, the Welsh Assembly Government (2003) proposed the establishment of integrated centres which would follow a number of the core features of English children's centres, including part time education, parenting support, health, and open access play. A recent National Foundation for Educational Research report (NFER, 2010) evaluated a sample of four Integrated Children's Centres (ICC) in Wales which were selected to be representative of the ICC offer. These centres were visited at three time points between 2008 and 2009, and interviews were carried out with parents, children, staff and managers. The qualitative case studies suggested that use of the ICCs benefited the development of children (through improved social and cognitive skills, stronger links with primary schools to enhance school readiness and transition). The case studies also suggested various benefits to the parents and families, for example obtaining qualifications and employment; and improved physical and psychological health.

### **A2.3 Family Centres**

Another intervention that bears a strong resemblance to UK children's centres are family centres. These entities have been designed in a similar way, to provide services aimed at the whole family including promoting parenting and healthy child development, both maternal and child healthcare, early education, family support and wider family needs such as language development and social care. The centres provide an opportunity for parents and children to attend activities together. While a large focus of these centres is on work with children aged nought to six, a number of centres in Finland for example, targeted children over the age of six (Kekkonen, 2013). Family centres are present across a number of Nordic countries (Sweden, Norway, Finland, Greenland) and Germany. Although family centres were introduced to Sweden over 40 years ago, there

was an apparent ‘boom’ in centres in the early 2000s, with the development of family centres across Denmark, Iceland and Norway (Kekkonen, Montonen, and Viitala, 2012, p.9). A report on the development of Family Centres in the Nordic regions recognised that very few studies or evaluations have taken place regarding the effectiveness of family centres: “*studies of effects or collective Nordic studies are completely lacking today*” (Kouvonen, Marklund, Karlsson, Mohamud, Nordlund, Rihnstrøm Schmidt, Mäkilä, Ström, Pinlaja, Warrer Schnor, Röckinger, Lundberg, Simic, 2012: pg.9). Instead, the authors cite a number of conferences, a report, and qualitative studies as evidence of family satisfaction and positive results in terms of child’s psychological health.

At the time of writing, literature on outcomes and the impact of family centres was sparse. An evaluation of family centres in Region Västra Götaland in Sweden considered 16 family centres, 470 parents and over 600 children (Abrahamsson, Bing and Löfström, 2009). The results interpreted parental perceptions of the service and described the provision of the programme; however again it did not provide any information on potential impact of the programme in terms of effects on family and child outcomes. Family centres have also been introduced in Germany fairly recently (2013) but at the time of writing, there was also no literature on any outcomes of family centre use.

## **A2.4 Head Start and Early Head Start**

A similar programme to children’s centres has been running in the United States since the 1960s. Head Start aims to provide a suite of services to support children from low income families up to the age of five, which include pre-school education, health and nutrition services, and child development services. Early Head Start was convened in 1994, with a more focused target of prenatal to age three. Early Head Start focuses more heavily on parent and child attachment, healthy development and parental involvement, through a mixture of centre-based and home-based services, and family childcare.

A number of evaluation studies have been carried out on both of these programmes. In one such study involving the random assignment of families to Head Start ‘treatment’ and waiting-list groups, Head Start children were shown to have improved receptive vocabulary and phonemic awareness when compared to non-Head Start children; and their parents were significantly more likely to address their children’s health needs (Abbott-Shim, Lambert and McCarty, 2003).

Results concerning the longer term outcomes of Head Start however, have not been so conclusive; perhaps as a result of differences in populations, programmes and context (Barnett and Hustedt, 2005). Ludwig and Phillips (2008, p.259) reported on the ‘*suggestive evidence*’ for long term effects of Head Start, passing a ‘benefit-cost test over the first few decades of operation’. In particular the authors cite two studies: the first compared the experiences of pairs of siblings (one who attended the Head Start programme, and one who did not - a study reported by Garces, Thomas and Currie, 2002: cited by Ludwig and Phillips). Using this ‘within-family, across-sibling’ design, the economists reported that non-Hispanic, white children who had accessed Head Start

were 1) more likely to finish high school and 2) more likely to attend a college. Ludwig and Miller used a different 'regression discontinuity' study design, which took account of counties with higher participation and funding rates. The findings suggested that children who were living in counties receiving a 50-100 per cent increase in funding for Head Start in the 1960s or 1970s were 'associated with a decline in mortality from causes of death that could be affected by the program'; and there was suggestive evidence for an increase in schooling attainment and an increase in the likelihood of attending college (Ludwig and Phillips, 2008, p260). The authors however held high hopes for the results from the Head Start randomised control trial which did not show the longer term effects as hoped (discussed later in this section).

A further study using a (fuzzy) regression discontinuity design followed children who could enrol into Head Start in the 1980s to the late 1990s (Carneiro and Ginja, 2014). This study recognised the probability of Head Start participation to be '*a discontinuous function of household income (and family size)*' (p.169). This later study suggested that eligibility for Head Start was associated with a number of outcomes for boys at age 12-13: 1) reduction in the probability of being overweight, 2) reduction in the probability of having a health condition involving special equipment, and 3) reduction in behavioural problems. The cognitive tests for this study were noted to be 'imprecise' and there was no evidence of any impact of Head Start eligibility. At age 16-17, Head Start eligibility was associated with a reduced probability of being overweight and presenting symptoms of depression. Lastly, at age 20-21 years, Head Start eligibility was associated with a decreased probability of having been sentenced for a crime, and idleness for males.

The recent randomised control trial reporting on the Head Start intervention compared a nationally representative sample of three and four year olds, randomly assigning them to either a Head Start group or control (who were entitled to enrol in other early childhood programmes, but not Head Start: U.S. Department of Health and Human Services, 2010). The total sample covered 383 randomly selected Head Start centres, and included a total of 4,667 three and four year olds who were new to the programme. The groups were further broken down into age groups (three or four years) to test whether age of participation made any difference to Head Start participation for a single year. The findings reported here are only those significant to the required level of probability ( $p < 0.05$ ) although the authors also described a number of suggestive impacts at  $p < 0.10$ . Detailed Head Start results and measures are presented in Technical Appendix 1.

The U.S. Department of Health and Human Services (2010) suggested that in terms of children's cognitive development, four year old children demonstrated significantly better outcomes for language and literacy whilst attending the Head Start scheme, but these were not sustained as they moved into kindergarten and first grade. Similarly, a few cognitive benefits were present for three to four year old children, but these disappeared as they moved on to kindergarten and first grade. Regarding children's social and emotional development, some limited benefits to children aged three were found during their Head Start participation (in terms of reduced hyperactivity and increased closeness with their parent), however, children attending Head Start at age four showed a negative

effect of increased shyness in first grade. In terms of health, Head Start primarily influenced children's dental health. Regarding parenting outcomes, the evaluation suggested that the Head Start programme can have a significant effect on a reduction in the use of negative parenting behaviours in terms of use of 'time out' and smacking children, and a reduction in authoritarian parenting style (for further detailed information, see Technical Appendix 1).

A second randomised control trial reporting specifically on the Early Head Start intervention, followed 3,001 families in the first 17 programmes, with children randomly assigned to either a program or control group (who were entitled to use other community services but not Early Head Start: Vogel, Xue, Moiduddin, Carlson and Kisker, 2010). The Early Head Start Research and Evaluation Project consisted of both an implementation study, and an impact study which followed children to the ages of three, five (pre-kindergarten year) and ten (fifth grade). At age three while children were still attending Early Head Start, children demonstrated a range of improved outcomes when compared to the control group including socio-emotional and approaches to learning (engagement with parents and sustained attention to objects, less negativity and aggressiveness); better cognitive development and receptive vocabulary (Vogel, Brooks-Gunn, Martin and Klute, 2013). In turn, parents of EHS children aged three were offering a significantly better language and learning environment in the home, supporting their children during play, reading to their children daily and reporting less physical punishment. When former EHS children were five, few of these previous benefits remained (only lower social behaviour problems, more positive approaches to learning, and parents continuing to read to their children and show interest in their learning). By age 10, there were no significant differences in the outcomes of former EHS children and families versus the control group (Vogel, et al., 2010). For further detailed information, see Technical Appendix 1.

## **A2.5 Flying Start**

A similar programme to children's centres entitled 'Flying Start' was implemented across some of the most disadvantaged areas across Wales. This again was an area-based programme which aimed to improve outcomes for children aged four and under and their families; through the integration of enhanced health visiting, parenting support, support for early language and free high quality part time childcare for two to three year olds. In a similar manner to the NESS evaluation, the evaluation of the Welsh Flying Start intervention took an intention to treat approach surveying all families within a Flying Start area, assuming that families have the opportunity to interact with Flying Start services (Knibbs, Pope, Dobie and D'Souza., 2013). Comparison areas were selected to match Flying Start respondents in terms of a range of demographic and socio-economic variables; however these areas were relatively less disadvantaged. The evaluation of this programme involved 1,033 parents of children aged between two to four in Flying Start areas, and 1,083 in selected comparison areas.

An evaluation of the Flying Start programme demonstrated no statistical differences between the two areas on key child outcomes (cognitive and language skills, social and emotional development and independence, self-regulation: Knibbs et al., 2013). However, the authors suggested that it was plausible that families in the Flying Start areas would have a lower 'baseline' than the matched comparison group due to their higher level of deprivation; in which case, there *may* have been a greater improvement in Flying Start families which brought their outcomes up to par with the matched comparison families; this of course is however a hypothesis which cannot be tested.

Living in a Flying Start area was also associated with a higher take-up of parenting and language support programmes, better contact with health visitors, and more confidence as parents. There were however no statistical differences between the two areas when considering key parent outcomes (immunisation rates, parenting self-confidence, mental health, or home environment: Knibbs et al., 2013).

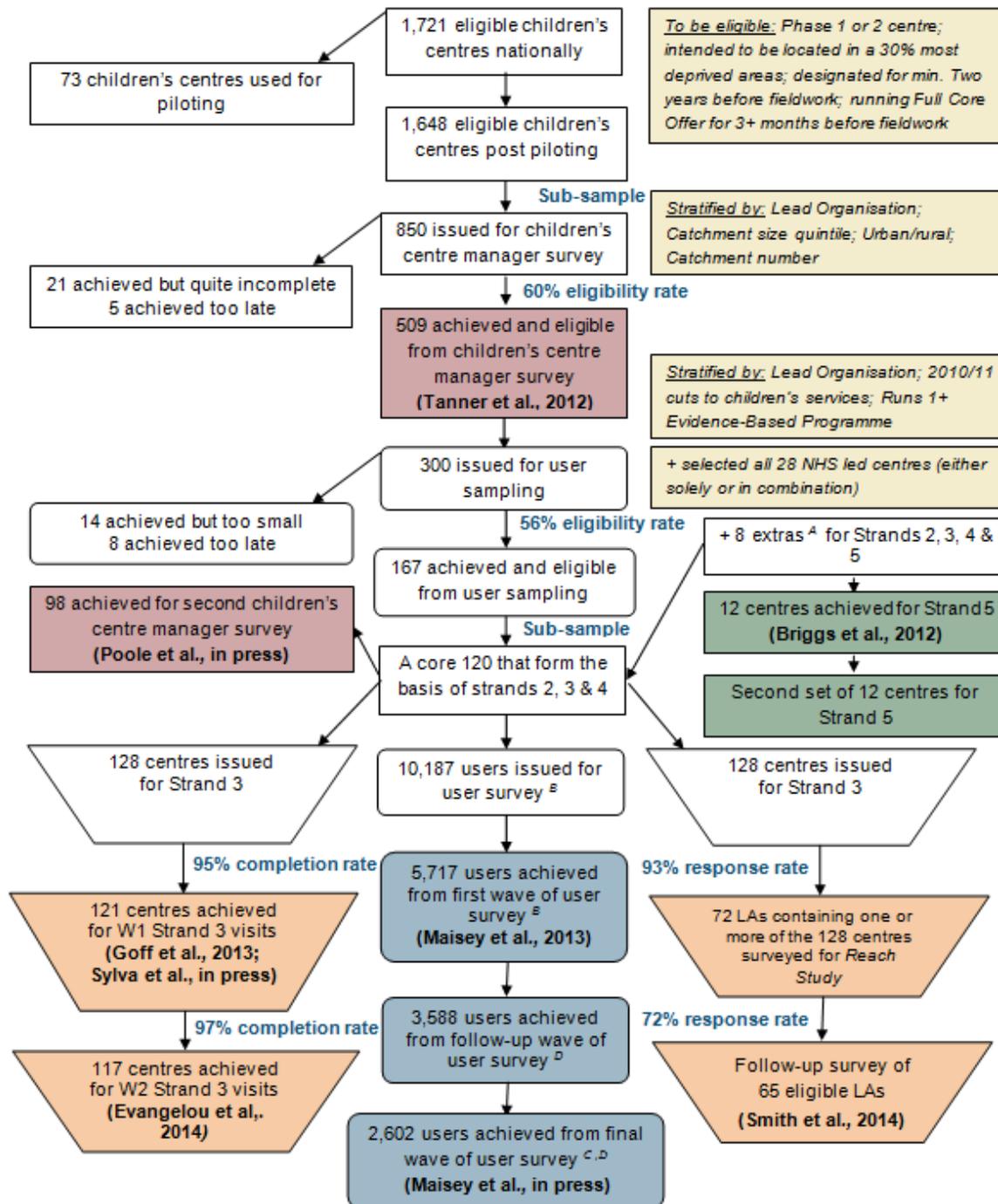
### **A3 Overview**

This review of the literature produces mixed evidence on the effects of programmes and interventions that have similarities to the children's centre initiative in England. The present ECCE evaluation is needed to add to the existing evidence base by focusing on a wide range of relevant outcomes and studying patterns of actual family use of services and centre characteristics and processes in more depth to see whether measurable effects can be identified. In particular it extends the NESS evaluation of Sure Start Local Programmes through the use of a longitudinal survey of children and families, and collection of more detailed information on uptake of services, plus more detailed evidence about the named children's centres at which families were registered. However, it cannot use a quasi-experimental or 'intention to treat' design because of the roll out of children's centres.

# Appendix B – Chapter 2 (Method)

## B1 Evaluation of Children’s Centres in England (ECCE)

Figure ApB1 ECCE sample design



	Strand 1 fieldwork
	Strand 2 fieldwork
	Strand 3 fieldwork
	Strand 5 fieldwork

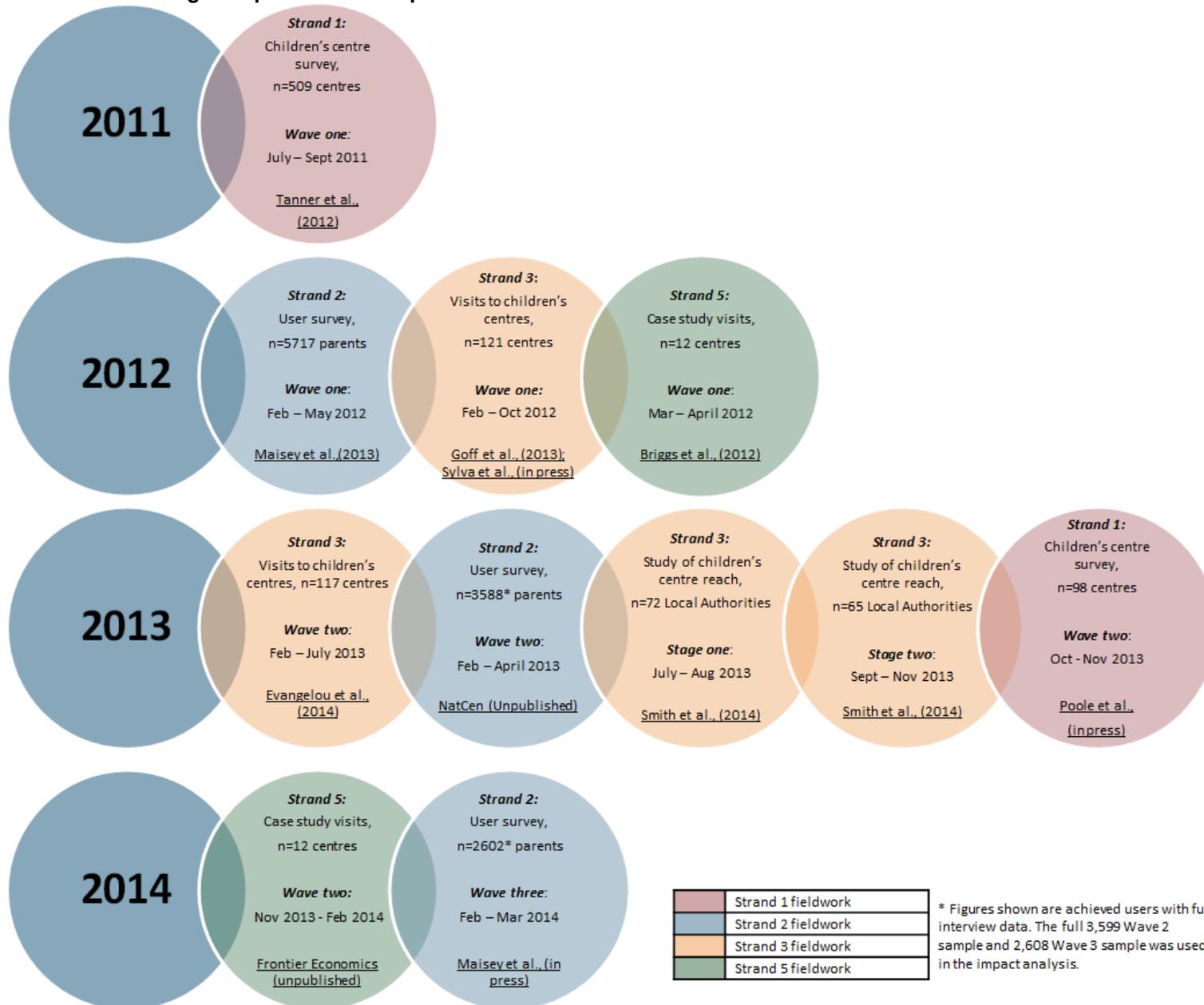
<sup>A</sup> Note: Extra centres were allocated to allow for potential attrition.

<sup>B</sup> Users were drawn from the same 128 centres allocated to Strand 3 fieldwork.

<sup>C</sup> Users were drawn from the 117 centres achieved at Wave 2 of Strand 3.

<sup>D</sup> Figures shown are achieved users with full interview data. The full 3,599 Wave 2 sample and 2,608 Wave 3 sample was used in the impact analysis.

Figure ApB2 ECCE Samples and Data Collection Periods across the five Strands of work



## B2 Research rigour

In terms of the *Maryland Scientific Methods Scale* (see Farrington, 2003) the researchers judge that the ECCE approach would be rated as at point 4 (or at worst point 3). However this is not seen as a limitation since the current design is still deemed to be the most appropriate for the study and evaluation of children's centres as they have been introduced in England to identify their effects. This is because it explicitly focuses on the intersection between the varied provision (differing at the individual centre level) and the varied patterns of family use of services (or lack of use of services for comparison). Data from the surveys revealed useful numbers of *limited* or *no users* of services to act as robust comparison groups (see Technical Appendix 2 for more detail on all measures).

### B.2.1 The Maryland Scientific Methods Scale

(*Sherman, Gottfredson, MacKenzie, Eck, Reuter and Bushway, 1998; Farrington, MacKenzie, Sherman and Welsh, 2002*)

440 evaluations of crime prevention programmes were rated on ten criteria:

1. Adequacy of sampling;
2. Adequacy of sample size;
3. Pre-treatment measures of outcomes;
4. Adequacy of comparison groups;
5. Controls for prior group differences;
6. Adequacy of measurement of variables;
7. Attrition;
8. Post-intervention measurement;
9. Adequacy of statistical analyses;
10. Testing of alternative explanations.

Each evaluation was then rated on a six point scale (0-5):

0) No confidence in results;

3) The minimum degree of methodological rigour in order to be confident that the results from the evaluation were reasonably accurate;

5) High confidence in results.

### B3 Sample, multilevel weighting procedures and analysis

The baseline Strand 1 and 2 analyses make use of their own sampling weightings (see respectively: Tanner et al., 2012; Maisey et al., 2013). The Strand 1 weightings were derived so that population estimates of Phase 1 and 2 children's centres (n=1,721, see Tanner et al., 2012) could be estimated from the Strand 1 children's centre sample of n=509. The Strand 2 weightings came from combining two intermediate weightings that make the responding parents (n=5,717) representative of parents within all centres with 30 or more parents.

Strand 4 will not employ the weights from either Strand 1 or Strand 2 as it will combine data from both of these with data from Strand 3 within *multilevel regression models* (as families were nested within centres). The reason for not including the weightings is that when using multilevel regression models (which are unavoidable here), the appropriate methods for multilevel weighting are still being researched. On-going developments include progress in the areas of *multi-level multiple imputation* and *multi-level logistic regression* (see respectively: the [MLwiN User Forum](#) and [The University of Bristol-Centre for Multilevel Modelling](#)).

In terms of the 'Impact at the level of services' discussed in Section 2.3 of the report, only estimates from these analyses will be taken through to the *Cost Benefits Analyses* of ECCE Strand 5 because there are an insufficient number of centres in the collection of cost data to be able to disaggregate by centre type. The 21 services listed in this same section are as follows: Ante-natal classes; breast feeding groups; midwife/health visitor drop-in sessions or clinics; Speech and Language Therapy (SALT); Psychologist/counsellor; Stay and Play, or play and learn groups; organised activities for babies or children; toy libraries; peer support groups; parenting classes; organised activities for parents; relationship support; specialist family or parenting support; benefits and tax credits advice; housing or debt advice; employment support; basic IT or jobs skills course; further education or adult learning courses; English classes for speakers of other languages; home safety advice or course; and other family services.

# Technical Appendices list

Please note, a number of Technical Appendices are available via the Oxford ECCE website ([available through this link](#)):

## 1 Review of the literature relating to children's centres

### 1.1 Detailed findings from the National Evaluation of Sure Start

#### 1.1.1 NESS Child outcomes

#### 1.1.2 NESS Mother, Family and Parenting Outcomes

#### 1.1.3 NESS Economic Benefits

### 1.2 Detailed findings from Head Start and Early Head Start

#### 1.2.1 Evaluation of Head Start

#### 1.2.2 Early Head Start Research and Evaluation Project

### 1.3 Literature supporting Strand 4 outcomes and measures

#### 1.3.1 What makes an effective children's centre?

#### 1.3.2 The measurement of outcomes within the literature

#### 1.3.3 Concepts and measures within Strand 4

## 2. Characteristics of the Sample

### 2.1 Child Characteristics

#### 2.1.1 Demographic Background at baseline

#### 2.1.2 Behaviour at age 3+ via the Strengths and Difficulties Questionnaire (SDQ)

#### 2.1.3 Cognition at age 3+ via the British Ability Scales (BAS)

#### 2.1.4 Child health at baseline via cluster analysis

#### 2.1.5 Child health at age 3+ via cluster analysis

### 2.2 Mother Characteristics

#### 2.2.1 Demographic Background at baseline

2.2.2 Mental health at baseline and at child age 3+ via the General Health Questionnaire (GHQ-12)

2.2.3 Physical Health at baseline and at child age 3+ via cluster analysis

## 2.3 Family Characteristics

2.3.1 Demographic Background at baseline

2.3.2 Chaotic home environment at baseline and at child age 3+ via the Chaos, Hubbub And Order in the home Scale (CHAOS)

2.3.3 The Home Learning Environment (HLE) at baseline and at child age 3+

2.3.4 Parenting Stress at baseline and at child age 3+ via the Parenting Stress Index (PSI)

## 2.4 Neighbourhood Characteristics

2.4.1 Neighbourhood disadvantage via IDACI

## 2.5 Centre Characteristics

2.5.1 Ofsted measure of children's centre effectiveness

2.5.2 Services provided by children's centres

2.5.3 Centre characteristics

2.5.4 Nature of centre reach (both from an area, and of disadvantaged families)

2.5.5 Centre emphasis on home-based services

2.5.6 Centre emphasis on child and family health

## 2.6 Families' use of children's centres and services

2.6.1 Any use of children's centres by families (registered, or otherwise); plus over time at registered centres

2.6.2 Families' use of services over time (at registered centre and at others), including use of individual services commonly used

## 3. Comparison of Cluster Analysis techniques available for ECCE Strand 4 data reduction: Hierarchical vs. Two-Step

### 3.1 Introduction

## 3.2 Method

## 3.3 Results

### 3.3.1 Descriptive Statistics

### 3.3.2 Hierarchical Cluster Analysis

### 3.3.3 Two-Step Cluster Analysis

### 3.3.4 Comparison of the solutions from the Hierarchical and Two-Step Cluster Analyses

## 3.4 Discussion

## 4 Impact upon Child Outcomes at Age 3+

### 4.1 The impact of background effects on child outcomes

#### 4.1.1 Contextualised models

#### 4.1.2 Contextualised Value Added models

### 4.2 The Impacts of children's centres on child outcomes

#### 4.2.1 The Impacts of centre use and service use

#### 4.2.2 The Impacts of centre characteristics and processes

#### 4.2.3 Combined Impacts of usage and characteristics

## 5 Impact upon Mother Outcomes at Child Age 3+

### 5.1 The impact of background effects on mother outcomes

#### 5.1.1 Contextualised models

#### 5.1.2 Contextualised Value Added models

### 5.2 The Impacts of children's centres on mother outcomes

#### 5.2.1 The Impacts of centre use and service use

#### 5.2.2 The Impacts of centre characteristics and processes

#### 5.2.3 Combined Impacts of usage and characteristics

## 6 Impact upon Family and Parenting Outcomes at Child Age 3+

### 6.1 The impact of background effects on family and parenting outcomes

6.1.1 Contextualised models

6.1.2 Contextualised Value Added models

6.2 The Impacts of children's centres on family and parenting outcomes

6.2.1 The Impacts of centre use and service use

6.2.2 The Impacts of centre characteristics and processes

6.2.3 Combined Impacts of usage and characteristics

7 Improving outcomes and meeting the needs of the most disadvantaged families

7.1 Summary of the estimates for the sub-group analyses

7.2 Model estimates for the sub-group analyses

8 Exploring predictors of outreach visits, and health visitors/midwife services

8.1 Outreach visits and health visitors/midwife services

References



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