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Early Impacts of Sure Start Local Programmes on Children and Families

SureStart

Report 13

Early Impacts of Sure Start Local Programmes on Children and Families

Report of the Cross-sectional Study of 9-and 36-Month Old Children and their Families

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PEER REVIEW

Peer review is an important process contributing to the maintenance of high standards for research publications. This report has been subject to peer review, being evaluated for the adequacy and merit of its research by a scientific Advisory Group assembled by the DfES for the purpose of reviewing the National Evaluation of Sure Start. The Advisory Group contains internationally respected experts from the academic fields that form the basis of the National Evaluation of Sure Start, including psychology, psychiatry, education, economics, paediatrics and social science. Members of the Advisory Group can comment freely upon the merits of the report and such comments may well lead to modifications of the report prior to publication. This report has been subject to thorough inspection by the Advisory Group who suggested many changes that improved the report. It is important to note that this report would not be published without the approval of the Advisory Group, which has the objective of ensuring the scientific integrity of the research. In sum, the peer review process ensures that the research report has been thoroughly examined with regard to its scientific merit and found to be worthy of publication.

EARLY FINDINGS ON THE IMPACT OF SURE START LOCAL PROGRAMMES ON CHILD DEVELOPMENT AND FAMILY FUNCTIONING:

Report of the Cross-Sectional Study of 9- and 36-Month Old Children and Their Families

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EXECUTIVE SUMMARY

A principal goal of Sure Start Local Programmes (SSLPs) is to enhance the functioning of children and families by improving services provided in the local programme areas. SSLPs were strategically situated in areas identified as having high levels of deprivation. SSLPs represent an intervention unlike almost any other undertaken to enhance the life prospects of young children in disadvantaged families and communities. What makes it so different is that it is *area based*, with *all* children under four and their families living in a prescribed area serving as the "targets" of intervention. This has the advantage that services within a SSLP area are universally available and thus limiting any stigma that may accrue from individuals being targeted. By virtue of their local autonomy, and in contrast to more narrowly-delivered early interventions, SSLPs do not have a prescribed "curriculum" or set of services, especially not ones delineated in a "manualised" form to promote fidelity of treatment to a prescribed model. Instead, each SSLP has extensive local autonomy concerning how it fulfils its mission to improve and create services as needed, without specification of how services are to be changed. SSLPs were advised, however, that services should be "evidence-based" and were directed to sources of information on evidence-based interventions. This general and highly varied approach to early intervention contrasts markedly with virtually all other early interventions demonstrated to be effective. (e.g. Abecedarian project, Ramey et al., 2000; Prenatal Early Intervention Project, Olds et al., 1999; Early Head Start, Love et al., 2002; Positive Parenting Program, Sanders 2003; Incredible Years, Webster-Stratton, 1993).In contrast to these projects which were guided by clear models of typically centre- or home-based service delivery, SSLPs aimed to deliver a wider and more varied range of services. The great diversity of interventions employed in SSLPs poses great challenges to evaluating their impact, as each SSLP is unique.

As a first step in assessing the impact of SSLPs on child and family functioning, the cross-sectional phase of the Impact Study of the National Evaluation of Sure Start (NESS) gathered extensive information on 9- and 36-month old children and their families living in SSLP areas and in comparison communities (i.e. areas designated to become SSLP later). These data were obtained after SSLPs had been in existence for at least three years. Data collected in the Implementation and Cost-effectiveness modules

of NESS indicate that it typically takes 3 years for SSLPs to achieve a full range of functioning services. Hence there would be a limited period that families and children at this stage of the study might have been influenced by SSLP services. Therefore, the findings of this report represent, at best, *early* indications of whether SSLPs *might* be affecting the well-being of children and families. Stronger grounds for drawing definitive conclusions about SSLP effectiveness will exist once longitudinal data on the 9-month olds and their families in SSLP areas who are included in this report are followed up at 36 months of age and thus have been exposed to SSLPs for a much longer period of time.

Home visits to obtain evaluation data were carried out in 16502 families in the first 150 SSLP areas and 2610 families in 50 comparison, Sure Start-to-be communities. Data from the home visits were used to examine the effect of SSLPs on a wide range of child, parenting, and family outcome measures. In evaluating effects of SSLPs, two parallel sets of analyses were conducted; one that included only cases with complete data and a second that relied also on imputed data to correct for potential biases caused by non-randomly missing data. Findings replicated across the two analyses are those in which the greatest confidence can be placed and which are summarised here, but all significant findings involving SSLP vs. comparison communities are presented in the body of this report. In studying children and families residing in SSLP areas regardless of use of SSLP services, the evaluation of SSLP effectiveness is very different from virtually all other evaluations of more narrowly focussed early interventions that assessed the functioning of only children/families chosen because of their initial enrolment with the centre- and/or home-based services provided. The diverse range of services and the mission of SSLPs to improve existing services and create new services as needed means that potentially any service user in an SSLP area is affected by the SSLP. Information on service use by families in the study was collected and used in analyses.

The results of the cross sectional Impact Study will be summarised in terms of four core questions, each of which refines the general question, "What is the effect of SSLPs, all other things being equal?" This is because answers to this general question and the three core questions are provided after taking into consideration (i.e. statistically controlling for) the fact that families vary within and across communities and that communities in which children/families reside vary from each other as well—in ways that can influence the outcomes measured. To foreshadow what is to come, overall, only limited evidence of SSLP impact was detected and that which emerged was often limited to specific sub-populations. Some of the detected effects of SSLPs can be regarded as beneficial whereas other effects were developmentally adverse. In all cases, the size of these limited effects, whether developmentally beneficial or adverse, was small.

Do children/families in SSLPs receive more services or experience their communities differently than children/families in comparison communities?

The "theory of change" underlying SSLPs stipulates that by enhancing services and changing the nature of the community, the functioning of children/families will improve. Information obtained from interview respondents (i.e. mothers) provided only limited evidence that services and communities were affected by SSLPs. In the case of neither mothers of 9- nor 36-month olds did evidence emerge of greater (or lesser) use or usefulness of services in SSLP areas than in comparison communities. In terms of the favourability-unfavourability of the community as a place to live and raise children, no effects of SSLPs were detected among families with 9-month olds. Among families with 36-month olds, however, mothers in SSLP areas rated their communities *less favourably* than those in comparison communities.

In summary, there was very little evidence that, at least as measured in the cross-sectional Impact Study, SSLPs achieved their goals of increasing service use and/or usefulness or of enhancing families' impressions of their communities. This poses a challenge for understanding how the small and limited effects of SSLPs to be summarised below are to be explained. Differences in the functioning of children/families in SSLP and comparison communities may reflect differences in quality in services as yet unmeasured or, given the number of analyses conducted; they could even be an artefact of chance, though the latter seems unlikely given their replication across two sets of analyses. In any event, it needs to be noted that measuring service use has proven to be a major challenge for NESS due to the fact that service delivery was so varied across SSLPs, making it impossible to deploy a standard measurement system across all 150 programmes (and comparison areas). This fact undermines the ability of the Impact Study to relate effects upon children and families to use of specific services.

Do families function differently in SSLP areas than in comparison communities?

Children growing up in SSLP areas might be affected by SSLPs in one of two general ways, directly and indirectly. Direct effects typically occur by virtue of something done with children by SSLPs, rather than with their families. Exposure of children to high quality childcare is a good example of a direct means of affecting children's development. Indirect effects are ones that "flow through" or are mediated by parents/families. Home visiting, which promotes maternal well-being and/or sensitive mothering, is a good example of indirect approaches to influencing child development. To determine whether SSLPs affected family functioning in ways that might be expected to impact children, the NESS Impact Study measured maternal well being, reported and observed parenting, and household organisation.

SSLPs appeared to beneficially affect family functioning to a modest extent, with mothers of 9-month olds experiencing less household chaos and mothers of 36-month olds being more accepting of their children's behaviour (i.e. less slapping, scolding, physical restraint). There was a further benefit for non-teen mothers of 36-month olds, who comprised the majority (86%), in that they showed less negative parenting when living in SSLP areas rather than comparison areas. In sum, SSLPs appeared to enhance growth-promoting family processes somewhat, though many more family outcomes appeared to be unaffected by SSLPs than those few summarised here that showed statistically significant effects.

Do effects of SSLPs extend to children themselves?

Because effects of the kind just described for family functioning may take time to influence children's development, it may be optimistic to expect SSLP-related effects on child functioning. As it turned out, both beneficial and adverse effects of SSLPs on children were detected, though these were restricted almost entirely to 36-month olds and varied across subpopulations. Once again these effects were limited, with many more child outcomes failing to reveal statistically significant effects of SSLPs than those few statistically significant effects summarised here. Nevertheless, because the limited findings form a coherent pattern, they are interpreted to be true effects of SSLPs on children/families. However the limited nature of the evidence does not preclude alternative interpretations.

Three-year olds of non-teen mothers exhibited fewer behaviour problems and greater social competence when living in SSLP communities than in comparison communities, and evidence indicated that these effects for children were mediated by SSLP effects on the parenting of non-teens (i.e. less negative parenting). Adverse effects of SSLPs emerged in the case of children of teen mothers (14% of sample), however, as they scored lower on verbal ability and social competence and higher on behaviour problems than their counterparts in comparison areas. Children from workless households (40% of sample) and children from lone-parent families (33% of sample) also showed evidence of adverse effects of SSLPs, scoring significantly lower on verbal ability when growing up in SSLP areas than did their counterparts in comparison communities.

In sum, results suggest that within the NESS sample of children from (mostly) deprived families living in deprived communities, those from *relatively* less (but still) disadvantaged households (i.e. non-teen mothers) residing in SSLP areas benefit somewhat from living in these areas, perhaps due to the beneficial effects of SSLPs on the parenting of non-teen mothers. In contrast, within these same deprived communities, children from *relatively* more disadvantaged families (i.e. teen mother, lone parent, workless household) appear to be adversely affected by living in a SSLP community. This pattern of diverse effects of SSLPs on distinct subpopulations—with *relatively* less disadvantaged children/families seeming to benefit and *relatively* more disadvantaged children/families seeming to be adversely affected--also emerged in results in which less confidence could be placed, as they were not replicated across both sets of analyses (see main body of report).

Are some SSLPs more effective than other SSLPs?

In addition to determining whether there were differences, *on average*, between all the SSLP and comparison communities on multiple measures of child, parenting and family functioning, efforts were undertaken to determine whether some SSLP communities produced child, parenting and family outcomes that, collectively, were better than would be expected on the basis of a wide range of family and community background characteristics (e.g. family income, maternal education, percent workless households). Results indicated that this was not the case relative to comparison communities when all outcomes were considered in aggregate. When attention turned to comparisons among the 150 SSLP communities, however, there was some evidence that programmes led by health agencies had some advantages.

Conclusion

The differential beneficial and adverse effects that emerged indicate that among the disadvantaged families living in the deprived SSLP areas, parents/families with greater human capital were better able to take advantage of SSLP services and resources than those with less human capital (i.e. teen parents, lone parents, workless households). The finding that an intervention has produced greater benefits for the moderately disadvantaged than for the more severely disadvantaged has occurred in other evaluations of interventions (e.g. Early Head Start, Love et al., 2002). Possibly the utilisation of services by those with greater human capital left others with less access to services than would have been the case had they not lived in SSLP areas. This possibility suggests that special efforts may need to be made to insure that those most in

need are not (inadvertently) deprived of assistance due to the way in which SSLPs operate. Special sensitivity (and related staff training) may also be required in dealing with the most disadvantaged families, as it may be the case that the adverse effects detected with respect to them inadvertently arose because they felt overwhelmed or turned off by the support that SSLPs offered.

The demographic characteristics of the communities studied indicate that the beneficial effects detected may apply to more children/families than the adverse effects, as there are many more children residing in families where the mother was 20 years of age or older when she gave birth than in families in which mother was a teenager when she gave birth or in which there were no working adults (i.e. workless households) or in which mother was a lone parent. Because it is children from the most at-risk households who are at greatest risk of school failure, drug use, crime and related problems that are costly to society, the possibility cannot be dismissed that the adverse effects detected and affecting fewer numbers of children may have greater consequences to communities and to society than the beneficial effects detected which affected more children/families.

The question arises as to why health-led SSLPs may have exerted a few more beneficial effects than other programmes. One possibility is that health-led programmes found it easier to establish contact with families with children under four, as it is known from the NESS Implementation Module that for many SSLPs this task proved to be a great challenge. It could also be the case that health-led programmes are better placed to start working with large numbers of children and families and/or are more experienced in data sharing, thereby facilitating service integration. In any event, data suggesting differential benefits of health-led programmes suggests that health services need to be fully integrated in the transformation of SSLPs to Children's Centres.

It must be emphasised that this report reflects the cross-sectional comparison of SSLP and comparison areas from the NESS' Impact Study and that the longitudinal follow-up of 9-month olds at 3- and 5-years of age will provide stronger evidence as to whether, how and under what conditions SSLPs influence children, parents and families. Obviously, only if the beneficial and/or adverse effects of SSLPs detected in the cross-sectional study are maintained in the longitudinal follow-ups will the results presented in this report be truly meaningful. Moreover, it must be appreciated that, in the main, only limited evidence of effects of SSLPs, whether positive or negative, emerged and those that were detected were small in magnitude. The fact that SSLPs had been in existence for only three years when children/families were studied and perhaps not even entirely "bedded" down and therefore not fully developed, further cautions against drawing too strong conclusions from the first phase of the Impact Study designed to provide early insight into the effects that SSLPs might be having on children and families.

Table of Contents

Table of Tables and Figures

1. INTRODUCTION

1.1.1   The ultimate goal of Sure Start local programmes (SSLPs) is to enhance the life chances for children less than four years of age growing up in disadvantaged neighbourhoods. Children and families in these communities are at risk for developing in ways that are less than optimal. This has profound consequences for the children, families and communities, and for society at large. Thus, SSLPs not only aim to enhance health and well-being during the early years, but to increase the chances that children will enter school ready to learn, be academically successful in school, socially successful in their communities and occupationally successful when adult. Indeed, by improving, early in life, the developmental trajectories of children known to be at-risk of compromised development, SSLPs aim to break the intergenerational transmission of poverty, school failure and social exclusion.

1.1.2   It needs to be appreciated that SSLPs represent an intervention unlike almost any other undertaken in the western world devoted to enhancing the life prospects of children under four growing up in disadvantaged families and communities. What makes it so different is that it is *area based*, with *all* children under four and their families living in a prescribed area serving as the "targets" of intervention. This results in the need for a distinct approach to evaluation, as presented in this report, one focussed on children and families residing in SSLP areas rather than focussing on children and families recruited because of their use of specific SSLP services. This intention-to-treat design is very different from those employed in evaluations of more narrowly-focussed early interventions that assessed the functioning of only children/families known to use the centre- and/or home-based services provided (see below).

1.1.3   By design, and in contrast to more narrowly-delivered early interventions carried out in the USA, SSLPs do not have a prescribed "curriculum" or set of services, especially not ones delineated in a "manualised" form to promote fidelity of treatment to a prescribed model. Instead, each local programme is charged with improving existing services and creating new ones as needed, a much broader mandate than virtually all other early interventions evaluated to date (see below), without specification of how services are to be changed. SSLPs are advised, however, to develop a package of "evidence-based" services and directed to sources of information on evidence-based interventions. This general and highly varied approach to early intervention contrasts markedly with early interventions demonstrated to be effective, be they childcare based, like the Abecedarian Project (Ramey et al., 2000); home based, like the Prenatal Early Intervention Project, (Olds et al., 1999), the Positive Parenting Program (Sanders, 2003), or Incredible Years (Webster-Stratton, 1993); or even a combination of centre and home based, like Early Head Start (Love et al., 2002).

1.1.4   In contrast to these projects with clear models of service provision, SSLPs are much more varied and are charged with providing a much wider range of services than the programmes just cited. The diverse range of services and the mission of SSLPs to improve existing services and create new services as needed means that potentially any service user in an SSLP area is affected by the SSLP. This poses great challenges to evaluating their impact, as each SSLP is unique and involves a different combination of improved and new services. There is only one thorough evaluation of a community-based intervention for young children and their families with a similarly loose structure to SSLPs. That is the Comprehensive Child Development Program (CCDP: ACYF, 1997) carried out in the USA and its evaluation revealed no significant effect of the intervention.

1.1.5   Given the ambitious goals of SSLPs, it is clear that the ultimate effectiveness of

SSLPs cannot be determined for quite some time and that children growing up in communities with SSLPs will need to be studied well beyond their early years before a final account of the success of SSLPs will prove possible. Nevertheless, by studying children and families in SSLPs during their opening years of life, it may well prove possible to detect evidence of early effectiveness. The first phase of the Impact Study of the National Evaluation of Sure Start (NESS) has been designed with this goal in mind. More specifically, in addition to following a large number of children (and their families) longitudinally, beginning at 9 months of age and then again when 3- and 5-years of age, the Impact Study incorporates into its research design a cross-sectional investigation of 9-month-olds and 36-month olds and their families. The primary purpose of this cross-sectional component was as a source of evidence for detecting *early* SSLP effectiveness.

1.1.6   When NESS was launched in 2001, the general hypothesis guiding the Impact Study was that children and families residing in SSLP areas would develop and function better than those in comparison areas yet to receive SSLP services. Examples of better functioning are less chaotic family environments, more cognitively-stimulating parenting and greater child language functioning and less aggressive and disobedient child behaviour. This general expectation of positive effects was based on the purpose of SSLPs and findings from American studies showing that early intervention could benefit children's development and/or family functioning. Subsequent to the launch of NESS an evaluation of Early Head Start (EHS) in the USA, an early intervention programme for disadvantaged families providing high-quality centre-based child-care and/or family support through home visiting, indicated that different subpopulations of disadvantaged families were differentially affected by the intervention designed to enhance child and family functioning (Love et al., 2002). The new evidence and especially that showing that some children in the most at-risk families within a disadvantaged population were apparently adversely affected by the early intervention being evaluated required that the NESS Impact Study entertain the prospect that both positive and negative effects of SSLPs might be found.

1.2.   Purpose of this Report

1.2.1   The primary purpose of this report is to summarize the examination of the data from the cross-sectional investigation that might shed light on this issue. This final report, following prior preliminary reports, presents findings related to the effectiveness of SSLPs in fostering the well being of 9-month olds (who will be studied again at ages 3 and 5) and 36-month olds (who are only studied once) and their families. This report relates to comparison of the functioning of 16502 children and families living in 150 Round 1-4 SSLP areas with that of 2610 counterparts living in 50 communities that do not have up-and-running SSLPs at the time they were measured, but which were to have such programmes shortly after data collection (i.e. Sure Start-to-be communities). These Sure Start-to-be communities were included in Round 5 of SSLPs.

1.3.   A Critical Caveat

1.3.1   The challenge of detecting effects of Sure Start Local Programmes during the early years is great. To begin with, it must be appreciated that it takes time for SSLPs to truly get off the ground; estimates from the Cost-Effectiveness module of NESS reveal that it is not until the third financial year of operation that most SSLPs are spending allocated funds to an extent indicating widespread effects on services (Meadows, 2005). Second, effects of early intervention programmes often take time to emerge and depend upon multi-year exposure to programme services; the children and families have been living in SSLP communities that have only had programmes bedded down for about one to two years when studied. Third, it is often the case that important evidence of enduring effects of effective early interventions

does not materialize until beyond the early years.

1.3.2   For these reasons readers of this report need to appreciate the critical distinction between evaluations reporting (1) no evidence of effectiveness and (2) the lack of effectiveness. That is, a conclusion that "no evidence of effectiveness could be detected", is distinctly different from concluding that the programme is ineffective in realizing its goals of enhancing child development and family functioning. In other words, absence of evidence (of effectiveness) is not evidence of absence of effectiveness. The critical distinction is between *detecting evidence* of effectiveness and *lack of* effectiveness. This distinction is particularly important for this report as it focuses on an intervention that is not necessarily well established in many places for children and families who have not been studied repeatedly over time.

2. RESEARCH DESIGN AND APPROACH

2.1.   Design

2.1.1   SSLPs constitute a community-based initiative where everybody in the community is potentially a beneficiary of the programme. Hence an "intention to treat" design was adopted in the evaluation of the impact of SSLPs. Such an approach does not focus on those children and families that have taken advantage of specific services in the SSLP areas, but rather studies children and families living in these areas that, in theory, should be exposed to such services, which the clients themselves may not differentiate as specifically Sure Start.

2.2.   Sample

2.2.1   Potential study participants living in SSLP areas and Sure Start-to-be areas were identified with the assistance of the Child Benefit Office of (initially) the Department of Works and Pension and (subsequently) the Inland Revenue. Potential participants were randomly selected from the Child Benefit Register. The recruitment goal of the cross-sectional study has been to recruit 12000 9-month-olds and 3000 36-month-olds and their families from the 150 SSLP areas, and 1250 families with 9-month olds and 1250 families with 36-month olds from the 50 Sure-Start-to-be (i.e. comparison) communities by the end of 2004. Data collection proceeded in 150 Round 1-4 SSLPs during 2003 and 2004 and 50 Sure-Start-to-be communities during 2002 and 2003. Overall data collection exceeded the target for total sample recruitment, in that data on 12575 9-month olds and 3927 36-month-olds and their families in Round 1-4 SSLPs, and 1509 9-month-olds and 1101 36-month-olds and their families in Sure Start-to-be communities were collected. Of the children/families eligible for enrolment in the Impact Study who could be contacted, the response rate was 84% for the families of 9-month-olds and 73% for the families of 3-year-olds. The comparable rate achieved by the Millennium Cohort Study for 9-month-olds was 84% (Plewis et al., 2004), and given the much higher level of disadvantage in the NESS sample and consequently greater difficulty in recruitment, the NESS response rate appears very favourable.

2.3.   Data collection

2.3.1   The families contacted who agreed to participate in the "Study of Children, Families & Services in the Community" provided extensive information on child and family functioning during the course of a home visit conducted by a specially trained fieldworker, typically lasting around 90 minutes. In the case of home visits to families with 9-month olds, a professional survey-research field workforce under subcontract from the Office of National

Statistics carried out data collection. Home visits to families with 36-month olds, which included standardized cognitive and linguistic testing of children, were carried out by a field staff specially hired and trained for this purpose by the Institute for the Study of Children, Families and Social Issues, Birkbeck University of London, (which houses NESS). During the course of the home visits, several sets of data were gathered (using well-established, psychometrically-sound measurement instruments) in order to be able to assess the effects of SSLPs on child development and family functioning. In addition to these dependent-variable outcome measures, demographic and background information were collected from each family, as well as area characteristics on each community, to serve principally as control variables in the analyses to be presented. The collection of data on these control variables, thought to potentially influence the outcome measures and to differ between SSLP and Sure Start-to-be communities, meant that such influences could be taken into account in the statistical analysis of the data. The statistical analyses (see Results section) discounts any pre-existing differences between families and communities before determining whether children and families differ in ways that could be attributable to the SSLPs effect. Hence analyses are designed to address the question, "What is the effect of SSLPs, all other (measured) things being equal?"

2.3.1. Child/Family and Community Control Variables

2.3.1.1   A variety of child/family and community variables functioned (principally) as control variables in the analyses to be described. These included the following:

- *Child Characteristics*: age, gender, and ethnicity.

- *Demographic, Socioeconomic and Parental Characteristics*: maternal age, maternal education, maternal work status, maternal occupational status, maternal cognitive difficulties, father's involvement/occupational status (i.e. present & working, present & not working, absent), household language, household income.

- *Area characteristics*: a variety of features of each community (e.g. ethnic make up, age distribution, child health) collected by the NESS Local-Context-Analysis module and measured prior to or at the onset of SSLPs were subjected to data-reduction-oriented factor analysis. Results were used to create composite factor scores reflecting dimensions of the community that could potentially influence the outcome measures. The labels of identified factors are listed in the left-hand column of Table 1, with associated component variables defining each factor listed in the right-hand column.

2.3.2. Child/Family Dependent/Outcome Variables

2.3.2.1 When it came to assessing potential effects of SSLPs, information was gathered through a variety of means (i.e. parental report, observation, developmental assessments) on a variety of "outcomes" theorised as likely to be affected by SSLPs. These are listed below, with further details provided in Appendix 1 in terms of the nature of the measure, the internal consistency reliability (i.e. coefficient alpha, Cronbach, 1951) for the current sample and the source of the measurement.

- *Child Cognitive and Language Development (36-months only)*: verbal ability, nonverbal ability. These measurements were obtained by means of standardized assessment of each child using subscales from the British Abilities Scales (Elliot, Smith, & McCulloch, 1996), specifically Block building (non-verbal), Picture Similarities (non-verbal), Verbal comprehension (verbal) and Picture naming (verbal).

- *Child social and emotional development (36 months only)*: conduct problems (i.e. disobedience, aggression), hyperactivity, prosocial behaviour, independence, emotional regulation, and overall behavioural difficulties. These were all obtained by means of parental report.

- *Child Physical Health*: for nine month olds - birth weight; child ever breastfed; child breastfed through first 6 weeks. For both age groups - one or more accidents in the last 9 (for 9-month olds) or 12 months (for 36-month olds); one or more hospital admissions due to injury in the past 9 or 12 months. Scores for these outcomes were based on detailed reports by parents of the child's health history.

- *Parenting and Family Functioning:* for nine month olds - maternal responsivity (observed), maternal acceptance (observed), household chaos (mother's report). For 36 month olds - maternal responsivity (observed), maternal acceptance (observed); home learning environment, parent-child conflict, parent-child closeness, harsh discipline, , father involvement (all mother report).

- *Maternal Psychological Well-being*: malaise, self-esteem.

- *Local Area*: ratings by mother and by research team observer

- *Services:* total number of different types of services used, usefulness of services used.

Table 1: Local Context Analysis Composites (Derived from Factor Analyses)

Composite	Variables in Composite
Ethnic population (Indian subcontinent) and young children	High % of population from Indian subcontinent
	High % of population children under 4 years old
	Low % of population aged 60+
Black population and number of working age adults	High % of population Black
	High % of population working age adults
Lone and teen mothers	High % of live births to teen mothers
	High % of live births to lone mothers
Deprivation	High % of 0-3 year olds living in workless households
	High % of 0-3 year olds living in households receiving Income Support
	High % of 4-17 year olds living in households receiving Income Support
	High % of adults with no qualifications
	High % of primary age children eligible for free school meals
Unemployment	High % of population unemployed and last worked before 1996
	High % of adults receiving Job Seekers Allowance
	High % of children under 4 in households receiving Job Seekers Allowance
Child Illness/Disability	High no. of cases of gastroenteritis per 1,000 children aged 0-3 years
	High no. of lower respiratory infection per 1,000 children aged 0-3 years
	High no. of cases of severe injury per 1,000 children aged 0-3 years
	High % of 0-3 year olds receiving Disability Living Allowance
	High % of 4-17 year olds receiving Disability Living Allowance
Infant Mortality	High no. of cases of infant mortality per 1,000 live births
	High no. of cases of neonatal mortality per 1,000 live births
	High no. of cases of perinatal mortality per 1,000 live births
School Achievement: Key Stage 1	High % of children aged 7 achieving Level 2 Key Stage 1 English
	High % of children aged 7 achieving Level 2 Key Stage 1 Maths
	High % of children aged 7 achieving Level 2 Key Stage 1 Science
Household Crowding	Low % households with up to 0.5 persons per room
	High % households with more than 1.5 per room
Council housing	Low % of households owner occupied
	High % of households council owned
Adult Poor Health/Disability	High % of adult females with long term illness (age standardised)
	High % of adult males with long term illness (age standardised)
	High % of adults receiving Disability Living or Attendance Allowance
	High % of adults receiving Severe Disability Allowance or Incapacity Benefit

2.3.2.1. Dependent-Variable Data Reduction

2.3.2.1.1   In order to reduce the likelihood that significant effects of SSLPs would emerge by chance (i.e., ones that would "masquerade" as actual effects of SSLPs), the number of

analyses was reduced by compositing select dependent variables, thereby reducing the number of dependent variables subject to statistical analysis. More specifically, two factor analyses (with oblique rotation) were carried out on the 36-month data, one including parenting/family-environment variables (i.e. responsivity, acceptance, parent-child conflict, parent-child closeness, discipline, home chaos) and one including child socio-emotional functioning (i.e. conduct problems, hyperactivity, prosocial behaviour, independence, emotional regulation, overall difficulties). In each case, two clear factors emerged (eigen values >1.0, see Appendix 2), leading to the creation of a total of four internally consistent composite dependent variables:

Supportive Parenting: responsivity + acceptance

Negative Parenting: parent-child conflict + harsh discipline + home chaos – parent-child closeness

Child Social Competence: prosocial behaviour + independence

Child Emotion-Behaviour Difficulties: conduct problems + hyperactivity + emotion dysregulation + overall difficulties

2.3.2.1.2   For conceptual reasons we chose to keep home-learning environment as a separate measure. The rationale for this decision was straightforward: The EPPE Study (Melhuish et al., 2001: Sammons et al., 2002; Sylva et al., 2004) and the EPPNI Study (Melhuish et al., 2002) both revealed this aspect of parenting to be uniquely powerful in predicting children's development. Thus, the decision was made to treat it as a separate entity in the NESS Impact Study.

3. RESULTS

3.1.1   The analyses were conducted, for each question considered, on two datasets. One dataset included only those cases for which 100% of the individual family-level background-control variables were available (Table 2). In order to maximise the sample used and reduce any bias associated with incomplete data, a second set of analyses was carried out on imputed data, which included all eligible individuals even if their data was incomplete (Appendix 3, Table 8a and 8b).

3.1.2   In gathering data from children and families, virtually all studies find that some proportion of information to be obtained cannot be gathered. This may occur for a variety of reasons, including insufficient time, unwillingness of research participants to provide the desired information, language-translation difficulties, or even human error. Thus, missing data is a characteristic of virtually every study, especially ones as large as the Impact Study. Such missing data can pose data-analysis problems, as a single piece of missing data can result in the elimination of an entire case—or many cases-from a particular statistical analysis. This circumstance is especially problematic when, as routinely occurs, the people who have missing data are not randomly distributed in the population studied and may include some of the most disadvantaged. Hence, if they are excluded from analyses because of missing information, this may lead to biased estimates, in this case of effects of SSLPs.

3.1.3   There is a strategy to overcome this problem involving the "imputation" of missing data. Imputation is based on the fundamental premise that tolerably accurate estimates of what a missing value would have been had the information been supplied can be determined using all the data that has been collected. Taking an over-simplified example, knowing a person's age, education level, gender, working status and occupation enables a reasonably accurate prediction of salary, should salary information be missing, using information on all these variables obtained from respondents who also provided salary information. In the

current evaluation, statistically sophisticated and widely used multiple-imputation techniques were employed to overcome the possibility of bias in results caused by non-random missing data. (For more detail, see Appendix 3, which also provides information on the number of cases for which imputation was required for each dependent variable.) Across all the data available, imputation of 9-month missing data resulted in an increase in approximately 3% of the data; the corresponding figure for 36 months was 6%. With respect to any specific dependent variable, imputed data was generated for between 10% and 41% of cases.

3.1.4   In reporting results and drawing conclusions, the greatest confidence will be placed in significant findings that emerge in both sets of analyses, that is, analysis of data based on only cases with complete data *and* analysis of data that includes data that has been imputed when missing. Nevertheless, all significant effects involving SSLP *vs.* non-Sure Start comparisons will be reported, even when they only emerge in one of the two sets of analyses.

3.1.5   In view of the relatively conservative strategy of imbuing with most meaning those statistically significant findings that emerged in both sets of analyses, a traditional strategy of treating statistically-significant findings (within either analysis) as notable was adopted, with the criteria of significance set at the traditional level of $p < 0.05$, often referred to as the "ninety-five percent confidence level." This means that if a given result has a "p" value of less than 0.05%, the result is taken as meaningful, in that it shows that there is less than five in a hundred possibility that the result in question could have occurred by chance. Put another way, if "p" is less than 0.05, one can be 95% certain that the result is not simply a result of random variation, but reflects real differences within the sample (i.e. the "null" hypothesis is rejected). In large samples such as that examined in the cross-sectional Impact Study, even small differences may be statistically significant. Moreover, when many tests are conducted, the number of significant findings that might emerge by chance increases. Thus, in presenting the results, the percentage or rate of significant findings that emerge is reported so that this figure can be compared with the 5% figure that would be expected by chance when adopting a $p < 0.05$ criteria. Note that requiring a significant result to occur in both complete-cases and imputed analyses before it is given high confidence to some extent counteracts the effect of finding significant effects by chance with many statistical tests being run.

3.2.   Preliminary Analysis: Background Differences Between SSLP and SSLP-to-be Groups

3.2.1   Initially comparisons were made between SSLPs and Sure Start-to-be areas in terms of the characteristics of families living in these two sets of areas. These comparisons were carried out separately for 9-month and for 36-month samples. Table 2a and Table 2b present the results of the comparisons of the complete data set (no missing values in any demographic variable) for 9-month and 36-months respectively. A similar comparison for the data used to create the imputed data is presented in Appendix 3. Overall, these comparisons reveal that the comparison communities were somewhat more deprived than the SSLP communities.

3.2.2   Four of 11 tested differences between the two groups proved significant in the sample of families studied with 9-month old children when only cases with complete data on all these background variables was subject to analysis (see Table 2a). Specifically, SSLP areas had more White and fewer Asian, Other Black or Mixed-Race participants; more English only speakers and fewer speakers of other languages; more mothers with A-level qualifications and fewer with other or no qualifications; more households with incomes in the mid, second and top quintiles, fewer in the fourth or bottom quintile.

3.2.3   In the case of families with 36-month olds, five of 11 tested differences between the two groups proved significant when only cases with complete data on all these background variables was subject to analysis (see Table 2b). Specifically, SSLP areas had more White and fewer Asian, Other Black or Mixed-Race participants; more English only speakers and fewer speakers of English and other languages; more mothers with A-level qualifications and fewer with other or no qualifications; and fewer mothers who were unemployed; more households with incomes in the second or mid quintile, and many fewer in the bottom quintile.

3.2.4   The analysis of the data used to create the imputation data showed similar significant differences (see Appendix 3 – Table 8a and b). For the 9-month sample, SSLP families had a higher percent of missing data for household income. For the 3-year sample, SSLP families had lower percent of missing for household income and maternal occupation. Fewer maternal cognitive difficulties were found in the SSLP areas.

3.2.5   In summary it is important to note that the level of deprivation for families in the comparison (Sure Start-to-be) areas is greater than for families in the SSLP areas. These differences are taken into account in subsequent sections when SSLP versus comparison differences are corrected for initial differences between areas thus enabling fair comparison.

Table 2a: Summary of Demographic Characteristics – 9 months: Complete data set

Characteristic	Sure Start (Total = 11316)		Sure start to be (Total = 1389)		Significance
	Number	%	Number	%	
Child's Age					0.96
8 months	767	6.8	74	5.3	
9 months	8538	75.5	1054	75.9	
10-12 months	2011	17.8	261	18.8	
CHILD'S GENDER					0.41
Male	5758	50.9	723	52.1	
Female	5558	49.1	666	47.9	
Child's Ethnicity					<0.001
White	8637	76.3	935	67.3	
Mixed	593	5.2	88	6.3	
Indian	140	1.2	29	2.1	
Pakistani	666	5.9	107	7.7	
Bangladeshi	286	2.5	63	4.5	
Black Caribbean	171	1.5	22	1.6	
Other Black	489	4.3	88	6.3	
Other	334	3.0	57	4.1	
LANGUAGE					<0.001
English Only	9303	82.2	1044	75.2	
English and Other Languages	1429	12.6	241	17.4	
Other Languages Only	584	5.2	104	7.5	

Characteristic	Sure Start (Total = 11316)		Sure start to be (Total = 1389)		Significance
	Number	%	Number	%	
Maternal Age (years at child's birth)					0.19
Not teenage	9776	86.4	1182	85.1	
< 20 (teenage)	1540	13.6	207	14.9	
Maternal Cognitive Difficulties					0.21
Has Some Difficulties	1225	10.8	166	12.0	
No Difficulties Reported	10091	89.2	1223	88.0	
Father's involvement[§]					0.56
Dad Absent	3762	33.2	481	34.6	
Dad Present But Not Working	1689	14.9	199	14.3	
Dad Present and Working	5865	51.8	709	51.0	
Household income[§§]					<0.001
Top quintile £338+ p.w.	2468	21.8	257	18.5	
2nd quintile £217-338 p.w.	2043	18.1	214	15.4	
Mid quintile £168-217 p.w.	2522	22.3	267	19.2	
4th quintile £126-168 p.w.	2141	18.9	306	22.0	
Bottom quintile <£126 p.w.	2142	18.9	345	24.8	
Maternal Education					<0.01
Degrees/Higher Education	1953	17.3	235	16.9	
A level	2642	23.3	288	20.7	
O level / GCSE	2722	24.1	312	22.5	
Other	794	7.0	118	8.5	
None	3205	28.3	436	31.4	
Maternal Occupation Status					0.26
Management/Professional	1599	14.1	174	12.5	
Intermediate	1658	14.7	192	13.8	
Small Employer	249	2.2	36	2.6	
Lower Supervisory/Technical	604	5.3	70	5.0	
Semi-Routine	3160	27.9	385	27.7	
Routine	2104	18.6	262	18.9	
Unemployed	1942	17.2	270	19.4	
Maternal Work Status					0.11
Not in Employment	7566	66.9	951	68.5	
In Employment – part time	1324	11.7	136	9.8	
In Employment – full time	2426	21.4	302	21.7	

[§] Parental status variable was formed from dad work status and lone parent variable.
[§§] Income values were split into 5 groups – lower income (bottom quintile) to highest income (top quintile)

Table 2b: Summary of Demographic Characteristics – 3 years: Complete data set

Characteristic	Sure Start (Total = 3382)		Sure start to be (Total = 793)		Significance
	Number	%	Number	%	
Child's Age					0.98
34-35 months	1261	37.3	296	37.3	
36-38 months	2121	62.7	497	62.7	
Child's Gender					0.73
Male	1763	52.1	408	51.5	
Female	1619	47.9	385	48.5	
CHILD'S ETHNICITY					<0.001
White	2726	80.6	570	71.9	
Mixed	163	4.8	63	7.9	
Indian	28	0.8	17	2.1	
Pakistani	171	5.1	65	8.2	
Bangladeshi	49	1.4	13	1.6	
Black Caribbean	36	1.1	9	1.1	
Other Black	117	3.5	33	4.2	
Other	92	2.7	23	2.9	
Language					<0.001
English Only	2852	84.3	611	77.0	
English and Other Languages	453	13.4	163	20.6	
Other Languages Only	77	2.3	19	2.4	
Maternal Age (years)					0.53
Not teenage	2936	86.8	695	87.6	
< 20 years (teenage)	446	13.2	98	12.4	
Maternal Cognitive Difficulties					0.87
Has Some Difficulties	322	9.5	77	9.7	
No Difficulties Reported	3060	90.5	716	90.3	
Father's involvement[§]					0.23
Dad Absent	1211	35.8	297	37.5	
Dad Present But Not Working	422	12.5	111	14.0	
Dad Present and Working	1749	51.7	385	48.5	
Household income[§§]					<0.001
Top quintile £338+ p.w.	536	15.8	114	14.4	
2nd quintile £217-318 p.w.	949	28.1	165	20.8	
Mid quintile £168-217 p.w.	629	18.6	108	13.6	
4th quintile £126-168 p.w.	636	18.8	151	19.0	
Bottom quintile <£126 p.w.	632	18.7	255	32.2	
Maternal Education					<0.001
Degrees/Higher Education	639	18.9	148	18.7	
A level	796	23.5	139	17.5	

Characteristic	Sure Start (Total = 3382)		Sure start to be (Total = 793)		Significance
	Number	%	Number	%	
O level / GCSE	874	25.8	199	25.1	
Other	296	8.8	79	10.0	
None	777	23.0	228	28.8	
Maternal Occupation Status					<0.001
Management/Professional	474	14.0	102	12.9	
Intermediate	446	13.2	72	9.1	
Small Employer	105	3.1	14	1.8	
Lower Supervisory/Technical	196	5.8	35	4.4	
Semi-Routine	956	28.3	205	25.9	
Routine	680	20.1	126	15.9	
Unemployed	525	15.5	239	30.1	
Maternal Work Status					0.26
Not in Employment	2234	66.1	545	68.7	
In Employment – part time	473	14.0	95	12.0	
In Employment – full time	675	20.0	153	19.3	

§   Parental status variable was formed from dad work status and lone parent variable.

§§   Income values were split into 5 groups – lower income (bottom quintile) to highest income (top quintile)

3.3.   First-Stage Analysis Strategy

3.3.1   The first stage of data analysis was designed, after taking into account pre-existing differences between SSLP and comparison families and communities in their demographics, (1) to assess the main or across-the-board effects of SSLPs on each dependent variable, (2) to determine whether SSLPs were more likely than comparison areas to include areas in which children/families were doing better than would otherwise be expected when a multiplicity of dependent variables were considered simultaneously (rather than one at a time), and (3) to test if some implementation factors might explain variation in these main effects.

3.3.1. Overall Main Effects of SSLPs

3.3.1.1   An overall main effect is one that involves the detection of a significant difference between SSLP and comparison communities on a measured outcome having (a) allowed for the background differences in the populations and areas and (b) not taken into consideration the possibility that subpopulations might be differentially affected by SSLPs. To foreshadow what is to come, *extremely few overall main effects of SSLPs, whether positive or negative, emerged in the analysis of either complete or imputed data. Moreover, those very few significant main effects that were detected proved to be small in magnitude. Overall, then, there was limited evidence of across-the-board effects of SSLPs on children/families at this relatively early stage in the evaluation of the impact of SSLPs.*

3.3.1.2   In order to determine whether effects of SSLPs on child development and family functioning were detectable, the data collected were analysed using multilevel models, a multivariate statistical procedure that takes into account the hierarchical nature of the data, with children and families nested within communities, some of which are SSLP communities

and some of which are Sure Start-to-be (i.e. comparison) communities. The analysis of each dependent variable or outcome measure proceeds in a series of steps. First, the outcome measures are compared, unadjusted for the child, family or community factors. In the next step, child, family and background variables are added to the model, along with the area characteristics (i.e. community factor scores). This procedure affords an assessment of the effects of this set of variables—individually and collectively—on the outcome under consideration. At each step, a designation indicating whether a community was a SSLP or comparison area was included. It was this comparison that indicates whether, across the board, differences proved detectable between SSLP and comparison communities on the outcome in question, differences that would then be attributable to the effects of SSLPs.

3.3.1.3   Table 3a and Table 3b present the overall results of SSLP vs. SSLP-to-be comparisons for the analyses of 9- and 36-month data, respectively. Summary statistics are presented for each of the outcomes along with the estimated effect of Sure Start, unadjusted and adjusted for the background variables —from the analyses of the complete dataset. From the analysis of the imputed dataset the adjusted estimate of Sure Start is presented. Continuous measures have been summarised by the mean and standard deviation, count data by the median and inter-quartile range, and binary outcomes by the number and percentage of children. The effects of Sure Start have been estimated in the modelling framework, taking into account the data structure (i.e. the nesting of children and families within communities). Linear models have been used for the continuous measures, Poisson models for count data and logistic models for binary outcomes.

3.3.1.4   The estimated effects of SSLPs (Table 3a and b) show the degree of difference, including confidence intervals, between the two types of areas, calculated (1) before adjusting for anything (Unadjusted Analysis), (2) after adjusting for child and family background factors (shown in Table 2a for the 9-month outcomes and Table 2b for the 36-month outcomes) and community characteristics which were found to be significantly related to the outcome measure under consideration (i.e. "Controlling for Demographics and LCA"). As such, these difference scores are *not* derivable from the simple difference between the raw means/medians/percentages presented in the Summary-Statistics column. Positive values on the mean and percentage difference scores indicate that the SSLP areas scored higher than the Sure Start-to-be areas on the outcome in question, as do odds ratios greater than 1.00; negative values of mean and percentage difference scores indicate the opposite, as do odds ratios less than 1.00. It will only be the results of the final set of comparisons involving controls for child, family and community characteristics that will be discussed further here, as these are the crucial comparisons for deciding if SSLPs in an area are linked with the effect in question.

3.3.1.5   The effects of the demographic, family characteristics and area level measures on each outcome, prior to evaluating effects of SSLPs, are summarised in tables in Appendix 4 for both the complete and imputed data analyses. These are not discussed in detail in this presentation, as emphasis is placed on detected effects of SSLPs, not of the many background factors taken into account before evaluating effects of SSLPs. Nevertheless, the data presented in Appendix 4 documents the validity of the outcome measurements, showing them to be related to many child, parent and family characteristics in the very manner that so much other research would lead one to expect. For example, note that among 9-month olds (in analyses of both complete and imputed data) that fathers were less involved with daughters than sons; that children of teen mothers relative to their non-teen counterparts had more accidents, were less likely to be breastfed for a minimum of six weeks and that these young mothers rated their areas less positively than non-teen mothers; and that the families with the highest incomes experienced less chaotic family life and provided more supportive parenting, as did mothers with degree-level education. Relatedly, note that among 36-month

olds (in analyses of both complete and imputed data) that fathers were also less involved with daughters than sons; that children of teen mothers relative to their non-teen counterparts had more behaviour problems and their mothers engaged in more negative parenting; and that children of the most highly educated mothers scored higher in verbal and nonverbal abilities and social competence, and that the more educated mothers also provided more supportive parenting.

3.3.1.6   Table 3a and 3b present only the *main* effects of SSLPs, that is, whether the SSLP and comparison samples differed significantly across the entire sample, net of family- and community-level control variables. That is, the data presented in these tables provide no information as to whether effects of SSLPs varied as a function of some background factor such a child gender, family ethnicity, or maternal education. Such interaction effects will be reported in the second major stage of analysis, but the possibility of such qualified main effects need to be considered at this junction. This is because the absence of a significant main effect may occur in the context of a significant interaction effect indicating that SSLPs actually had an effect on some subset of the studied sample (e.g. lone parents) when main-effect results suggest otherwise; thus, it would be wrong to conclude on the basis of main-effect results alone that no effect of SSLPs was detected (for a particular outcome measure) just because no significant main effect was detected.

3.3.1.7   By the same token, it would be mistaken to presume that a significant main effect necessarily means that SSLPs actually exerted an across-the-board effect, as significant main effects seem to suggest. This is because a significant interaction can qualify and reduce to insignificance a main effect, thereby revealing that, what may at first appear to be an overall effect of SSLPs on the total sample, was restricted to some subsample. The reader is thus cautioned against over interpreting the main effect findings before consideration of interaction effects.

3.3.1.8   Inspection of the data presented in Table 3a indicates that comparisons of SSLP areas and SS-to-be areas on the 14 9-month outcome measures yielded significant differences (i.e. main effects) in the case of 3 outcomes in one or both of the analyses (i.e. complete-cases data; imputed data). Most consistently, *SSLP communities scored lower (i.e. better) on home chaos than comparison, Sure Start-to-be communities in both sets of analyses.* Breastfeeding through six weeks was less frequent in the SSLP communities in the imputed-data analysis but not in the complete-data analysis. Hospital admissions for injury were more frequent in SSLP areas, but only in the no-missing-data analysis (i.e. complete cases).

Table 3a: Comparison of SSLPs and SSLP-to-be communities for 9 month olds

Outcome Measures[§]	Summary Statistics				Estimated Effects of Sure Start - SSLP vs. SSLP-to-be					
					Cases with complete data only				Imputed data set	
	SSLP		SSLP-to-be		Unadjusted Analysis		Controlling for Demographics and LCA[§§]		Controlling for Demographics and LCA	
	Mean	SD	Mean	SD	Mean Difference	95% CI	Mean Difference	95% CI	Mean Difference	95% CI
Physical Health										
Birth Weight	3270.07	609.34	3251.90	600.56	17.57	-21.45 to 56.59	-1.05	-34.62 to 32.53	2.57	-29.78 to 34.93
	Number	%	Number	%	OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Children who had Accident(s)	1075	9.50	139	10.00	0.95	0.77 to 1.16	0.89	0.73 to 1.08	0.86	0.72 to 1.04
Children Admitted to Hospital	1717	15.20	171	12.30	1.26*	1.03 to 1.55	1.25*	1.03 to 1.52	1.17	0.97 to 1.41
Ever Breastfed	6735	59.5	886	63.9	0.85	0.62 to 1.17	0.86	0.71 to 1.04	0.90	0.73 to 1.09
Breastfeeding a Min of 6 Weeks	4017	37.1	560	42.1	0.81	0.59 to 1.12	0.84	0.68 to 1.04	0.77**	0.71 to 0.82
	Mean	SD	Mean	SD	Mean Difference	95% CI	Mean Difference	95% CI	Mean Difference	95% CI
Parenting/Family Functioning										
Supportive Parenting	9.55	1.54	9.44	1.61	0.09	-0.10 to 0.29	0.05	-0.14 to 0.23	0.11	-0.05 to 0.28
ADDITIONAL: ACCEPTANCE	4.84	0.48	4.85	0.49	-0.01	-0.06 to 0.04	-0.01	-0.06 to 0.04	0.01	-0.03 to 0.06
Father Involvement	15.72	4.70	15.50	4.54	0.21	-0.24 to 0.66	0.09	-0.26 to 0.43	0.14	-0.27 to 0.55
Home Chaos	8.61	2.45	8.95	2.26	-0.35**	-0.52 to -0.17	-0.31**	-0.46 to -0.15	-0.34**	-0.49 to –0.18

[§] For variable definitions see Appendix 1 Key: CI = Confidence interval SD = Standard deviation OR = Odds ratio * $p \leq 0.05$ ** $p \leq 0.01$

[§§] LCA stands for Local Context Analysis also referred to in the text as Community Characteristics for short.

Outcome Measures[§]	Summary Statistics				Estimated Effects of Sure Start - SSLP vs. SSLP-to-be					
					Cases with complete data only				Imputed data set	
	SSLP		SSLP-to-be		Unadjusted Analysis		Controlling for Demographics and LCA[§§]		Controlling for Demographics and LCA	
	Mean	SD	Mean	SD	Mean Difference	95% CI	Mean Difference	95% CI	Mean Difference	95% CI
MATERNAL WELL-BEING										
Malaise	1.76	1.89	1.83	1.91	-0.07	-0.19 to 0.06	-0.04	-0.15 to 0.08	-0.06	-0.18 to 0.05
Self Esteem	18.64	3.06	18.58	3.07	0.07	-0.13 to 0.27	0.10	-0.08 to 0.29	0.11	-0.07 to 0.30
Local Area Measures										
Mother's Area Rating	32.47	6.49	31.82	6.07	0.54	-0.2 to 1.28	0.34	-0.17 to 0.85	0.44	-0.06 to 0.95
Observer's Area Rating	22.26	3.44	21.59	3.69	0.61*	0.04 to 1.19	0.27	-0.14 to 0.68	0.26	-0.14 to 0.65
	Median	IQR	Median	IQR	% Difference	95% CI	% Difference	95% CI	% Difference	95% CI
Services										
Total Services Used	3.00	15.00	2.00	15.00	8.14*	1.01 to 16.18	5.80	-1.00 to 13.88	0.05	-0.02 to 0.13
Total Support Usefulness	1.00	3.00	2.00	3.00	-2.12	–6.76 to 3.05	-1.91	-6.76 to 3.05	-0.02	-0.06 to 0.03

[§] For variable definitions see Appendix 1   Key: CI = Confidence interval   SD = Standard deviation   OR = Odds ratio   * p ≤ 0.05   ** p ≤ 0.01

[§§] LCA stands for Local Context Analysis also referred to in the text as Community Characteristics for short.

Table 3b: Comparison of SSLPs and SSLP-to-be communities for 3 years olds

Outcome Measures[§]	Summary Statistics				Estimated Effects of Sure Start - SSLP vs. SSLP-to-be					
					Cases with complete data only				Imputed data set	
	SSLP		SSLP-to-be		Unadjusted Analysis		Controlling for Demographics and LCA[§§]		Controlling for Demographics and LCA	
	Mean	SD	Mean	SD	Mean Difference	95% CI	Mean Difference	95% CI	Mean Difference	95% CI
Child Cognitive Ability										
Bas Verbal	42.89	9.55	42.63	9.59	0.28	-0.92 to 1.48	-0.73	-1.61 to 0.14	-0.41	-1.19 to 0.37
Bas Non-Verbal	41.49	6.91	40.66	6.58	0.68	-0.25 to 1.61	0.03	-0.69 to 0.75	0.34	-0.31 to 0.98
	Number	**%**	**Number**	**%**	**OR**	**95% CI**	**Adjusted OR**	**95% CI**	**Adjusted OR**	**95% CI**
Physical Health										
Children who had Accident(s)	885	26.20	220	27.70	0.93	0.76 to 1.12	0.87	0.72 to 1.04	0.94	0.80 to 1.12
Children Admitted to Hospital	330	9.80	83	10.50	0.93	0.71 to 1.20	0.93	0.71 to 1.21	0.93	0.74 to 1.18
	Mean	**SD**	**Mean**	**SD**	**Mean Difference**	**95% CI**	**Mean Difference**	**95% CI**	**Mean Difference**	**95% CI**
Parenting/Family Functioning										
Supportive Parenting	7.87	1.66	7.62	1.84	0.22	-0.05 to 0.50	0.20	-0.07 to 0.46	0.17	-0.07 to 0.40
ADDITIONAL: ACCEPTANCE	2.84	0.48	2.66	0.67	0.16 **	0.09 to 0.24	0.16**	0.09 to 0.22	1.14**	1.07 to 1.21
Negative Parenting	33.17	14.96	33.91	15.41	-0.75	-2.02 to 0.52	-1.09	-2.28 to 0.11	-1.23*	-2.31 to –0.15
Home Learning Environment	18.78	6.05	18.39	6.28	0.51	-0.19 to 1.21	0.20	-0.45 to 0.85	0.28	-0.31 to 0.87
Father Involvement	24.49	4.34	24.01	4.16	0.45	-0.04 to 0.94	0.31	-0.15 to 0.77	0.00	-0.41 to 0.42

[§] For variable definitions see Appendix 1   Key: CI = Confidence interval   SD = Standard deviation   OR = Odds ratio   * p ≤ 0.05   ** p ≤ 0.01
[§§] LCA stands for Local Context Analysis also referred to in the text as Community Characteristics for short.

Table 3b (continued): Comparison of SSLPs and SSLP-to-be communities for 3 years olds

Outcome Measures[§]	Summary Statistics				Estimated Effects of Sure Start - SSLP vs. SSLP-to-be					
					Cases with complete data only				Imputed data set	
	SSLP		SSLP-to-be		Unadjusted Analysis		Controlling for Demographics and LCA[§§]		Controlling for Demographics and LCA	
	Mean	SD	Mean	SD	Mean Difference	95% CI	Mean Difference	95% CI	Mean Difference	95% CI
Social/Emotional Development										
Social Competence	24.67	2.99	24.47	3.01	0.18	-0.09 to 0.46	0.15	-0.11 to 0.41	0.14	-0.10 to 0.38
Behavioural Problems	28.28	9.28	28.76	9.38	-0.47	-1.25 to 0.30	-0.40	-1.11 to 0.32	-0.50	-1.14 to 0.14
Maternal Well-Being										
Malaise	2.09	2.04	2.04	1.98	0.05	-0.13 to 0.22	0.14	-0.02 to 0.31	0.04	-0.12 to 0.20
Self Esteem	18.26	3.29	18.28	3.16	-0.02	-0.28 to 0.25	-0.01	-0.27 to 0.25	0.01	-0.22 to 0.24
Local Area Measures										
Mother's Area Rating	31.26	6.54	31.69	6.81	-0.40	-1.30 to 0.5	-0.74*	-1.46 to -0.02	-0.98**	-1.61 to –0.34
Observer's Area Rating	22.18	2.95	21.74	3.34	0.20	-0.36 to 0.76	-0.07	-0.45 to 0.32	-0.14	-0.51 to 0.24
	Median	IQR	Median	IQR	% Difference	95% CI	% Difference	95% CI	% Difference	95% CI
Services										
Total Service Used	3.00	15.00	3.00	14.00	10.3*	1.01 to 19.72	4.95	-3.92 to 13.88	0.06	-0.01 to 0.15
Total Support Usefulness	1.00	3.00	1.00	3.00	-1.91	-8.61 to 5.13	-0.76	-7.69 to 6.18	-0.02	-0.07 to 0.04

[§] For variable definitions see Appendix 1   Key: CI = Confidence interval   SD = Standard deviation   OR = Odds ratio   * $p \leq 0.05$ ** $p \leq 0.01$

[§§] LCA stands for Local Context Analysis also referred to in the text as Community Characteristics for short.

3.3.1.9   Inspection of the data in Table 3b indicates that comparisons of SSLP areas and Sure Start-to-be areas on the 16 36-month outcome measures yielded significant differences (i.e. main effects) in the case of two outcomes: *mothers rated the local areas less favourably in SSLP communities than in comparison ones (both analyses)* and mothers in the SSLP areas reported using less negative parenting (e.g. less mother-child closeness, more harsh discipline, more household chaos) (imputed analyses only). Previous interim reports on the Impact Study examined a somewhat different set of outcome variables, most notably, the individual components of the parenting and child-behaviour composite variables created on the basis of the factor analyses presented in Appendix 2. In light of the failure to detect a main effect of SSLPs on the supportive-parenting composite in the current set of analyses when such an effect was detected in prior interim reports on one of its component variables, acceptance (reflecting lack of use scolding, slapping and physical restraint), concern was raised that a potentially important effect may be being overlooked.

3.3.1.10   In order to reduce the likelihood that a previously-detected effect of SSLPs was being missed due to the a-priori decision to aggregate some outcome measures (to reduce the possibility of generating chance findings), the decision was made to subject to statistical analysis the acceptance component of the supportive-parenting composite. It was decided not to carry out such "secondary" analyses with any other component of a composite variable, as this could not be justified on the basis of findings presented in previous interim reports; thus, doing so was judged to increase the likelihood of chance results emerging. Importantly, when acceptance was subject to analysis, *results from both sets of analyses (Table 3a and b) indicated that mothers of 36-month olds (but not of 9-month olds) in SSLPs were observed by interviewers to be more accepting of their children's behaviour (i.e. less likely to slap, scold, use physical restraint) than mothers in the comparison communities.* Even though the way in which the variable "acceptance" is operationalised—in terms of avoidance of slapping, scolding, physical restraint--suggests that it might capture much of what is measured by the composite variable negative parenting, this was not the case. Not only did acceptance not load on the same factor as the other components of the negative-parenting composite variable, it also proved to be only moderately correlated with the negative-parenting composite. This means that the effects of SSLPs on negative parenting and on acceptance are reasonably separable rather than being the same effect emerging in two different places.

3.3.1.11   The testing for SSLP effects so far provided an answer to the question "Is there a significant *overall* effect of being in an SSLP in which high levels of confidence can be place?" with that answer being, more or less, "there is some evidence of positive effects, mostly on household functioning (i.e. lower chaos at 9 months) and parenting (i.e. more acceptance at 36 months), but also some evidence of adverse effects, most notably, less favourable ratings of their communities by mothers of 36 month olds." There was no evidence from the analyses reported so far that SSLPs were affecting children's health and/or development. Moreover, the significant effects detected were quite limited in number and small in their magnitude, with many more outcomes failing to show effects of SSLPs than showing them. It remains possible that because of the diversity of SSLPs, particular SSLPs may be having more markedly demonstrable effects upon children or families without there being a strong overall SSLP effect. This could occur because the significant effects of some SSLPs are overwhelmed by the lack of similar effects in the remaining SSLPs. Hence a relevant question is "Do particular SSLPs have a significant effect?" This is a question to which attention now turns.

3.3.2. Variation Between Communities in Overall Effectiveness

3.3.2.1 Multilevel models enable the extraction of a community level residual effect for each community in the analysis, separately for each dependent variable. These community residuals provide evidence of whether significant "community effects" exist, that is, whether the 200 areas studied differ significantly from one another (on each of the dependent variables) after taking into account all the child/family and community control variables. Where they do, this opens up the possibility of identifying communities in which children and/or families are functioning noticeably better (or worse) on a particular outcome than would be expected given what is known about the family and area demographics (i.e. control variables). Indeed, it makes possible the identification of SSLPs that are particularly effective (or ineffective) with respect to one or more aspects of child and family functioning measured even when, *on average*, no evidence of *general* SSLPs effects could be detected.

3.3.2.2 To gain further insight into these area effects, the effect size attributable to each of the 200 communities being investigated for each dependent measure was examined. These community-residual-effect measurements, which can be positive or negative in value, reflect the *degree* to which the children or families in an area are functioning better or worse than would be expected on the basis of all that is known about the families and the area on the outcome in question. Outcome measures that were found to have residual effects that differed significantly between communities at 9 and 36 months were used to create an overall measure of community effectiveness. (Outcomes with significant variance at the community level can be identified from Appendix 4. As both outcome measures for breast-feeding had significant variation between communities, only the outcome ever breast-fed was included in the community ranking measure.) For each of these outcomes, every one of the 200 communities (i.e. 150 SSLP, 50 comparison/Sure-Start-to-be) were given a score as follows: -1 if its residual value was more than one standard error below the residual mean of zero, +1 if its residual value was greater than one standard error above the mean, and 0 if its value fell between plus and minus one standard error.

3.3.2.3 These individual outcome rankings were summed to create a measure of overall community effectiveness for each of the 200 communities, the distribution of which is shown in (Figure 1). Thus, a community could, from the analysis of the complete data, in principle, end up with a total score summed across the 16 variables of between -16 to +16, representing the extent to which it deviated—in a negative or positive way—from other communities (i.e. children/families functioning worse or better than expected). The overall community score was categorised into communities whose performance was poorer than expected (score of -2 and below), average (-1 to 1), and greater than expected (2 or more). As can be seen from

Table 4, the ranking of community effectiveness created from the analysis of the complete data shows that 22.5% of the total of 200 communities were identified as performing better than expected (n = 45) and 23.5% were identified as performing more poorly than expected (n = 47), with the remaining identified as performing in the average range (n = 108). The ranking created from the analysis of the imputed data identifies 16% of the communities falling above or below average (n=32), with the remaining 136 communities (68%) falling in the average range.

Figure 1: Histogram of overall community effectiveness rankings

Mean = 0.0   Standard deviation = 2.2   Number of communities = 200

(i) complete data

Mean = 1.0   Standard deviation = 1.7   Number of communities = 200

(ii) imputed data
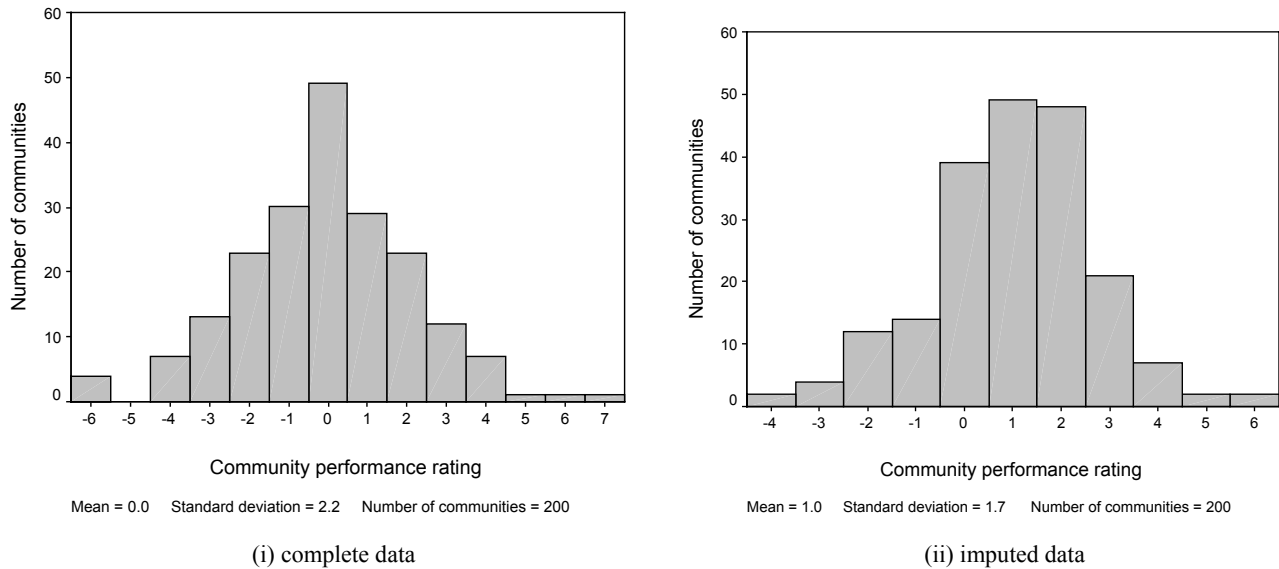
Table 4: Performance Relative to Expectation

DATASET	AREA	Lesser		Average		Greater		Total
		Actual	Expected	Actual	Expected	Actual	Expected	
Complete	**SSLP**	33	35	78	81	39	34	150
	Non-SSLP	14	12	30	27	6	11	50
	Total	**47**		**108**		**45**		**200**
Imputed	**SSLP**	25	24	98	102	27	24	150
	Non-SSLP	7	8	38	34	5	8	50
	Total	**32**		**136**		**32**		**200**

3.3.2.4   Statistically, there was no significant difference (or even much of an eyeball difference) in the likelihood of SSLP and comparison communities meeting criteria for producing better or worse effects than expected in the analysis of the complete data (p=0.12) or the imputed (p=0.32). Indeed, the same result emerged—with and without imputation—when area effects on 14 family outcome measures chosen because they were particularly relevant to SSLP aims were combined, regardless of level of community level variation. The goal in conducting these many variations of the same analysis was to ensure that the null-hypothesis of no difference was not being prematurely embraced. These results of the additional analyses are presented in Appendix 6**.**

3.3.3. Implementation Characteristics of SSLPs and Variation in Effects on Children and Families

3.3.3.1   It is clear from the data discussed in the previous section that communities show considerable variation in their effects upon children and families. This raises the issue that amongst SSLP communities, variability in the implementation of the SSLP may relate to variation in effects upon children and families. One important challenge, then, is to identify aspects of implementation that might account for variability in the effectiveness of programmes. An in-depth study of all 150 programmes is being carried out as an adjunct to the work presented in this report to address just this issue. For purposes of the present report, it was examined by means of three limited measures of implementation variation:

- Costs per child: Annual expenditure as a function of number of children 0-4 in community

- Lead agency: Health Agency, Local Authority, Voluntary agency

- Percent Children/Families Tracked over a year by Programmes: number of children programmes reported seeing as a function of total children 0-4 in the community

3.3.3.2   To examine the potential importance of these three implementation variables on children and families, each of the 15 9-month outcomes and the 17 36-month outcomes was re-examined in the multilevel model used for examining overall SSLP effects, with minor modification. Included within the revised models were the same child/family background predictors and local community characteristics, but the model was rerun on only the 150 SSLP communities (i.e. did not include the comparison communities); thus, the SSLP vs. Sure Start-to-be comparison was deleted from the model. In its place was added one of the three implementation variables to determine whether each, by itself, significantly explained variation in the outcome measure after taking into consideration child/family and community factors. These analyses were undertaken for complete-cases and imputed data. Results that were significant in both sets of analyses are summarised in Table 5.

3.3.3.3   Inspection of Table 5a and b, indicate some modest impact of the three implementation variables under consideration. In the case of 9-month olds and their families, lead agency significantly added to the prediction of two outcomes, with health agency leadership predicting significantly more father involvement relative to all other lead agencies, and more favourable ratings of the area by mothers relative to local authority as lead agency. Also for 9-month olds and their families SSLPS with a higher level of reach, (i.e. in contact with more families) were associated with mothers showing more supportive parenting.

3.3.3.4   With 3-year olds and their families, lead agency again was related to mothers' rating of the area with those areas where the SSLP was led by either a Health agency or by the Local authority being rated more favourably than SSLPs led by a voluntary agency. Also when programmes were led by the health agency, children had fewer accidents than where a programme was led by a local authority.

3.3.3.5   Overall, the most consistent finding from these limited analyses was that lead agency had limited effects with those led by a health agency showing four positive effects and those led by a local authority one favourable effect.

Table 5a: Effect of implementation variables –findings significant for complete and imputed - 9 months

Outcome Measures[§]	Controlling for Demographics and LCA		
	Cost	Lead agency	% Tracked
PHYSICAL HEALTH			
Children who had Accidents			
Children admitted to Hospital			
Birth weight			
Ever Breastfed			
Breastfeeding a min of 6 weeks			
Parenting/Family Functioning			
Supportive parenting			+ve
EXTRA VARIABLE: ACCEPTANCE			
Father involvement		Health Agency better than Local Authority Health Agency better than voluntary agency	
Chaos			
Maternal well-being			
Malaise			
Self esteem			
Local Area Measures			
Mother's Area Rating		Health Agency better than Local Authority	
Observer's Area Rating			
Services			
Total Service Used			
Total Support Usefulness			

Table 5b: Effect of implementation variables –findings significant for complete and imputed – 3 years

OUTCOME MEASURES	Controlling for Demographics and LCA		
	Cost	Lead agency	% Tracked
Child Cognitive Ability			
BAS Verbal			
BAS Non-Verbal			
Physical Health			
Children who had Accidents		Health Agency better than Local Authority	
Children admitted to Hospital			
Parenting/Family Functioning			
Supportive parenting			
EXTRA VARIABLE: ACCEPTANCE			
Negative parenting			
Father involvement			
Home learning environment			
Social and emotional development			
Social competence			
Behavioural problems			
Maternal well-being			
Malaise			
Self esteem			
Local Area Measures			
Mother's Area Rating		Local Authority better than voluntary agencies Health Agency better than voluntary agencies	
Observer's Area Rating			
Services			
Total Service Used			
Total Support Usefulness			

[§] LCA stands for Local Context Analysis also referred to in the text as Community Characteristics for short.

3.4   Second Stage Analysis Strategy: Differential Effects of SSLPs on Specific Subpopulations

3.4.1   Thus far analyses have considered main effects for the comparison between SSLP and comparison communities. This does not tell us whether specific subpopulations within these communities are differentially affected by SSLPs. This possibility can be investigated by examining whether there is a significant interaction between a population characteristic (e.g. lone/dual parent) and the SSLP/comparison distinction. To foreshadow what is to come, when interaction effects were examined, they proved more revealing than did the investigation of main or across-the-board effects of SSLPs, but only in the case of the 36-month data. Not only was it the case that significant interactions emerged at a rate that was greater than significant main effects (in the 36-month data), but further inspection of them revealed some consistency in their nature. More specifically, there was repeatedly suggestive, even if modest, evidence that *among the (mostly) deprived families living in the deprived SSLP areas, somewhat less disadvantaged families (i.e. non-teen mothers) benefited somewhat from SSLPs, whereas more disadvantaged families were adversely affected by SSLPs (i.e. children of teen mothers, lone parents, workless households)*. While the evidence for these differential effects at 36 months (only) was limited and the effects in question were small, their patterning was judged to be meaningful and noteworthy.

3.4.2   Six demographic variables were chosen (because of their policy relevance) to determine whether effects of SSLPs varied across subpopulations living in SSLP areas. More specifically, 2-way interactions involving SSLP status and each of the following factors were tested for each outcome measure after controlling for the child and family characteristics and significant local area characteristics:

- child gender
- full/part-time maternal employment
- teenage parenthood (i.e. <20 years at delivery)
- lone parenthood (i.e. no partner living in home)
- workless household (i.e. no adult employed in home), and
- severity of income deprivation (i.e. <£100 p.w., £100-194/p.w., >£194/p.w.)

(Note: The £194 p.w. income figure was chosen as this is 60% of the median income for the country, and people with incomes below this figure are officially regarded as poor. The proportion of the sample above this official poverty line was 45.5%. The <£100 p.w. income figure identifies the poorest group, representing 13% of the sample.)

3.4.3   At 9 months with both complete case and imputed data, 3.4% of 89 tested interactions proved significant. At 36-months with complete data, 14.9% of 101 tested interactions proved significant; the comparable figure with imputed data was 24.8%**.** In view of the fact that only the figures for 36-month results were greater than the 5% chance result, post-hoc follow-up analyses were carried out only with the 36-month-old data to determine the specific conditions associated with these interactions. Specifically, for a significant 2-way interaction, follow-up analyses determined whether the SSLP *vs.* comparison groups differed for a particular subgroup. For example, if it was found (as it was not) that child gender interacted with group in predicting verbal ability, it was then determined (a) whether boys in SSLP and Sure Start-to-be areas differed significantly from each other in verbal ability and (b) whether the same was true of girls in the two types of communities. At 36 months and with respect to complete data, 45.7% of tested SSLP *vs.* non-SSLP comparisons within subgroups (e.g. lone

parents, two-parent households) proved significant; the comparable figure with imputed data was 51.9%. Once again, all these rates of significant results exceed the 5% level expected by chance.

3.4.4   Appendix 5 - Table 11 (a to d) displays which 2-way interactions were significant for 36-month olds. Estimated values for subgroups in SSLP/ comparison areas are in Appendix 5 – Table 12 (a and b). Tables 6 and 7 summarise the results of the follow-up analyses of 36-month olds using complete data and imputed data, respectively, showing which subgroups were beneficially or adversely affected by SSLPs. Results are shown from compete-cases and imputed data analyses. Once again, greatest confidence can be placed in findings emerging in both sets of analyses.

3.4.5   Tables 6 and 7 include positive (+) and negative (-) signs, with some of these circled. Whenever the SSLP areas scored higher on the outcome in question (e.g. more supportive parenting, more behaviour problems), the positive sign is used; whenever the SSLP area scored lower on the outcome in question (e.g. less supportive parenting, fewer behaviour problems), the negative sign is used. Where two positive or negative signs occur these indicate particularly significant effects ($p \leq 0.01$). Circled (positive and negative) signs reflect findings indicative of *beneficial* effects of SSLPs (e.g. more supportive parenting, fewer behaviour problems); signs not so circled reflect findings indicative of *adverse* effects of SSLPs (e.g. less supportive parenting, more behaviour problems).

3.4.6   In the 36-month data, adverse effects of SSLPs were more pronounced. In the complete-cases analysis (Table 6), 7 of 16 of the effects of SSLPs detected in the follow-up of significant 2-way interactions reflected adverse consequences of being in a SSLP area; this was true of 16 of 25 significant findings in the imputed cases analysis (Table 7). This contrast highlights the need to distinguish subgroup-specific SSLP effects that were consistent across the two sets of analyses and those that were not, irrespective of whether they highlighted beneficial or adverse effects of SSLPs.

Table 6: Exploring significant interactions – 36 months complete data

Sure start with . . . . . . Interactions	Cognitive Ability		Physical Health		Parenting/Family Functioning					Social and Emotional Development		Maternal Wellbeing		Local Area	
	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	Supportive Parenting	ACCEPTANCE	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating
Child's Gender															
Male															
Female															
Maternal Age (Years)															
Not teenage						+ +	- -			+	-				
< 20 (Teenage)	- -									- -	+ +				
Maternal Work Status															
Not In Employment															
In Employment - Part Time															
In Employment - Full Time															
Lone parent status															
Lone parent	- -														
Not a lone parent															
Household Deprivation status															
Income less than £100 weekly	- -														
Between £100 - £194 weekly	-					+ +	-		+ +						
More than £194 weekly					+ +	+ +									
Working Household status															
Working household															
Workless household	- -														

Indicates beneficial effects of SSLPs: cases in SSLPs scored higher on positive outcomes or lower on negative outcomes.

** For clarity, the columns for 'services' (variables 'total services used' and 'total support usefulness') have been omitted from this table as no effects were observed for them.

Table 7: Exploring significant interactions – 36 months imputed data

Sure start with . . . . . . Interactions	Cognitive Ability		Physical Health		Parenting/Family Functioning					Social and Emotional Development		Maternal Wellbeing		Local Area		Services
	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	Supportive Parenting	ACCEPTANCE	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used
Child's Gender																
Male																
Female																
Maternal Age (Years)																
Not teenage							(– –)			(+)	(– –)					
< 20 (Teenage)	– –							–		– –	+					
Maternal Work Status																
Not in Employment						(+ +)								– –		
In Employment - Part Time	– –						+ +			–	+ +	+ +	– –	– –		
In Employment - Full Time	(+)	(+ +)				(+ +)								–		(+)
Lone parent status																
Lone parent	– –															
Not a lone parent								(+)								
Household Deprivation status																
Income less than £100 weekly																
Between £100 - £194 weekly	–															
More than £194 weekly																
Working Household status																
Working household																
Workless household	–															

Indicates beneficial effects of SSLPs: cases in SSLPs scored higher on positive outcomes or lower on negative outcomes.

** For clarity, the column for variable 'total support usefulness' has been omitted from this table as no effects were observed for it.

3.4.8   In an attempt to present the findings from the follow-up tests of 2-way interactions involving SSLPs and demographic factors in a conceptually meaningful way, we highlight first beneficial effects, then adverse effects, in each case describing the most consistently detected findings first. This approach first calls attention to the relatively less disadvantaged households and then to the most-disadvantaged or at-risk families under investigation, as the relatively less-disadvantaged families appeared to be more likely to benefit from SSLPs whereas the most-disadvantaged families seemed to be disproportionately associated with the adverse effects of SSLPs. It should not be forgotten when characterising families as more and less disadvantaged that (a) the overwhelming majority of families living in SSLP and comparison areas were indisputably disadvantaged economically (median household income is £186 p.w. for families with a 9-month-old and £191 p.w. for families with a 3-year-old) and (b) all the communities were indisputably economically disadvantaged. Thus, the presentation that follows is about *relative* advantage and disadvantage, not absolute advantage by many means.

3.4.1. Beneficial Effects of SSLPs and the Relatively Less Disadvantaged

3.4.1.1   The most consistent beneficial effects of SSLPs that emerged from the analysis of 36-month data involved children from seemingly less disadvantaged families, with "less disadvantaged" status being defined in terms of maternal age (i.e. did not give birth as a teenager), maternal employment (i.e. employed full time), family work status (i.e. working-adult household) and weekly income (>£194 p.w.). Recall that the £194 p.w. income figure was chosen as this is 60% of the median income for the country, and people with incomes below this figure are officially regarded as poor. Results replicated across both sets of analyses are reported first.

3.4.1.2   Three-year-old children of non-teen mothers (20+ years at time of birth) exhibited less behaviour problems and more social competence and the mothers showed less negative parenting when living in SSLP communities rather than in comparison communities. The fact that the parenting and family functioning of these 3-year olds was also positively affected by SSLPs raised the prospect that the beneficial effects detected in the case of children of non-teen mothers was mediated by the beneficial effects of SSLPs on parenting and family functioning. To test this proposition, the analyses revealing beneficial effects of SSLPs on children of non-teen mothers were rerun, controlling for negative parenting. Consistent with mediational thinking, with this control in place, effects of SSLPs on the social functioning of children of non-teen mothers was reduced to insignificance. Such findings are consistent with the notion that SSLPs positively affect children by first positively affecting parenting/family functioning. Clearly, some noteworthy if limited beneficial effects accrue to this *relatively* less-disadvantaged subpopulation (non-teen mothers) within SSLP areas, and this subpopulation constitutes the majority in these areas. To reiterate, these "less disadvantaged" families are only less disadvantaged *relative* to others living in their communities—and specifically families with mothers who gave birth as teens. In income terms both groups are disadvantaged with the median income of the families with a non-teen mother at £197 p.w., and for families with a teen mother the median income is £155 p.w. They are not "advantaged" in any absolute sense; relative to the entire population of the UK, most are clearly disadvantaged.

3.4.1.3   When results that emerged in one set of analyses are also considered, there is additional evidence that the relatively less disadvantaged may profit from being in a SSLP community. Dual-parent families had a higher home learning environment (imputed analysis only). Another "less-disadvantaged" group of families that seemed to benefit from living in

SSLP areas included mothers who were employed full time. Three-year-olds in these households, when living in SSLP areas, scored higher on verbal and nonverbal abilities than comparable children residing in comparison areas (imputed analysis – Table 7). Also, the mothers of these 36-month-old children showed more acceptance of their child's behaviour and used more services than their counterparts living in non-SSLP communities (imputed analysis – Table 7).

3.4.1.4   SSLP benefits also emerged when "advantaged" was defined by weekly household income, though such benefits only emerged in the complete-case analyses. In the case of the least economically deprived families (i.e. >£194 p.w.), mothers of 3-year-olds manifest more supportive parenting, including more acceptance, when in SSLPs. In the case of families that might be described as moderately disadvantaged (i.e. £100-194/p.w.), mothers manifest more acceptance and less negative parenting, while reporting more father involvement when living in SSLPs rather than in comparison communities. In summary, at 36-months only, there was repeated indication that among the families living in deprived SSLP and comparison communities, it was those who were not the most disadvantaged-- relative to others in these communities--who benefited from living in SSLP areas; and this was true when "less-disadvantaged" household was defined in terms of age of mother when she gave birth to the study child (i.e. not teen), maternal employment status (i.e. full time), work status of adults in the household (i.e. someone employed), and family income (i.e. all those >£100 p.w.). *However, high confidence can only be placed in the beneficial effects detected in the case of families with non-teen mothers (i.e. less negative parenting, greater child social competence and fewer behaviour problems), as it was only these findings that replicated across the two sets of analyses.*

3.4.2. Adverse Effects of SSLPs and the Most Disadvantaged

3.4.2.1   Some consistent evidence emerged at 36 months, that the most disadvantaged children and/or families may have been adversely affected by living in SSLP areas, with "most disadvantaged" being defined in terms of being born to a teenage mother, growing up in a lone-parent home or a workless household, having a mother who was unemployed or worked part-time (rather than full-time), or living in a family in which household income was below the poverty line. Most notably, 3-year-old children born to teenage mothers scored lower in verbal ability and manifest less social competence and more behaviour problems when living in SSLP areas than in comparison communities (both analyses), and were reported to engage in fewer learning activities with them (imputed-data analysis) (Tables 6 and 7). Further evidence of SSLPs exerting adverse effects on the most disadvantaged families comes from data showing that 3-year-olds scored lower in verbal ability in SSLPs than in comparison communities when mothers were lone parents (both analyses) and when households were characterised as "workless" (both analyses).

3.4.2.2   In addition to such evidence of adverse effects of SSLPs in which high confidence can be placed, there are several significant and related findings that emerged in only one of the two sets of analyses, and hence command lower confidence. These results frequently relate to SSLP effects associated with mother's employment status or household income level. When mothers worked part time, 3-year-olds also scored lower in verbal ability when living in SSLP areas (imputed-data analysis); these same children were lower in social competence and higher on behaviour problems (imputed-data analysis – Table 7) than their counterparts residing in comparison communities. Conceivably, these results could be related to the fact that in SSLP areas mothers employed part time experienced more malaise and lower self esteem and displayed more negative parenting than mothers working part-time

in Sure Start-to-be comparison communities (imputed data analyses – Table 7). Another result related to maternal employment was that mothers not in employment showed more acceptance of their 3-year-olds's behaviour when living in an SSLP area (imputed analysis – Table 7). Further evidence of SSLPs exerting adverse effects on the most disadvantaged families comes from data showing that 3-year-olds scored lower in verbal ability in SSLPs than in comparison communities when mothers had household incomes of less than £100 p.w. (complete case analysis – Table 6) or between £100-194 p.w. (both analyses – Tables 6 and 7).

3.4.2.3   In summary, there was repeated indication at 36 months, that among the families in deprived SSLP and comparison communities, it was those who were most disadvantaged who were adversely affected by living in SSLP areas; and this was true when "most-disadvantaged" households (among the generally disadvantaged families in these communities) was defined in terms of age of mother when she gave birth to the study child (i.e. teenager), maternal employment status (i.e. part time), work status of adults in the household (i.e. workless), parental status (i.e. lone parent) and family income (i.e. <194/p.w.). *However, high confidence can only be placed in the adverse effects detected in the case of families with teen mothers (i.e. less social competence, more behaviour problems, less verbal ability), with lone parents (i.e. less verbal ability), and with no employed adults (i.e. workless: less verbal ability), as it was only these findings that replicated across the two sets of analyses.*

3.4.2.4   In view of the apparent pattern in the data highlighting that most beneficial effects of SSLPs accrue to the relatively less disadvantaged children/families whereas most adverse effects accrue to the most disadvantaged households in the disadvantaged communities under study, it needs to be noted that a few results from follow-up analyses of 2-way interactions seemed inconsistent with this pattern. Mothers of 3-year-olds who were employed full-time, part-time or not at all rated their community less positively (but to varying degrees and so the significant 2-way interaction) when living in SSLPs than in comparison areas (imputed data analyses – Table 7). Despite these few inconsistencies, the notion that less disadvantaged families—among the (mostly) disadvantaged families included in the Impact Study-- were more likely to benefit from SSLPs than more disadvantaged families and that the reverse was true with respect to adverse effects, seems a viable interpretative lens through which to consider the 2-way interaction results.

4. SUMMARY AND CONCLUSIONS

4.1.1 This report of results from the cross-sectional study of 9- and 36-month olds in SSLP and comparison communities must be regarded as preliminary with respect to the effectiveness of SSLPs because the cross-sectional data collected on 9-month-olds represents the beginning of a longitudinal study considering the longer term effects of Sure Start Local Programmes. The data presented in this report were obtained after SSLPs had been in existence for three years and thus following a period that the NESS Implementation and Cost-effectiveness modules define as a time when SSLPs are "bedding down", and therefore not fully developed. Hence this report's findings represent, at best, *early* indications of whether SSLPs *might* be exerting enduring effects on children and families. Stronger grounds for drawing definitive conclusions about SSLP effectiveness will exist once longitudinal data on the 9-month olds and their families in SSLP areas who are included in this report are followed up at 36 months of age and thus have been exposed to SSLPs for a much longer period of time.

4.1.2   With these qualifications in mind, some limited evidence did emerge suggestive of both overall positive and negative effects of SSLPs, as well as of small positive and negative effects for specific subpopulations. In this summary, we emphasise the findings in which high confidence can be placed because they emerged in the analyses of both complete-cases data and the data set relying also on imputed data. In highlighting effects of SSLPs detected in both sets of analyses, it must not be forgotten that detection of significant effects, either overall or within select subpopulations, was the exception rather than the rule, with more outcomes failing to show effects of SSLPs than otherwise. Additionally, it must be appreciated that all detected effects were indisputably small in magnitude.

4.1.3   Such observations could lead, on the one hand, to the conclusion that there are, in the main, no real effects of SSLPs on children and families. After all, the ones detected were limited in frequency and small in magnitude and, even if seeming to emerge at a rate greater than chance, they were by no means particularly abundant and never large or even moderate in size. On the other hand, however, there are grounds for concluding that the effects detected, while limited and small, are nevertheless meaningful, especially given that they form a coherent pattern. This view is buttressed by the following facts: (a) moderate or large effects were never anticipated, especially so early in the evaluation of SSLP effectiveness; (b) the intention-to-treat design means that children and families are being assessed regardless of contact with SSLP services; (c) it is strikingly difficult to detect interaction effects of any kind in non-experimental research (McClelland & Judd, 1993) and (d) the absence of a policy of random assignment of SSLPs to deprived communities greatly undermines the leverage to detect programme effects. Although there are certainly grounds for open-minded thinkers to forge different views of the importance of the limited and small SSLP effects detected here, the view that the results are meaningful and informative is sufficiently supported, especially those pertaining to 36-month olds and their families, that this reading of the evidence informs the subsequent discussion.

4.2.   Overall and Subpopulation-Specific Effects of SSLPs

4.2.1   In the case of 9-month olds and their families, only one high confidence result was detected, something that might be expected because there is very little time for any effects to emerge. Mothers of 9-month olds in SSLP communities reported less household chaos than mothers of 9-month olds in comparison communities; and this beneficial effect of SSLPs was not restricted to any particular subpopulation

4.2.2   In the case of 36-month olds and their families, substantially more significant effects of SSLPs were detected in which high confidence could be placed. In SSLP areas relative to comparison communities, mothers were observed to be more accepting of their children (i.e. avoidance of slapping, scolding, physical restraint). Subpopulation analyses further revealed that non-teen mothers reported less negative parenting in SSLP areas and that the children of these non-teen mothers (20+ years at time of birth) exhibited fewer behaviour problems and more social competence when living in SSLP communities rather than comparison communities. Analyses designed to determine whether the beneficial effects of SSLPs on the social functioning of children of non-teen mothers was a function of the beneficial effects of SSLPs on the mothering/family functioning of non-teen mothers was consistent with this explanation. Thus, families of non-teen mothers who comprise a *relatively* less disadvantaged section of the studied communities appear to be benefiting somewhat from SSLPs.

4.2.3   In contrast, some disadvantages of living in a SSLP area appeared to accrue for children growing up under seemingly more disadvantaged circumstances. The 36-month-old children of teen mothers showed less verbal ability, less social competence and more behaviour problems when living in a SSLP community. Relatedly, children in workless households had less verbal ability when in SSLP communities, as did children growing up in lone-parent households. A final adverse effect of SSLPs in which high confidence could be placed concerned mothers' ratings of their communities. Mothers of 3-year olds rated the area in which they lived less favourably than mothers in comparison communities.

4.2.4   The results of the analyses of overall community effects (residuals) combined across a multiplicity of measured outcomes (rather than just examining them one at a time) proved consistent with the general conclusion of limited overall (beneficial or adverse) effects of SSLPs that were not restricted to one subpopulation or another. SSLP and comparison communities were equally likely to be classified as more and less effective in their impact upon children/families than would otherwise be expected (based on family and area characteristics); and this was so irrespective of the number of outcome variables considered (i.e. combined) or whether analyses were carried out using only compete cases or using imputed data.

4.3.   Effects of Implementation Characteristics

4.3.1   When only the 150 SSLPs were considered in an effort to illuminate whether variation in three implementation characteristics affected SSLP effectiveness (i.e. disregarding the comparison communities), it emerged that programmes led by health agencies showed some small advantages, and also when SSLPs established contact with greater numbers of families there was more supportive parenting of 9-month-olds. A possible explanation for this greater effectiveness associated with health-led SSLPs may be that such SSLPs have immediate access to birth records and also their health visitors who visit every infant are likely to be better integrated with SSLP services. Hence such programmes can more easily access every new baby and their health visitors are more likely to direct needy families to relevant SSLP services. Where SSLPs are not health-led or where health agencies are not well integrated with SSLPs, considerable resources will have to be expended in locating infants—because some health agencies have refused to supply information from birth records, appealing to the Data Protection Act, despite assurances from a health minister- and families will be contacted considerably later in the child's life with consequent reduction in opportunities for service use. Also links with health visitors may not be as well established and alternative home-visiting strategies may have to be devised, again diverting resources from actual service delivery. In addition, health-led SSLPs appear to get services up-and-running sooner, as indicated by their quicker rate of spend (Meadows, 2005). It could also be the case that health-led programmes are better placed to start working with large numbers of children and families and/or are more experienced in data sharing, thereby facilitating service integration. In the case of SSLPs not well integrated with health services, there also may be fragile inter-agency and inter-professional communication and poorer working relationships between agencies. One way this might be reflected is in terms of reluctance by some agencies to make referrals to SSLP services. In any event, the more positive findings for programmes led by health agencies implies that such agencies should be fully integrated in the transformation of SSLPs to Children's Centres.

4.4.   Differential Effects by Subpopulation: Why?

4.4.1   The above summary of findings in which high confidence can be placed given their replication across analyses indicated that beneficial effects of SSLPs were disproportionately likely to accrue to the *relatively* less disadvantaged families, especially those with mothers who gave birth after turning 20, in the deprived communities under investigation, whereas adverse effects of SSLPs were disproportionately likely to accrue to the seemingly most disadvantaged households, especially families of teen mothers, of lone parents and workless households. It was not just the case, however, that beneficial effects of SSLPs emerged only in the case of older mothers (over 20 years) (i.e. greater child social competence, fewer child behaviour problems, less negative parenting). When results detected in only a single set of analyses are considered, beneficial effects of SSLPs also emerged in the case of mothers employed full time (i.e. higher child verbal and nonverbal abilities, more acceptance, greater service usage), as well as with regard to the least economically-disadvantaged families (i.e. more supportive parenting, including acceptance) and in moderately economically-disadvantaged families (i.e. more acceptance, less negative parenting, greater father involvement). In considering the latter results, it must be appreciated that "least disadvantaged economically" was defined as a weekly household income in excess of just £194 and that the majority of these "least-economically-disadvantaged" families had annual incomes of less than £15,000 per annum, and hence were poorer than the majority of the UK population, but not beneath the poverty line ($< 60\%$ of the population's median income = £194 p.w. at the time of data collection). To reiterate again, then, the terminology used in this report of "less disadvantaged" reflects less disadvantage *relative* to those who were more disadvantaged within disadvantaged communities.

4.4.2   It was also the case that evidence of adverse effects of SSLPs did not just apply to families of teenage mothers (i.e. lower child verbal abilities, less child social competence, more child behaviour problems), lone-parent families (i.e. lower child verbal abilities), and workless households (i.e. lower child verbal abilities). When results detected in only a single set of analyses are considered, adverse effects also emerged in the case of mothers employed part time (i.e. lower child verbal abilities, less child social competence, more child behaviour problems, more negative parenting, more malaise, less self esteem, lower area rating) and mothers who were unemployed (i.e. less breastfeeding through six weeks).

4.4.3   Due to the fact that SSLPs did not appear to affect service use or perceived usefulness of services, and mothers of 36-month olds viewed their area less favourably when living in a SSLP area, it is challenging to account for the effects detected, both beneficial and adverse, of SSLPs. How has it come to be that home chaos at 9 months and acceptance at 36-months has been increased overall? While these effects on parenting could account for the detected beneficial effects of SSLPs on children growing up in the least disadvantaged families in SSLP areas, adverse effects on child development of the most disadvantaged children remain a challenge to explain. That the adverse effects are replicated across analyses makes it unlikely that they are just an artefact of chance. Indeed, in light of similar adverse findings emerging from the evaluation of Early Head Start with respect to the most at-risk families (Love et al., 2002), it would be unwise to ignore these disconcerting findings for a programme designed to benefit the neediest.

4.4.4   The very fact that the NESS impact study detected no overall difference in service use or even service usefulness reported by parents in the SSLP and comparison communities might provide some insight into why the NESS impact study results might have emerged as they did with respect to beneficial and adverse effects accruing, respectively, to the *relatively* least- and most-disadvantaged children/families. A likely explanation for the *relatively* less

disadvantaged doing better from SSLP provision is that their greater human capital (i.e. knowledge and skills in exploiting services) results in their accruing advantages from SSLP service provision that they would not obtain were they living in comparison communities. The explanation for adverse effects being associated with the more disadvantaged groups may involve three possible processes:

a) *Services in a client-responsive environment being used more extensively by relatively less disadvantaged groups and hence fewer services being available to the most disadvantaged.* This explanation is supported by the findings showing that service use did not differ between SSLP and comparison communities and that more advantaged families—those with higher income, more maternal education and greater maternal occupational status--used more services (see Appendix 4). There are other possible explanations.

b) *Possible negative reaction by the most disadvantaged to services offered.* As noted above, the finding of adverse effects of an early intervention for the most disadvantaged was also found in the Early Head Start evaluation in the USA (Love et al., 2002). Many home-visiting programmes have found greater resistance to home-visiting/parent education amongst the most disadvantaged; and in Early Head Start, which had three separate intervention groups (home-visiting, centre childcare, and a combination of home-visiting and centre childcare), the adverse effects for the most disadvantaged were most apparent in the two groups receiving home-visiting. This suggests that receiving potentially unwanted home-visiting, a core component of many SSLPs, may increase stress for already stressed and disadvantaged parents and be counter-productive. An analogy here is that cognitive stimulation for young children is generally beneficial but for autistic children it is aversive and counter-productive, unless handled in an especially skilful manner. Additionally, in the absence of very carefully selected and highly trained home visitors, as in Olds' nurse-home-visitor project (Olds et al., 1999), intervention efforts may overwhelm the most needy, leading them to be less oriented toward their children. This latter observation calls attention to the fact that routinely trained SSLP personnel may lack the special skills needed for engaging the most hard to reach. The nurse-home-visitor programme developed by Olds and found to be most effective with the most at-risk population not only relies on nurses (who are perceived to have a legitimate reason to visit families with a young child) as home visitors, but carefully screens them before hiring and then provides very special training. SSLPs may need to adopt similar practices to maximise beneficial impact on the most disadvantaged in SSLP areas and avoid adverse effects, as detected in this evaluation and in the evaluation of Early Head Start.

c) *Working with more cooperative groups is considerably easier and more pleasant than working with less cooperative, and even resistant groups.* SSLP staff may thus spend more time delivering services to the most cooperative groups, who will often be the relatively less disadvantaged in the community.

4.4.5   If it were it the case that this multi-faceted explanation of the NESS Impact Study findings concerning beneficial and adverse effects was absolutely correct, this study should have found that, in fact, service use and usefulness reported by parents varied as a function of degree of disadvantage across SSLP and comparison communities. In the main this was not the case, as only a single interaction involving service use was detected (see below), though that may be as much a function of limitation of measurement as anything else. In other words, the general failure to detect interactions involving family demographic factors in the case of these two service measurements (i.e. service use, service usefulness) is not evidence that the processes under consideration are *not* operating; null results are simply not

entirely interpretable. Also the measures of service use refer to number of types of service use without consideration of the extensiveness or quality of each instance of service use.

4.5. Differential Effects by Subpopulation: Implications

4.5.1   Although the interpretations under consideration remains speculative and cannot be regarded in any sense as "proven", they raise the possibility that SSLPs may have service-delivery and utilisation challenges to address. If the wide publicity given to service availability in SSLP areas results in these services being used disproportionately by the *relatively* less disadvantaged (but still needy) families when the overall availability of services is apparently not increased, as the data suggest, and in which services are increasingly responsive to the demands of the *relatively* less disadvantaged, then service delivery may need restructuring to ensure more equitable provision and utilisation of services across the community. This may require a disproportionate provision to, and utilisation by, those families that are most disadvantaged, or alternatively different patterns of service provision for different sectors of the population, in order to reduce the likelihood of adverse effects of SSLPs.

4.5.2   Different subgroups appear to be differentially affected by SSLPs, and hence it seems reasonable to wonder whether more children/families fall into the subgroups that benefited rather than in those that were adversely affected. There are indeed more children/families in the subgroups that benefited than in those that did not (Appendix 7). For example 14% of mothers of 3-year olds gave birth as teens, whereas 86% did not; 40% of children were living in workless households, whereas 60% were not; 33% of the children were residing in lone-parent families, but 67% were not; and 13% had weekly incomes less than £100, whereas 45% had weekly incomes in excess of £194 (poverty Line).

4.5.3   Even though there are more children/families falling into the "experienced-beneficial-effects" rather than "experienced-adverse-effects" subgroups, there would still seem to be grounds for concern. This is because a disproportionate amount of the current and future costs to society of failures in early development (e.g. school failure, drug abuse, crime, unemployment) derive from the most disadvantaged children growing up in the most disadvantaged families, a fact that figured importantly in the very creation of SSLPs. So, even if there are fewer children/families being adversely affected than benefiting from SSLPs, the fact that those being adversely affected may be those already most costly to society, raises the prospect that the benefits accrued to the *relatively* less disadvantaged—among the disadvantaged—in SSLPs could be outweighed in terms of societal costs incurred by the most disadvantaged being adversely affected by SSLPs. Although this cost-benefit discussion is speculative, it underscores the need to avoid selectively attending to or embracing particular findings from this report, because they appear favourable, rather than all of them.

4.5.4   It is critically important to remember that this report reflects "early returns" from the NESS Impact Study, with the longitudinal follow-up of 9-month olds at 3- and 5-years of age positioned to provide important additional evidence as to whether, how and under what conditions SSLPs influence children, parents and families. Among the critical questions for the future will not simply be whether the beneficial and/or adverse effects of SSLPs detected for select subgroups in the cross-sectional study of 3-year olds and their families will emerge in the longitudinal cohort—which will have been exposed to "bedded down" SSLPs since their birth—but whether any such effects remain through age five and the start of school, if not beyond. Only an extended longitudinal inquiry will be able to fully address the primary policy issues that the NESS Impact Study was originally designed to illuminate.

4.5.5   In considering all the findings of the cross-sectional Impact Study of NESS presented in this report, the unique nature of the intervention being evaluated merits consideration. Sure Start Local Programmes is an intervention unlike almost any other undertaken in the western world devoted to enhancing the life prospects of children under four growing up in disadvantaged families and communities. What makes it so different is that it is *area based*, with *all* children 0-4 and their families living in a prescribed area serving as the "targets" of intervention. This has the advantage that services within a SSLP area are universally available, thereby limiting any stigma that may accrue to individuals being targeted. By virtue of their local autonomy, and in contrast to more narrowly-delivered early interventions, SSLPs do not have a prescribed "curriculum" or set of services, especially not ones delineated in a "manualised" form to promote fidelity of treatment to a prescribed model. Instead, each local programme is charged with improving existing services and creating new ones as needed, without specification of how services are to be changed.

4.5.6   This contrasts markedly with early interventions demonstrated to be effective (e.g. Abecedarian project, Ramey et al., 2000; Prenatal Early Intervention Project, Olds et al., 1999; Early Head Start, Love et al., 2002; Positive Parenting Program, Sanders 2003; Incredible Years, Webster-Stratton, 1993; Patterson et al., 2002)). In contrast to these projects with clear models of service provision, SSLPs are much more varied. A few individual SSLPs did incorporate elements of such 'manualised' approaches, but these were relatively few and the general pattern of provision had a much looser structure. This poses great challenges to evaluating their impact, as each SSLP is unique. The great diversity among SSLPs does offer one advantage on which NESS is attempting to capitalise, namely, that diverse models offer opportunities for comparison. NESS is undertaking additional work on the nature of provision within specific SSLPs in hopes of specifying those features of provision that best predict programme effectiveness, particularly in relation to child and parenting outcomes. Such information may be valuable for future detailed planning of provision.

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Appendices

APPENDIX 1　　　　　Outcome Variables

Child Cognitive Ability	
Verbal ability*	Language expression and comprehension abilities (subscale of BAS)
Non-verbal ability*	Spatial and number skills (subscale of BAS)

Social and Emotional	
Child social competence*	A construct of 'pro-social' (shows concern for others, shares, liked by others) and 'independence' (works things out for self, chooses activities for self, persists with difficult tasks)
Behaviour difficulties*	A construct of: 'Conduct Problems' (antisocial or disruptive behaviour; fights/bullies, temper tantrums, argues), 'Emotion Regulation' (worried/anxious behaviour, worries, clingy, tearful, fearful), 'Hyperactivity' (restless, distractible, impulsive, overexcited), and 'Overall Difficulties' (overall difficulty getting along with others, concentrating, behaving).

Physical Health	
Birth weight**	Child's weight at birth in grams
Ever breastfed**	Divides the mothers in 2 categories, those that attempted breastfeeding vs. those that didn't
Breastfed a min of 6 weeks**	Two groups; mothers that breastfed less than 6 weeks vs. those breastfeeding for longer
One or more accidents	One or more accidents in past year (or 9 months for 9 month olds)
Admitted to Hospital	One or more hospital admissions in past year (or 9 months for 9 month olds)

Parenting/Family Functioning	
Supportive parenting	A construct of: 'Responsivity' (observations of mother praising, responding, showing affection), and 'Acceptance' (not observing scolding/derogating, spanking, physically restraining)
Negative parenting *	A construct of: 'Parent/child conflict' (parent-child struggles, child easily angry with parent, conflict with discipline), 'Parent/child closeness' (affectionate relationship, child seeks comfort, child shares feelings), 'Harsh Discipline' (frequency of (reported) swearing, threatening, smacking, slapping child), and 'Home chaos' (disorganized, noisy, lacking regular routine)
Home Learning Environment*	Learning opportunities provided in home; child read to, taken to library, engaged in play with letters/numbers, taught songs/rhymes
Father involvement	Looks after, feeds, plays with child (as reported by mother)
Home chaos **	Disorganized, noisy, lacking regular routine

Maternal well-being	
Malaise: depression measure	Jittery, tired, depressed (bad for parenting and child development)
Self-esteem	Positive feelings about self (good for parenting and child development)

Local Area Measures	
Mother's area rating	A score given by the mother, for her local area
Observer's area rating	A score for the are given by the interviewer

Services	
Total Support Services Used	Number of different types of services respondent received support from
Total Support Usefulness	Usefulness of support services used (mean score of service use)

* Denotes outcomes for the 3 year old group only　** Denotes outcomes for the 9 month old group only

CHILD COGNITIVE ABILITY

For 3-year-olds trained researchers administered the British Ability Scales* (BAS). The 4 subscales used were Block-building, Picture Similarities, Verbal Comprehension and Picture Naming. These 4 subscales were used to produce a measure of verbal ability and a measure of non-verbal ability.

* Elliot, C., with Smith, P. and McCulloch, K. (1996), *British Ability Scales Second Edition (BAS II).* Windsor: NFER-Nelson Publishing Company Limited.

CHILD SOCIAL COMPETENCE AND BEHAVIOUR PROBLEMS

For 3-year olds, mothers' report of child behaviour using an extended version of the Strengths and Difficulties Questionnaire* yielded two summary scores: *Social competence* reflected prosocial behavior (see below; items 1, 4, 9, 17, 20) (alpha = 0.61) and independence (items 27, 30, 33, 36, 39) (alpha = 0.61); *behaviour problems* reflected conduct (items: 5, 7, 12, 18, 22) (alpha = 0.69), hyperactivity (items 2, 10, 15, 21, 25) (alpha = 0.70), emotional control (28, 31, 34, 35, 40) (alpha = 0.53) and overall difficulties (items 41-47) (alpha = 0.79).

For the next section please answer on the basis of your child's behaviour over the last 6 months. For each question, please say whether the statement is not true, somewhat true or certainly true of your child

1   shows concern for other peoples feelings

    (1)   Not true
    (2)   Somewhat true
    (3)   Certainly true

2   is restless, overactive and cannot stay still for long
3   often complains of headaches, stomach-aches or sickness
4   is happy to share with other children (treats, toys, pencils etc)
5   often has temper tantrums or hot tempers
6   tends to play alone, is rather solitary
7   generally obeys, usually does what adults ask
8   has many worries, often seems worried
9   is helpful if someone is hurt, upset or feeling ill
10   can't sit still, is constantly fidgeting or squirming
11   has at least one good friend ^....often fights with other children or bullies them
12   is often unhappy, tearful, or down-hearted
13   is generally liked by other children
14   is easily distracted, attention wanders
15   is nervous or clingy in new situations, easily loses confidence
16   is kind to younger children
17   often argues with adults
18   is picked on or bullied by other children
19   often volunteers to help others (parents, teachers, other children)
20   can stop and think things over before acting
21   can be spiteful towards others
22   gets on better with adults than with other children
23   has many fears, is easily scared
24   sees tasks through to the end, has good attention span
25   is calm and easy going
26   likes to work things out for self; seeks help only when has to, or as a last resort
27   shows wide mood swings
28   can work or play easily with others
29   does not need much help with tasks
30   gets over excited

31   says 'please' and 'thank you' when reminded
32   chooses activities on their own
33   is easily frustrated
34   gets over being upset quickly
35   persists in the face of difficult tasks
36   waits his/her turn in games or activities
37   cooperates with requests
38   can move to a new activity after finishing a task
39   is impulsive, acts without thinking

Overall, do you think that ....has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get along with other people?

(1)   No, no problems
(2)   Yes minor difficulties
(3)   Yes, definite difficulties
(4)   Yes, severe difficulties

How long have these difficulties been present
(1)   Less than one month
(2)   One month - less than 5 months
(3)   Between 5 and 12 months
(4)   Over a year

Do these difficulties upset or distress <child's name>?
Do these difficulties interfere with <child's name> 's home life?
Do these difficulties interfere with <child's name> 's friendships?
Do these difficulties interfere with <child's name> 's learning?
Do these difficulties interfere with <child's name> 's leisure activity?
Do these difficulties put a burden on you or the family?

*Goodman R. The strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry* 1997; **38 (5):** 581–586. (supplemented with items used in the EPPE study).

PARENTING/FAMILY FUNCTIONING

OBSERVATION OF PARENTING: RESPONSIVITY (FIRST 5)/ACCETANCE* (alphas = 0.96/0.95)

Positive Voice: Is the mother pleased with her child? Does she enjoy (him/her) and talk about (him/her) in a pleasant, joyful manner rather than talk in a flat tone which communicates, 'She's here, so I'll put up with her.'
(1)   Positive
(2)   Not positive

Converses Twice: This item involves maternal conversation, not just vocalization which can be any sounds or words exchanged with the child. The mother must make an effort to converse with the child and ask questions, to talk about things, or to engage in verbal interchange other than scolding or degrading comments
(1)   Converses
(2)   Did not converse

Answers Question/Requests: In order to receive credit for this item the mother must make an effort to answer the question for the child. If the mother is unable to answer it at the moment, she may tell the

child she doesn't know but that they will look up the answer later. Answers such as 'Mother's busy, go away' or 'Don't bother me now' do not receive credit
(1)   Answers
(2)   Did not answer

Responds Verbally: The key here is that the mother recognizes and acknowledges the child's vocalizations and does not ignore them. For a score of '1' the response may be a word or series of words or sounds such as 'Uh huh', 'Um', or 'sure'. If the child does not vocalize in any way during the interview, thereby giving no opportunity for response the score is '2'
(1)   Responds verbally
(2)   Does not respond verbally

Spontaneous Praise: The key word here is 'spontaneous', but since most mother enjoy talking about and are proud of their children, this is not hard to observe. Frequently a mother will tell you how well her child throws a ball or runs and will brag on how well he/she dresses himself/herself or can get his/her own drink
(1)   Spontaneous praise
(2)   Not spontaneous praise

Shows Affection This need not be a wild burst of showy affection. Simple signs of concern such as a mother gently tucking the child's shirt in, holding him/her on her lap, holding a hand or a gentle pat on the shoulder would all receive a '1'
(1)   Affectionate
(2)   Not affectionate

Scolds: In this item all remarks must be made to the child; that is, the mother must tell the child that he is a bad boy and not simply tell the interviewer that the child is bad. If this occurs more than once during the visit, the item should be scored '2'
(1)   Did not scold
(2)   Scolded

Physical Restraint: In a younger child the mother might be apt to hold the child in her lap even though the child struggles to get down. An older child might be placed in a chair to keep him/her out of the way, or he/she might be jerked back for handling items on a table or pulled away if he/she tried to climb on the interviewer's lap
(1)   Did not use restraint
(2)   Restrained

Slap/Spank: This item goes and in hand with the previous question. In this item the slaps and spanks must be in anger or as a reprimand for some wrong doing. An affectionate pat on the bottom as the mother sends the child out to play does not mean the item should receive a '2'
(1)   Did not slap or spank
(2)   Slapped or spanked

*Caldwell, B. M., & Bradley, R. H. (1984) Home Observation for Measurement of the Environment. Little Rock, Arkansas: University of Arkansas at Little Rock.

PARENT-CHILD CONFLICT (First 6)/CLOSENESS* (alphas = 0.78/0.70)

"Child's name here" and I always seem to be struggling with each other
(1)   Definitely does not apply
(2)   Not really
(3)   Neutral, not sure

(4)   Applies sometimes
(5)   Definitely applies

"Child's name here" easily becomes angry at me
"Child's name here" remains angry or is resistant after being disciplined
Dealing with "child's name here" drains my energy
When "child's name here" wakes up in a bad mood, I know we're in for a long and difficult day
"Child's name here"'s feelings towards me can be unpredictable or can change suddenly
I share an affectionate, warm relationship with "child's name here"
If upset, "child's name here" will seek comfort from me
"Child's name here" is uncomfortable with physical affection or touch from me
"Child's name here" values his/her relationship with me
When I praise "child's name here", he/she beams with pride
"Child's name here" spontaneously shares information about himself/herself
It is easy to be in tune with what "child's name here" is feeling
 "Child's name here" is sneaky or manipulative with me
"Child's name here" openly shares his/her feelings and experiences with me

* Pianta R C. *The Student-Teacher Relationship Scale* 2001 Odessa FL: PAR.

HOME-LEARNING ENVIRONMENT* (alpha = 0.64)

How often does someone at home read to …

(1)   occasionally or less than once a week,
(2)   once a week,
(3)   several times a week,
(4)   once a day,
(5)   or more than once a day?

How often does someone at home take …to the library?
(1)   on special occasions,
(2)   once a month,
(3)   once a fortnight,
(4)   or once a week?

How often does someone at home teach …a sport, dance or physical activities?
(1)   occasionally or less than once a week
(2)   1-2 days per week
(3)   3 times a week
(4)   4 times a week
(5)   5 times a week
(6)   6 times a week
(7)   7 times a week

How often does someone play with letters at home with…?
How often does someone teach …the ABC or the alphabet?
How often does someone at home try to teach … numbers?
How often has someone taught… songs, poems or nursery rhymes?

* Melhuish, E. C., Sylva, K., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2001). *The Effective Provision of Pre-school Education Project, Technical Paper 7: Social/behavioural and cognitive development at 3-4 years in relation to family background.* London: Institute of Education/DfES.

CHAOS* (alpha = 0.68)

Its really disorganised in our home
(1)   Strongly agree
(2)   Agree
(3)   Neither agree or disagree
(4)   Disagree
(5)   Strongly disagree

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

*Matheny A P, Wachs T, Ludwig J L, Phillips K. Bringing order out of
        chaos: Psychmometric characteristics of the Confusion, Hubbub and Order
        Scale. *Journal of Applied Developmental Psychology* 1995; **16**: 429–444.

HARSH DISCIPLINE* (alpha = 0.78)

Children often do things wrong, disobey, or make their parents angry. We would like to know what you
have done when your child(ren) did something wrong or made you upset or angry.

 The next questions are about things you might have done in the past year. For each one please answer
how often you have done it in the past year.

Sent … to their room
(0)   This never happened
(1)   Once in the past year
(2)   Twice in the past year
(3)   3-5 times in the past year
(4)   6-10 times in the past year
(5)   11-20 times in the past year
(6)   More than 20 times in the past year
(9)   Not in the past year, but it did happen before

Shouted, yelled or screamed at…
Smacked … on the bottom with your bare hand
Swore or cursed at …
Threatened to smack or hit … but did not actually do it
Slapped … on the hand, arm or leg
Took away something … liked, would not let … do something they wanted, or required them to remain at
home
Called … dumb or lazy or some other name like that

* Straus M A, Hamby S, Finkelhor D, Moore D, Runyan D. Identification of child maltreatment with the
Parent-Child Conflict Tactics Scales: Development and psychometric data for a national sample of
American parents. *Child Abuse & Neglect* 1998; **22:** 249–270.

FATHER INVOLVEMENT* (alpha = 0.68)

Now I'd like to ask you some questions about your partner and his involvement with your child. Please
say how often he does each of the things I am going to read out—in general, not just when around.

First, how often does he look after …on his own?

(1)   More than once a day
(2)   Once a day
(3)   A few times a week
(4)   Once or twice a week
(5)   Less than once a week
(6)   Never

And how often does he play with …

And how often does he dress him/her?

And finally how often does he get …ready for bed in the evening?

How often can you count on him if you need him to take care of ….?
(1)   Never
(2)   Sometimes
(3)   Usually
(4)   Rarely
(5)   Always

Overall how close would you say he is to your child?
(1)   Not very
(2)   Fairly close
(3)   Quite close
(4)   Extremely close

*Source: Millennium Cohort Study interview schedule

MATERNAL WELL BEING

SELF ESTEEM* (alpha = 0.82)

The next questions are about how you feel about yourself. Please say how much you agree or disagree with each of the following statements.

....on the whole, I am satisfied with myself.
(1)   Strongly agree
(2)   Agree
(3)   Disagree
(4)   Strongly disagree
(5)   Can't say
...at times I think I am no good at all.
...I am able to do things as well as most other people.
...all in all, I am inclined to feel that I am a failure.
...I take a positive attitude toward myself.

The last few questions are to do with how you feel about your life so far.
Please choose the statement which is most true for you...

(1)   I never really seem to get what I want out of life
(2)   I usually get what I want out of life
(3)   Can't say

* Bachman J G, O'Malley P M, Johnston J. *Adolescence to adulthood:*
Changes and stability in the lives of young men 1978; Ann Arbor, MI: Institute for Social Research,
University of Michigan.

<u>MALAISE*</u> (alpha = 0.77)

The next questions are about how you are feeling generally.

First, do you feel tired most of the time?
(1) Yes (2) No

Do you often feel miserable or depressed?
Do you often get worried about things?
Do you often get into a violent rage?
Do you often suddenly become scared for no good reason?
Are you easily upset or irritated?
Are you constantly keyed up and jittery?
Does every little thing get on your nerves and wear you out?
Does your heart often race like mad?

* Rutter M, Tizard J, Whitmore K. *Education, Health and Behaviour* 1970.
London: Longmans.

<u>LOCAL AREA MEASURES</u>

<u>AREA RATING BY MOTHER*</u> (alpha = 0.73)

How satisfied or dissatisfied are you with the area you live in. By your area, I mean within about a mile or 20 minutes walk of here?
(1)   Very satisfied
(2)   Fairly satisfied
(3)   Neither satisfied nor dissatisfied
(4)   Fairly dissatisfied
(5)   Very dissatisfied
(6)   Don't know

How common each of these things are in your area?
(1)   Very common
(2)   Fairly common
(3)   Not very common
(4)   Not common at all

 ...noisy neighbours or loud parties?
...vandalism and deliberate damage to property?
...insults or attacks to do with someone's race or colour?
...poor public transport?
...food shops and supermarkets that are easy to get to?
...drug related crime

Are there places in your area where children can play safely?
(1) Yes
(2) No

Is this a good area to bring up children?
(1)   Excellent
(2)   Good
(3)   Average
(4)   Poor
(5)   Very poor

In some areas adults correct child misbehaviour if the child's parents are not around. In this neighbourhood does this happen..
(1)   Not at all
(2)   Not often
(3)   Sometimes
(4)   Often
(5)   Almost always

*Source: Barnes J. The reliability and validity of a questionnaire describing neighbourhood characteristics relevant to families an young children living in urban areas. *Journal of Community Psychology* 1997; **25:** 551–566.

AREA OBSERVATION BY HOME VISITOR* (alpha = 0.78)

Interviewer completes after leaving the home and observing the area in the vicinity of the home visited.

How would you rate the general condition of most of the residences or other buildings in the street?
(1)   Well kept, good repair & exterior surfaces
(2)   Fair condition
(3)   Poor condition, peeling paint, broken windows
(4)   Badly deteriorated

Do any of the fronts of residential or commercial units have metal security blinds, gates, or iron bars and grilles?
(1)   None
(2)   Some
(3)   At least half
(4)   Most

How would you rate the volume of traffic on the street where the family live?
(1)   No traffic permitted
(2)   Very light
(3)   Light
(4)   Moderate
(5)   Heavy
(6)   Very heavy

Is there any of the following: rubbish, litter, broken glass, drug related items, beer or other alcohol containers, cigarette ends or discarded packs, in the street or on the pavement?
(1)   None or almost none
(2)   Yes, but not a lot
(3)   Yes, quite a bit
(4)   Yes, just about everywhere you look

Are there any adults or teenagers in the street or on the pavements arguing, fighting, drinking, or behaving in any kind of hostile or threatening way?
(1)   No persons observed in the street or pavement
(2)   None observed behaving in hostile ways
(3)   Yes, one or two arguing etc.
(4)   Yes, at least one group of three or more

How did you feel parking, walking, waiting at the door in the street?
(1)   Very safe
(2)   Safe
(3)   Neither safe nor unsafe

(4)   Unsafe
(5)   Very unsafe

How would you feel living or working in the area?

(1)   Very comfortable
(2)   Comfortable
(3)   Uncomfortable
(4)   Very uncomfortable

* Barnes J. The reliability and validity of a questionnaire describing neighbourhood characteristics relevant to families an young children living in urban areas. *Journal of Community Psychology* 1997; **25:** 551–566.

Services

SUPPORT SERVICES USED

Have you ever received advice or support on any of the following topics?

 (1)   Baby's health
(2)   Breastfeeding
(3)   Adult health, diet and/or nutrition
(4)   Contraception/birth control
(5)   Quitting smoking
(6)   Safety in the home
(7)   Depression, anxiety and/or worries
(8)   Reading to your child
(9)   Child diet
(10)   Managing child behaviour
(11)   Other childrearing/parenting skills
(12)   Relations with partner
(13)   Improving your reading and writing skills
(14)   Obtaining more education or job training
(15)   Managing your money: saving and spending

SUPPORT SERVICE USEFULNESS

How useful was the advice or support you got about (each of the topics listed above).
Was it...
(1)   very useful,
(2)   useful,
(3)   or, not useful?
(4)   No use at all

Data-Reduction-Oriented Factor Analysis Results

I. Factor Loading for 36-Month Child-Behaviour Outcomes

Variable	Emotion – Behaviour difficulties	Social Competence
Conduct	**0.79**	-0.28
Hyperactivity	**0.70**	-0.49
Prosocial	-0.30	**0.80**
Independence	-0.20	**0.83**
Emotional regulation	**0.68**	0.06
Difficulties	**0.70**	-0.35
Eigen value	*2.52*	*1.07*

II. Factor Loadings for 36-Month Parenting Outcomes

Variable	Negative parenting	Supportive parenting
Responsivity	-0.06	**0.80**
Acceptance	-0.09	**0.69**
Parent-child conflict	**-0.80**	-0.14
Parent-child closeness	**-0.53**	0.39
Discipline	**0.70**	0.20
Home chaos	**0.60**	-0.24
Eigen value	*2.07*	*1.11*

APPENDIX 3   Imputation procedure

Two approaches have been taken for dealing with missing data: case deletion and imputation. Case deletion involves deleting for each outcome measure any individual who has missing data either for the outcome measure or for the demographic or family background characteristics, leaving only cases with complete data. Analysis of data including only complete cases has the considerable drawback that, in a situation in which we are considering a number of explanatory factors, we may be forced to discard quite a large part of the data. Not only is this inefficient, it may also leave us with a subset of data that is small and, if the mechanism by which the data are missing is not random (i.e. if certain population subgroups are more likely to refuse to answer or skip over certain questions), may be unrepresentative of the population as a whole. Imputation of data for a respondent involves filling in the missing values with plausible values based on the known characteristics of that respondent together with the relationship between characteristics observed in the rest of the sample. Multiple imputation (Schafer, 1997) was used to estimate the missing data values using the statistical package NORM (http://www.stat.psu.edu/~jls/misoftwa.html#mi). Multiple imputation is the process of generating several data sets, analysing these and combining the results. This ensures that we have sufficient variability between imputed values to be able to draw correct inferences. The hierarchical structure of the data was ignored which will result in more conservative parameter estimates in the imputed models. For the nine month dataset, for the variables included in all the analyses, 3% of the data were missing and 6% for the three year old dataset. Appensix 3 – Table 8a and b show the percent missing for each of the demographic and family background characteristic variables (in addition to presenting and comparing the characteristics of the families living in SSLPs and Sure Start-to-be areas, see Section 3.1). At nine months only household income had more than 2% missing over all. At three years, household income, maternal education, maternal occupation and maternal work status all had more than 2% missing over all. Appendix 3 – Table 9a and b show for each outcome measure the percent of cases with missing outcome measures and incomplete data (missing outcome and/or missing demographic or family background characteristics). For the complete data analysis these cases are excluded. For the 9-month data, between 10% and 24% of the cases are excluded from any one analysis. For the 3-year data, higher rates of missing data were observed, between 17% and 41% of the cases.

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

Appendix 3 - Table 8a: Summary of Demographic Characteristics – 9m: Data set for imputation

Characteristic	Sure Start (Total =12575)		Sure start to be (Total =1509)		Significance
	Number	%	Number	%	
Child's Age					0.23
8 months	837	6.7	84	5.6	
9 months	9472	75.3	1141	75.6	
10-12 months	2266	18.0	284	18.8	
CHILD'S GENDER					0.63
Male	6373	50.7	776	51.4	
Female	6179	49.1	733	48.6	
Missing	23	0.2	0	0.0	
Child's Ethnicity					<0.001
White	9208	73.2	965	63.9	
Mixed	636	5.1	94	6.2	
Indian	185	1.5	38	2.5	
Pakistani	920	7.3	131	8.7	
Bangladeshi	404	3.2	79	5.2	
Black Caribbean	182	1.4	26	1.7	
Other Black	577	4.6	93	6.2	
Other	399	3.2	66	4.4	
Missing	64	0.5	17	1.1	
Language					<0.001
English Only	9938	79.0	1090	72.2	
English and Other Languages	1816	14.4	285	18.9	
Other Languages Only	808	6.4	129	8.5	
Missing	13	0.1	5	0.3	
Maternal Age (years)					0.17
Not teenage	10696	85.1	1267	84.0	
< 20 (teenage)	1677	13.3	221	14.6	
Missing	202	1.6	21	1.4	
Maternal Cognitive Difficulties					0.26
Has Some Difficulties	1428	11.4	185	12.3	
No Difficulties Reported	11089	88.2	1307	86.6	
Missing	58	0.5	17	1.1	
Father's involvement[§]					0.39
Dad Absent	4048	32.2	511	33.9	
Dad Present But Not Working	1875	14.9	215	14.2	
Dad Present and Working	6598	52.5	775	51.4	
Missing	54	0.4	8	0.5	
Household income[§§]					<0.001
Top quintile £338+ p.w.	2503	19.9	261	17.3	
2nd quintile £217-318 p.w.	2075	16.5	217	14.4	
Mid quintile £168-217 p.w.	2561	20.4	270	17.9	
4th quintile £126-168 p.w.	2191	17.4	314	20.8	
Bottom quintile <£126 p.w.	2207	17.6	358	23.7	

Characteristic	Sure Start (Total =12575)		Sure start to be (Total =1509)		Significance
	Number	%	Number	%	
Missing	1038	8.3	89	5.9	
Maternal Education					0.02
Degrees/Higher Education	2092	16.6	242	16.0	
A level	2794	22.2	299	19.8	
O level / GCSE	2924	23.3	331	21.9	
Other	929	7.4	132	8.7	
None	3694	29.4	485	32.1	
Missing	142	1.1	20	1.3	
Maternal Occupation Status					0.29
Management/Professional	1708	13.6	180	11.9	
Intermediate	1753	13.9	199	13.2	
Small Employer	271	2.2	38	2.5	
Lower Supervisory/Technical	646	5.1	74	4.9	
Semi-Routine	3404	27.1	408	27.0	
Routine	2246	17.9	268	17.8	
Unemployed	2444	19.4	325	21.5	
Missing	103	0.8	17	1.1	
Maternal Work Status					0.14
Not in Employment	8462	67.3	1039	68.9	
In Employment – part time	1395	11.1	142	9.4	
In Employment – full time	2593	20.6	308	20.4	
Missing	125	1.0	20	1.3	

Appendix 3 – Table 8b: Summary of Demographic Characteristics – 3y: Data set for Imputation

Characteristic	Sure Start (Total = 3927)		Sure start to be (Total = 1101)		Significance
	Number	%	Number	%	
Child's Age					0.27
34-35 months	1459	37.2	389	35.3	
36-38 months	2468	62.8	712	64.7	
Child's Gender					0.98
Male	2041	51.9	573	52.0	
Female	1884	48.0	528	48.0	
Missing	2	0.1	0	0.0	
Child's Ethnicity					<0.001
White	2987	76.1	714	64.9	
Mixed	186	4.7	78	7.1	
Indian	43	1.1	32	2.9	
Pakistani	257	6.5	96	8.7	
Bangladeshi	106	2.7	57	5.2	
Black Caribbean	38	1.0	14	1.3	
Other Black	149	3.8	52	4.7	
Other	129	3.3	45	4.1	
Missing	32	0.8	13	1.2	
Language					<0.001
English Only	3130	79.7	772	70.1	
English and Other Languages	663	16.9	263	23.9	
Other Languages Only	131	3.3	63	5.7	
Missing	3	0.1	3	0.3	
Maternal Age (years)					0.37
Not teenage	3380	86.1	952	86.5	
< 20 (teenage)	488	12.4	125	11.4	
Missing	59	1.5	1077	2.1	
Maternal Cognitive Difficulties					0.02
Has Some Difficulties	404	10.3	141	12.8	
No Difficulties Reported	3469	88.3	947	86.0	
Missing	54	1.4	13	1.2	
Father's involvement[§]					0.05
Dad Absent	1359	34.6	370	33.6	
Dad Present But Not Working	518	13.2	174	15.8	
Dad Present and Working	1994	50.8	527	47.9	
Missing	56	1.4	30	2.7	
Household income[§§]					<0.001
Top quintile £338+ p.w.	542	13.8	150	13.6	
2nd quintile £217-318 p.w.	957	24.4	195	17.7	
Mid quintile £168-217 p.w.	645	16.4	120	10.9	
4th quintile £126-168 p.w.	655	16.7	167	15.2	
Bottom quintile <£126 p.w.	651	16.6	269	24.4	
Missing	477	12.1	200	18.2	

Characteristic	Sure Start (Total = 3927)		Sure start to be (Total = 1101)		Significance
	Number	**%**	**Number**	**%**	
MATERNAL EDUCATION					<0.001
Degrees/Higher Education	686	17.5	182	16.5	
A level	860	21.9	181	16.4	
O level / GCSE	964	24.5	256	23.3	
Other	345	8.8	116	10.5	
None	929	23.7	300	27.2	
Missing	143	3.6	66	6.0	
MATERNAL OCCUPATION STATUS					<0.001
Management/Professional	507	12.9	108	9.8	
Intermediate	479	12.2	82	7.4	
Small Employer	120	3.1	17	1.5	
Lower Supervisory/Technical	209	5.3	36	3.3	
Semi-Routine	1048	26.7	222	20.2	
Routine	753	19.2	151	13.7	
Unemployed	702	17.9	344	31.2	
Missing	109	2.8	141	12.8	
MATERNAL WORK STATUS					0.62
Not in Employment	2575	65.6	693	62.9	
In Employment – part time	508	12.9	147	13.4	
In Employment – full time	733	18.7	212	19.3	
Missing	111	2.8	49	4.5	

Appendix 3 - Table 9a: Percentage of data imputed – 9 months

OUTCOME	N*	Outcome only		Outcome & Child & Family Variables	
		Cases with outcome	% missing	Number of complete cases	Percentage of cases with incomplete data
Children who had Accidents	14084	14066	0.1	12705	9.8
Children Admitted to Hospital	14084	14084	0	12705	9.8
Birth weight	14084	13741	2.4	12613	10.4
Breast feeding	14084	13251	5.9	12150	13.7
Malaise	14084	12614	10.4	11590	17.7
Self esteem	14084	13049	7.3	11999	14.8
Supportive Parenting	14084	12096	14.1	10977	22.1
Acceptance	14084	12096	14.1	10977	22.1
Chaos	14084	13813	1.9	12544	10.9
Mother's Area Rating	14084	13978	0.8	12674	10.0
Observer's Area Rating	14084	13916	1.2	12577	10.7
Total Services Used	14084	14066	0.1	12705	9.8
Total Support Usefulness	14084	11642	17.3	10649	24.4
Father involvement**	9463	9306	1.7	8300	12.3

* Total number of families/children interviewed   ** Families/children only included in the analysis if currently living with a partner

Appendix 3 – Table 9b: Percentage of data imputed – 3 years

Outcome	N*	Outcome only		Outcome & Child & Family Variables	
		Cases with outcome	% missing	Number of complete cases	Percentage of cases with incomplete data
Children who had Accidents	5028	5010	0.4	4173	17.0
Children Admitted to Hospital	5028	5028	0	4175	17.0
Malaise	5028	4592	8.7	3983	20.8
Self esteem	5028	4557	9.4	3970	21.0
Social competence	5028	4823	4.1	4073	19.0
Behavioural problems	5028	4773	5.1	4049	19.5
BAS verbal	5028	4395	12.6	3740	25.6
BAS non-verbal	5028	4296	14.6	3668	27.0
Negative parenting	5028	4573	9.0	4015	20.1
Supportive parenting	5028	4662	7.3	3927	21.9
Acceptance	5028	4931	1.9	4096	18.5
Home Learning Environment	5028	4998	0.6	4168	17.1
Mother's Area Rating	5028	3418	32.0	2975	40.8
Observer's Area Rating	5028	4996	0.6	4151	17.4
Total Services Used	5028	4972	1.1	4175	17.0
Total Support Usefulness	5028	4138	17.7	3540	29.6
Father involvement**	3213	3183	0.9	2610	18.8

* Total number of families/children interviewed   ** Families/children only included in the analysis if currently living with a partner

Appendix 4 - Table 10a: Summary of Model Estimate effects – 9 months: complete dataset

Demographic Variables \ Outcome Variables	Physical Health					Parenting/Family Functioning				Maternal Wellbeing		Local Area		Services	
	Children Who Had Accidents	Children Admitted To Hospital	Birth Weight	Ever Breastfed	Breastfed A Min of 6 Weeks	Father Involvement	Chaos	ACCEPTANCE	Supportive Parenting	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Intervention (SSLP vs. non-SSLP)		+ve					-ve	+ve	+ve						
Child's Age (Baseline = 9 Months)															
8 Months															
10 - 12 Months														+ve	
Child's Gender (Baseline = Male)															
Female		-ve	-ve		+ve	-ve			+ve	-ve					
Child's Ethnicity (Baseline = White)															
Mixed			-ve	+ve	+ve		-ve			+ve					
Indian			-ve	+ve								+ve			
Pakistani			-ve	+ve		-ve	-ve			+ve		+ve			
Bangladeshi	-ve		-ve	+ve	+ve							+ve			
Back Caribbean		-ve	-ve	+ve	+ve						+ve	+ve	-ve	-ve	
Other Black	-ve	-ve	-ve	+ve	+ve	+ve				-ve	+ve	+ve	-ve	+ve	
Other			-ve	+ve	+ve					+ve				+ve	
Language (Baseline = English Only)															
Other Languages Only			+ve	+ve	+ve	-ve	-ve				+ve	+ve		+ve	
English And Other Languages				+ve	+ve	-ve	-ve		+ve			+ve			
Maternal Age (Years) (Baseline= >20)															
< 20 (Teenage)	+ve	+ve			-ve	+ve	-ve	-ve	-ve			-ve	-ve	-ve	
Maternal Cognitive Difficulties (Baseline = No Difficulties)															
Has Some Difficulties						-ve	+ve	-ve	-ve	+ve	-ve		-ve	+ve	
Father's Involvement* (Baseline = Dad Present & Working)															
Dad Absent		+ve	-ve	-ve	-ve			-ve	-ve	+ve		-ve	-ve		
Dad Present But Not Working			-ve			+ve	+ve		-ve	+ve	-ve	-ve	-ve		
Household Income* (Baseline = Bottom Quintile <£126)															
Top quintile £338+ p.w.		-ve	+ve	+ve	+ve		-ve		+ve	-ve		+ve	+ve		
2nd quintile £217-318 p.w.			+ve	+ve	+ve		-ve		+ve		-ve				
Mid quintile £168-217 p.w.	+ve		+ve				-ve		+ve			-ve	-ve		
4th quintile £126-168 p.w.							-ve					-ve	-ve		

Demographic Variables / Outcome Variables	Physical Health					Parenting/Family Functioning				Maternal Wellbeing		Local Area		Services	
	Children Who Had Accidents	Children Admitted To Hospital	Birth Weight	Ever Breastfed	Breastfed A Min of 6 Weeks	Father Involvement	Chaos	ACCEPTANCE	Supportive Parenting	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Maternal Education (Baseline = O Level/GCSE)															
Degrees/Higher Education				+ve	+ve	+ve	-ve		+ve					-ve	
A-level						+ve	-ve							-ve	
Other						+ve								+ve	
None			-ve	-ve	-ve		+ve		-ve	-ve			-ve	+ve	-ve
Maternal Occupation Status (Baseline = Routine)															
Management/Professional				+ve	+ve		-ve		+ve		+ve		+ve	-ve	
Intermediate	+ve			+ve	+ve		-ve		+ve		+ve	+ve	+ve	-ve	
Small Employer				+ve	+ve	-ve			+ve		+ve		+ve		
Lower Supervisory/Technical						+ve	-ve	+ve	+ve				+ve	-ve	
Semi-Routine															
Unemployed				-ve					-ve			+ve		+ve	
Maternal Work Status (Baseline = Not In Employment)															
In Employment - Part Time						+ve	-ve		+ve	-ve	+ve	+ve	+ve	-ve	
In Employment - Full Time						+ve	-ve			-ve	+ve	+ve	+ve		
Community Factors (LCA)															
Higher % of Indian Subcontinent and Young Children						-ve				-ve					
Higher % of Black and Number of Working Age Adults															
Higher % of Lone Parents and Teen Mothers						+ve						-ve			
Higher % of Deprivation												-ve	-ve		
Higher % of Unemployment		-ve								+ve					
Higher % of Child Illness/Disability								-ve				+ve			
Higher % of Infant Mortality												-ve			
Higher % of School Achievement: Key Stage I												+ve	+ve		
Higher % of Household Crowding												-ve	-ve		
Higher % of Council Housing							+ve								
Higher % of Adult Poor Health/Disability				-ve			-ve		+ve		+ve	+ve			
Random Parameters															
Community Variance		+ve		+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	
Individual variance			+ve			+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve		

Demographic Variables \ Outcome Variables	Physical Health					Parenting/ Family Functioning				Maternal Wellbeing		Local Area		Services	
	Children Who Had Accidents	Children Admitted To Hospital	Birth Weight	Ever Breastfed	Breastfed A Min Of 6 Weeks	Father Involvement	Chaos	ACCEPTANCE	Supportive parenting	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Intervention (SSLP vs. non-SSLP)					-ve		-ve								
Child's Age (Baseline = 9 Months)															
8 Months															
10 - 12 Months														-ve	
Child's Gender (Baseline = Male)															
Female		-ve	-ve		+ve	-ve			+ve	-ve					
Child's Ethnicity (Baseline = White)															
Mixed				+ve	+ve		-ve			+ve				+ve	
Indian			-ve	+ve								+ve			
Pakistani			-ve	+ve		-ve	-ve			+ve		+ve			
Bangladeshi	-ve		-ve	+ve	+ve				-ve			+ve	-ve		
Black Caribbean		-ve	-ve	+ve	+ve						+ve	+ve	-ve	+ve	
Other Black	-ve	-ve	-ve	+ve	+ve	+ve			-ve	-ve		+ve	-ve		
Other			-ve	+ve	+ve									-ve	
Language (Baseline = English Only)															
Other Languages Only	-ve			+ve	+ve	-ve	-ve				+ve	+ve		-ve	
English And Other Languages				+ve	+ve	-ve	-ve					+ve		-ve	
Maternal Age (Years) (Baseline= >20)															
< 20 (Teenage)	+ve	+ve		-ve	-ve		-ve	-ve	-ve			-ve	-ve	+ve	
Maternal Cognitive Difficulties (Baseline = No Difficulties)															
Has Some Difficulties						-ve	+ve	-ve	-ve	+ve	-ve		-ve	-ve	
Father's Involvement* (Baseline = Dad Present & Working)															
Dad Absent		+ve	-ve	-ve	-ve	N/A		-ve	-ve	+ve		-ve	-ve		
Dad Present But Not Working			-ve	-ve		+ve	+ve		-ve	+ve	-ve	-ve	-ve		
Household Income** (Baseline = Bottom Quintile <£126)															
Top quintile £338+ p.w.		-ve		+ve	+ve		-ve		+ve	-ve		+ve	+ve		
2nd quintile £217-318 p.w.				+ve	+ve		-ve								
Mid quintile £168-217 p.w.	+ve						-ve					-ve			
4th quintile £126-168 p.w.							-ve		+ve			-ve	-ve		
Maternal Education															

Demographic Variables	Physical Health					Parenting/ Family Functioning				Maternal Wellbeing		Local Area		Services	
	Children Who Had Accidents	Children Admitted To Hospital	Birth Weight	Ever Breastfed	Breastfed A Min Of 6 Weeks	Father Involvement	Chaos	ACCEPTANCE	Supportive parenting	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
(Baseline = O Level/GCSE)															
Degrees/Higher Education				+ve	+ve	+ve	-ve		+ve					+ve	
A level						+ve	-ve							+ve	
Other														-ve	
None	-ve		-ve	-ve	-ve		+ve		-ve	+ve			-ve	-ve	+ve
Maternal Occupation Status (Baseline = Routine)															
Management/Professional				+ve	+ve		-ve	+ve	+ve		+ve		+ve	+ve	
Intermediate				+ve	+ve		-ve		+ve		+ve	+ve	+ve	+ve	
Small Employer				+ve	+ve	-ve			+ve		+ve		+ve		
Lower Supervisory/Technical						+ve			+ve				+ve	+ve	
Semi-Routine														+ve	
Unemployed				-ve	+ve				-ve			+ve		-ve	
Maternal Work Status (Baseline = Not In Employment)															
In Employment - Part Time						+ve	-ve		+ve	-ve	+ve	+ve	+ve	-ve	
In Employment - Full Time						+ve	-ve			-ve	+ve	+ve			
Community Factors (LCA)															
Higher % of Indian Subcontinent and Young Children						-ve									
Higher % of Black and Number of Working Age Adults															
Higher % of Lone Parents and Teen Mothers						+ve						-ve			
Higher % of Deprivation												-ve	-ve		
Higher % of Unemployment			-ve							+ve					
Higher % of Child Illness/Disability												+ve			
Higher % of Infant Mortality												-ve			
Higher % of School Achievement: Key Stage I												+ve	+ve		
Higher % of Household Crowding												-ve	-ve		
Higher % of Council Housing							+ve								
Higher % of Adult Poor Health/Disability					-ve		-ve		+ve		+ve	+ve			
Random Parameters															
Community Variance		+ve		+ve	+ve		+ve	+ve	+ve	+ve	+ve	+ve			
Individual variance						+ve	+ve	+ve	+ve	+ve	+ve	+ve			

Appendix 4 – Table 10c: Summary of Model Estimate effects – 3 years: complete dataset

Outcome Variables → / Demographic Variables ↓	Cognitive Ability		Physical Health		Parenting/Family Functioning					Social And Emotional Development		Maternal Wellbeing		Local Area		Services	
	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	ACCEPTANCE	Supportive Parenting	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Intervention (SSLP vs. non-SSLP)					+ve									-ve			
Child's Age (Baseline ≥ 36 M)																	
34 - 35 Months	+ve	+ve	+ve											+ve		+ve	
Child's Gender (Baseline = Male)																	
Female	+ve	+ve	-ve	-ve	+ve	+ve	-ve	+ve	-ve	+ve	-ve					-ve	
Child's Ethnicity (Baseline = White)																	
Mixed													+ve	-ve			
Indian		-ve	-ve						-ve	-ve		+ve					
Pakistani	-ve	-ve			-ve	-ve		-ve	-ve	-ve	+ve	+ve	+ve				
Bangladeshi	-ve	-ve										+ve					
Black Caribbean	-ve	-ve	-ve				-ve					+ve			-ve		
Other Black	-ve	-ve	-ve			-ve	-ve					+ve					
Other	-ve	-ve		+ve							+ve						
Language (Baseline = English Only)																	
Other Languages Only							-ve	-ve		+ve	-ve	-ve	+ve	+ve		-ve	
English and Other Languages	-ve						-ve							+ve			
Maternal Age (Years) (Baseline= >20)																	
< 20 (Teenage)						+ve					+ve			-ve	-ve	+ve	
Maternal Cognitive Difficulties (Baseline = No Difficulties)																	
Has Some Difficulties	-ve				-ve	-ve	+ve	-ve		-ve	+ve	+ve	-ve	-ve	-ve	-ve	
Father's Involvement* (Baseline = Present & Working)																	
Dad Absent	-ve	-ve	+ve		-ve	-ve	+ve				+ve	+ve	-ve	-ve	-ve	+ve	
Dad Present But not Working	-ve	-ve			-ve	-ve	+ve		+ve		+ve	+ve	-ve	-ve	-ve	+ve	
Household Income** (Baseline = Bottom Quintile<£126)																	
Top quintile £338+ p.w.	+ve	+ve				+ve						-ve	+ve	+ve	+ve	+ve	
2nd quintile £217-318 p.w.						+ve	+ve								+ve	+ve	
Mid quintile £168-217 p.w.			-ve								+ve					+ve	
4th quintile £126-168 p.w.																	

Demographic Variables \ Outcome Variables	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	ACCEPTANCE	Supportive Parenting	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Maternal Education (Baseline = O Level/GCSE)																	
Degrees/Higher Education	+ve	+ve				+ve	-ve	+ve		+ve	-ve					+ve	
A level	+ve	+ve	+ve					+ve		+ve						+ve	
Other																-ve	
None	-ve	-ve		+ve		-ve		-ve		-ve	+ve				-ve	-ve	
Maternal Occupation Status (Baseline = Routine)																	
Management/Professional	+ve	+ve			+ve	+ve	-ve	+ve		+ve	-ve				+ve	+ve	
Intermediate	+ve	+ve				+ve			-ve	+ve					+ve	+ve	
Small Employer	+ve	+ve				+ve			+ve						+ve	+ve	
Lower Supervisory/Technical	+ve	+ve				+ve			+ve	+ve						+ve	
Semi-Routine			-ve			+ve				+ve					+ve	+ve	
Unemployed										+ve							
Maternal Work Status (Baseline = Not In Employment)																	
In Employment - Part Time	+ve	+ve				+ve			+ve				+ve		+ve	-ve	
In Employment - Full Time	+ve	+ve					-ve		+ve		-ve		+ve			-ve	
Community Factors (LCA)																	
Higher % of Indian Subcontinent & Young Children		-ve															
Higher % of Black & Number of Working age Adults	+ve				+ve										-ve		
Higher % of Lone Parents And Teen Mothers																	
Higher % of Deprivation														-ve			
Higher % of Unemployment		+ve													-ve		
Higher % of Child Illness/Disability							-ve								-ve		
Higher % of Infant Mortality	-ve														+ve		
Higher % of school achievement: Key Stage I	+ve				+ve	+ve											
Higher % of Household Crowding						+ve								-ve			
Higher % of Council Housing															-ve		
Higher % of Adult Poor Health/Disability		-ve											+ve	+ve			
Random Parameters																	
Community Variance	+ve	+ve			+ve	+ve		+ve		+ve				+ve	+ve	+ve	
Individual variance	+ve	+ve			+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve		

Appendix 4 – Table 10d: Summary of Model Estimate effects – 3 years imputed dataset

Demographic Variables \ Outcome Variables	Cognitive Ability		Physical Health		Parenting/Family Functioning					Social And Emotional Development		Maternal Wellbeing		Local Area		Services	
	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	ACCEPTANCE	Supportive Parenting	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Intervention (SSLP vs. non-SSLP)					+ve		-ve							-ve			
Child's Age (Baseline ≥ 36 M)																	
34 - 35 Months	+ve	+ve	+ve								+ve		-ve			+ve	
Child's Gender (Baseline = Male)																	
Female	+ve	+ve	-ve	-ve	+ve	+ve	-ve	+ve	-ve	+ve	-ve					-ve	
Child's Ethnicity (Baseline = White)																	
Mixed																+ve	
Indian		-ve							-ve			+ve					
Pakistani	-ve	-ve				-ve		-ve	-ve		+ve	+ve	+ve				
Bangladeshi	-ve	-ve	-ve				-ve		-ve	-ve		-ve	+ve	+ve			
Black Caribbean	-ve	-ve	-ve				-ve					+ve			-ve		
Other Black	-ve	-ve	-ve			-ve	-ve					+ve		+ve			-ve
Other		-ve		+ve						-ve	+ve					+ve	
Language (Baseline = English Only)																	
Other Languages Only	-ve			-ve			-ve	-ve		+ve	-ve					-ve	
English and Other Languages	-ve	-ve					-ve							+ve	-ve	-ve	
Maternal Age (Years) (Baseline= >20)																	
< 20 (Teenage)						-ve	+ve				+ve			-ve	-ve	+ve	
Maternal Cognitive Difficulties (Baseline = No Difficulties)																	
Has Some Difficulties	-ve	-ve			+ve	-ve	+ve	-ve		-ve	+ve	+ve	-ve	-ve		-ve	
Father's Involvement* (Baseline = Present & Working)																	
Dad Absent	-ve	-ve			-ve	-ve	+ve		N/A		+ve	+ve	-ve	-ve	-ve	+ve	
Dad Present But not Working	-ve				-ve	-ve			+ve		+ve	+ve	-ve	-ve	-ve	+ve	
Household Income** (Baseline = Bottom Quintile <£126)																	
Top quintile £338+ p.w.	+ve	+ve										-ve	+ve	+ve	+ve	+ve	
2nd quintile £217-318 p.w.	+ve	+ve					+ve	+ve							+ve	+ve	
Mid quintile £168-217 p.w.																+ve	
4th quintile £126-168 p.w.																	

Demographic Variables / Outcome Variables	Cognitive Ability		Physical Health		Parenting/Family Functioning					Social And Emotional Development		Maternal Wellbeing		Local Area		Services	
	BAS Verbal	BAS Non-Verbal	Children Who had Accidents	Children Admitted to Hospital	ACCEPTANCE	Supportive Parenting	Negative Parenting	Home Learning Environment	Father Involvement	Child Social Competence	Behavioural Problems	Malaise	Self Esteem	Mother's Area Rating	Observer's Area Rating	Total Services Used	Total Support Usefulness
Maternal Education (Baseline = O Level/GCSE)																	
Degrees/Higher Education	+ve	+ve				+ve		+ve		+ve						+ve	
A level	+ve		+ve					+ve		+ve						+ve	
Other																	
None	-ve	-ve				-ve		-ve		-ve	+ve				-ve	-ve	
Maternal Occupation Status (Baseline = Routine)																	
Management/Professional	+ve	+ve			+ve	+ve	-ve	+ve		+ve	-ve		+ve		+ve	+ve	
Intermediate	+ve	+ve				+ve			-ve	+ve					+ve		
Small Employer	+ve	+ve				+ve		+ve							+ve	+ve	
Lower Supervisory/Technical	+ve	+ve				+ve		+ve		+ve			+ve		+ve		
Semi-Routine				-ve		+ve									+ve	+ve	
Unemployed							-ve									-ve	
Maternal Work Status (Baseline = Not In Employment)																	
In Employment - Part Time	+ve	+ve				+ve			+ve			-ve	+ve		+ve	-ve	
In Employment - Full Time	+ve	+ve					-ve		+ve		-ve	-ve	+ve			-ve	
Community Factors (LCA)																	
Higher % of Indian Subcontinent & Young Children		-ve															
Higher % of Black & Number of Working age Adults	+ve				+ve										-ve		
Higher % of Lone Parents And Teen Mothers																	
Higher % of Deprivation														-ve			
Higher % of Unemployment		+ve													-ve		
Higher % of Child Illness/Disability															-ve		
Higher % of Infant Mortality	-ve														+ve		
Higher % of school achievement: Key Stage I	+ve				+ve	+ve											
Higher % of Household Crowding						+ve								-ve			
Higher % of Council Housing																	
Higher % of Adult Poor Health/Disability		-ve											+ve	+ve			
Random Parameters																	
Community Variance	+ve	+ve				+ve		+ve	+ve	+ve				+ve	+ve	+ve	
Individual variance	+ve	+ve				+ve	+ve	+ve	+ve	+ve	+ve	+ve		+ve	+ve		

APPENDIX 5   Testing interactions

Appendix 5 - Table 11a: Summary of interaction effects - 9 months complete data

Outcome Measures	Sure Start with …… … Interactions					
	Child's Gender	Maternal Age	Maternal Work Status	Lone Parent Status	Household Deprivation	Working Household Status
Physical Health						
Children who had Accidents						
Children Admitted to Hospital						
Birth Weight						
Ever Breastfed				4		
Breastfeeding a min of 6 Weeks						
PARENTING/FAMILY FUNCTIONING						
Father Involvement				N/A		
Chaos						
Supportive parenting						
ADDITIONAL: ACCEPTANCE						
Maternal Well-Being						
Malaise						
Self Esteem					4	
Local Area Measures						
Mother's Area Rating						
Observer's Area Rating						
Services						
Total Services Used						)
Total Support Usefulness						

)   Indicates a significant overall interaction

4   Indicates that this interaction was not found when looking at the individual terms

Appendix 5 – Table 11 b: Summary of interaction effects - 9 months imputed data

Outcome Measures	Sure Start with …… … Interactions					
	Child's Gender	Maternal Age	Maternal Work Status	Lone Parent Status	Household Deprivation	Working Household Status
Physical Health						
Children who had Accidents						
Children Admitted to Hospital						
Birth Weight						
Ever Breastfed				)		
Breastfeeding a min of 6 Weeks			)			
Parenting/Family Functioning						
Father Involvement				N/A		
Chaos						
Supportive parenting						
ADDITIONAL: ACCEPTANCE						
Maternal Well-Being						
Malaise						
Self Esteem						
Local Area Measures						
Mother's Area Rating						
Observer's Area Rating						
Services						
Total Services Used						)
Total Support Usefulness						

)   Indicates a significant overall interaction

4   Indicates that this interaction was not found when looking at the individual terms

Appendix 5 Table 11c: Summary of interaction effects - 36 months complete data

Outcome Measures	Sure Start Interactions					
	Child's Gender	Maternal Age	Maternal Work Status	Lone Parent Status	Household Deprivation	Working Household Status
Cognitive Ability						
BAS verbal		)		)	)	)
BAS non verbal						
Physical Health						
Children who had Accidents						
Children Admitted to Hospital						
Parenting/Family Functioning						
Supportive Parenting		4			)	
ADDITIONAL: ACCEPTANCE		)			)	
Negative Parenting		)			)	
Home Learning Environment		4		4		
Father Involvement				N/A	)	
Maternal Well-Being						
Malaise						
Self Esteem						
Social & Emotional Development						
Child Social Competence		)				
Behavioural Problems		)				
Local Area Measures						
Mother's Area Rating						
Observer's Area Rating						
Services						
Total Service Used						
Total Support Usefulness						

)   Indicates a significant overall interaction

4   Indicates that this interaction was not found when looking at the individual terms

Appendix 5 – Table 11d: Summary of interaction effects - 36 months imputed data

Outcome Measures	Sure Start Interactions					
	Child's Gender	Maternal Age	Maternal Work Status	Lone Parent Status	Household Deprivation	Working Household Status
Cognitive Ability						
BAS verbal		)	)	)	)	)
BAS non verbal		4	)			
Physical Health						
Children who had Accidents			4			
Children Admitted to Hospital						
Parenting/Family Functioning						
Supportive Parenting		4	4			
ADDITIONAL: ACCEPTANCE			)			
Negative Parenting		)	)			
Home Learning Environment		)	4	4		
Father Involvement				N/A		
Maternal Well-Being						
Malaise			)			
Self Esteem			)			
Social & Emotional Development						
Child Social Competence		)	)			
Behavioural Problems		)	)			
Local Area Measures						
Mother's Area Rating			)			
Observer's Area Rating						
Services						
Total Service Used	4		)			
Total Support Usefulness						

)   Indicates a significant overall interaction

4   Indicates that this interaction was not found when looking at the individual terms

Appendix 5 – Table 12a: Estimated values after testing for interactions – 3 years complete data

Outcome variable	Categories	SSLP		SSLP to be		P-value
		Estimated values (95% CI)		Estimated values (95% CI)		
BAS VERBAL						
	Maternal Age (Years)					
	Not a teenage	40.42	(39.2 to 41.64)	40.75	(39.35 to 42.15)	0.48
	< 20 (Teenage)	39.57	(38.11 to 41.03)	43.05	(40.92 to 45.18)	<0.001
	Lone parent status					
	Lone parent	38.45	(37.32 to 39.58)	40.33	(38.87 to 41.79)	<0.001
	Not a lone parent	39.80	(38.65 to 40.95)	39.90	(38.5 to 41.31)	0.85
	Household Deprivation					
	Income < £100 weekly	39.96	(38.5 to 41.42)	42.79	(40.79 to 44.79)	0.01
	Between £100 - £194	40.28	(39.19 to 41.38)	41.60	(40.14 to 43.05)	0.03
	More than £194 weekly	41.59	(40.55 to 42.63)	41.02	(39.61 to 42.44)	0.35
	Working Household					
	Working household	41.04	(39.85 to 42.24)	41.14	(39.69 to 42.6)	0.81
	Workless household	38.59	(37.35 to 39.82)	40.20	(38.67 to 41.73)	0.01
SUPPORTIVE PARENTING						
	Maternal Age (Years)					
	Not a teenage	7.66	(7.42 to 7.90)	7.41	(7.11 to 7.71)	0.06
	< 20 (Teenage)	7.45	(7.18 to 7.73)	7.66	(7.24 to 8.08)	0.32
	Household Deprivation					
	Income < £100 weekly	7.48	(7.20 to 7.75)	7.54	(7.15 to 7.93)	0.76
	Between £100 - £194	7.71	(7.49 to 7.92)	7.61	(7.29 to 7.92)	0.51
	More than £194 weekly	7.87	(7.66 to 8.08)	7.51	(7.20 to 7.81)	0.01
ACCEPTANCE						
	Maternal Age (Years)					
	Not a teenage	2.86	(2.79 to 2.93)	2.69	(2.6 to 2.78)	<0.001
	< 20 (Teenage)	2.81	(2.72 to 2.89)	2.77	(2.64 to 2.90)	0.53
	Household Deprivation					
	Income < £100 weekly	2.81	(2.73 to 2.90)	2.76	(2.65 to 2.88)	0.38
	Between £100 - £194	2.85	(2.78 to 2.91)	2.69	(2.60 to 2.78)	<0.001
	More than £194 weekly	2.86	(2.80 to 2.92)	2.67	(2.58 to 2.76)	<0.001
NEGATIVE PARENTING						
	Maternal Age (Years)					
	Not a teenage	33.5	(31.5 to 35.5)	35.1	(32.9 to 37.3)	0.01
	< 20 (Teenage)	37.8	(35.4 to 40.2)	35.2	(31.7 to 38.7	0.13
	Household Deprivation					
	Income < £100 weekly	34.1	(31.7 to 36.5)	31.4	(28.2 to 34.6)	0.10
	Between £100 - £194	33.6	(31.8 to 35.3)	35.6	(33.3 to 37.9)	0.02
	More than £194 weekly	35.0	(33.3 to 36.7)	36.2	(34.0 to 38.4)	0.19

Outcome variable	Categories	SSLP		SSLP to be		P-value
		Estimated values (95% CI)		Estimated values (95% CI)		
HOME LEARNING ENVIRONMENT	**Maternal Age (Years)**					
	Not a teenage	18.46	(17.66 to 19.26)	18.06	(17.12 to 19.00)	0.25
	< 20 (Teenage)	17.96	(17.01 to 18.92)	19.14	(17.72 to 20.56)	0.09
	Lone parent status					
	Lone parent	18.31	(17.57 to 19.06)	18.86	(17.87 to 19.85)	0.22
	Not a lone parent	18.42	(17.66 to 19.17)	17.79	(16.84 to 18.73)	0.09
DAD INVOLVEMENT	**Household Deprivation**					
	Income < £100 weekly	23.63	(22.76 to 24.51)	23.48	(22.18 to 24.77)	0.82
	Between £100 - £194	24.14	(23.51 to 24.76)	23.10	(22.2 to 24.00)	0.01
	More than £194 weekly	24.21	(23.63 to 24.80)	24.27	(23.51 to 25.04)	0.84
SOCIAL COMPETENCE	**Maternal Age (Years)**					
	Not a teenage	24.23	(23.83 to 24.62)	23.94	(23.5 to 24.39)	0.04
	< 20 (Teenage)	23.93	(23.46 to 24.41)	24.77	(24.07 to 25.47)	0.01
BEHAVIOURAL PROBLEMS	**Maternal Age (Years)**					
	Not a teenage	28.27	(27.08 to 29.46)	29.08	(27.76 to 30.39)	0.04
	< 20 (Teenage)	31.06	(29.62 to 32.50)	28.56	(26.43 to 30.68)	0.01

Appendix 5 – Table 12b: Estimated values after testing for interactions – 3 years imputed data

Outcome variable	Categories	SSLP		SSLP to be		P-value
		Estimated values (95% CI)		Estimated values (95% CI)		
BAS VERBAL	**Maternal Age (Years)**					
	Not a teenage	39.90	(38.7 to 41.10)	39.95	(38.68 to 41.21)	0.91
	< 20 (Teenage)	39.10	(37.75 to 40.44)	42.17	(40.26 to 44.08)	<0.001
	Lone parent status					
	Lone parent	37.95	(36.94 to 38.95)	39.59	(38.21 to 40.97)	0.005
	Not a lone parent	39.40	(38.28 to 40.52)	39.16	(37.88 to 40.44)	0.64
	MATERNAL WORK STATUS					
	Unemployed	39.78	(38.57 to 40.99)	40.51	(39.19 to 41.84)	0.13
	Part-time	40.75	(39.00 to 42.49)	42.79	(41.42 to 44.16)	<0.001
	Full-time	42.41	(40.85 to 43.98)	41.19	(39.20 to 43.18)	0.03
	Household Deprivation					
	Income < £100 weekly	39.61	(38.11 to 41.11)	40.77	(39.04 to 42.51)	0.17
	Between £100 - £194	39.96	(38.94 to 40.97)	41.10	(39.76 to 42.44)	0.04
	More than £194 weekly	41.18	(40.22 to 42.14)	40.66	(39.45 to 41.87)	0.31
	Working Household					
	Working household	40.57	(39.41 to 41.73)	40.51	(39.26 to 41.77)	0.91
	Workless household	38.19	(37.02 to 39.36)	39.40	(37.92 to 40.87)	0.03
BAS NON-VERBAL	**Maternal Age (Years)**					
	Not a teenage	39.56	(38.67 to 40.44)	39.06	(38.11 to 40.01)	0.14
	< 20 (Teenage)	39.17	(38.19 to 40.14)	40.04	(38.65 to 41.44)	0.19
	Maternal work status					
	Unemployed	39.47	(38.59 to 40.35)	39.44	(38.42 to 40.46)	0.93
	Part-time	39.58	(38.29 to 40.87)	40.28	(39.24 to 41.32)	0.15
	Full-time	41.38	(40.10 to 42.67)	40.07	(38.47 to 41.67)	0.002
SUPPORTIVE PARENTING	**Maternal Age (Years)**					
	Not a teenage	7.61	(7.35 to 7.86)	7.39	(7.09 to 7.69)	0.08
	< 20 (Teenage)	7.35	(7.08 to 7.63)	7.56	(7.17 to 7.95)	0.29
	Maternal work status					
	Unemployed	7.60	(7.34 to 7.85)	7.43	(7.12 to 7.75)	0.22
	Part-time	7.37	(7.05 to 7.69)	7.62	(7.31 to 7.92)	0.11
	Full-time	7.66	(7.32 to 8.00)	7.44	(7.00 to 7.88)	0.12

Outcome variable	Categories	SSLP		SSLP to be		P-value
		Estimated values (95% CI)		Estimated values (95% CI)		
ACCEPTANCE	**Maternal work status**					
	Unemployed	2.81	(2.75 to 2.88)	2.70	(2.61 to 2.79)	0.002
	Part-time	2.76	(2.66 to 2.87)	2.75	(2.66 to 2.84)	0.75
	Full-time	2.85	(2.76 to 2.94)	2.73	(2.61 to 2.86)	0.003
NEGATIVE PARENTING	**MATERNAL AGE (YEARS)**					
	Not a teenage	33.1	(31.3 to 34.9)	34.7	(32.8 to 36.7)	0.006
	< 20 (Teenage)	37.3	(35.1 to 39.6)	35.6	(32.5 to 38.7)	0.26
	Maternal work status					
	Unemployed	33.1	(31.4 to 34.9)	34.5	(32.4 to 36.5)	0.07
	Part-time	35.1	(32.3 to 37.9)	32.2	(30.1 to 34.3)	0.005
	Full-time	34.0	(31.4 to 36.5)	34.6	(31.3 to 38.0)	0.43
HOME LEARNING ENVIRONMENT	**Maternal Age (Years)**					
	Not a teenage	18.46	(17.73 to 19.20)	17.96	(17.11 to 18.82)	0.10
	< 20 (Teenage)	18.08	(17.19 to 18.98)	19.43	(18.11 to 20.75)	0.04
	Maternal work status					
	Unemployed	18.48	(17.74 to 19.22)	17.94	(17.04 to 18.84)	0.13
	Part-time	18.33	(17.19 to 19.48)	19.21	(18.3 to 20.11)	0.06
	Full-time	17.97	(16.95 to 19.00)	17.41	(16.03 to 18.8)	0.16
	Lone parent status					
	Lone parent	18.16	(17.45 to 18.88)	18.58	(17.65 to 19.52)	0.31
	Not a lone parent	18.28	(17.58 to 18.98)	17.63	(16.77 to 18.49)	0.05
MALAISE	**Maternal work status**					
	Unemployed	2.06	(1.81 to 2.31)	1.90	(1.60 to 2.20)	0.11
	Part-time	2.83	(2.39 to 3.27)	2.09	(1.75 to 2.43)	<0.001
	Full-time	1.84	(1.50 to 2.17)	1.66	(1.21 to 2.11)	0.13
SELF ESTEEM	**Maternal work status**					
	Unemployed	18.16	(17.75 to 18.57)	18.27	(17.81 to 18.73)	0.49
	Part-time	17.10	(16.47 to 17.73)	18.04	(17.58 to 18.50)	<0.001
	Full-time	18.21	(17.64 to 18.78)	18.53	(17.77 to 19.29)	0.09
SOCIAL COMPETENCE	**Maternal Age (Years)**					
	Not a teenage	24.35	(23.96 to 24.74)	24.08	(23.64 to 24.53)	0.04
	< 20 (Teenage)	24.02	(23.57 to 24.46)	24.83	(24.21 to 25.45)	0.007
	Maternal work status					
	Unemployed	24.35	(23.95 to 24.75)	24.11	(23.66 to 24.56)	0.13

Outcome variable	Categories	SSLP Estimated values (95% CI)		SSLP to be Estimated values (95% CI)		P-value
	Part-time	24.54	(23.90 to 25.18)	24.99	(24.49 to 25.48)	0.03
	Full-time	24.06	(23.55 to 24.57)	23.91	(23.23 to 24.59)	0.40
BEHAVIOURAL PROBLEMS	**Maternal Age (Years)**					
	Not a teenage	28.30	(27.22 to 29.38)	29.14	(27.91 to 30.37)	0.01
	< 20 (Teenage)	31.13	(29.75 to 32.50)	29.08	(27.18 to 30.98)	0.02
	MATERNAL WORK STATUS					
	Unemployed	28.40	(27.30 to 29.49)	28.65	(27.36 to 29.95)	0.56
	Part-time	30.24	(28.50 to 31.98)	27.35	(26.02 to 28.69)	<0.001
	Full-time	28.45	(26.91 to 29.99)	28.15	(26.09 to 30.21)	0.56
MUM AREA RATING	**MATERNAL WORK STATUS**					
	Unemployed	31.17	(30.14 to 32.19)	32.43	(30.96 to 33.89)	0.006
	Part-time	29.59	(28.30 to 30.88)	31.65	(30.57 to 32.74)	<0.001
	Full-time	31.98	(30.20 to 33.77)	33.01	(30.64 to 35.39)	0.05

Outcome variable	Categories	SSLP Estimated probabilities (95% CI)		SSLP to be Estimated probabilities (95% CI)		P-value
ACCIDENTS	**Maternal work status**					
	Unemployed	0.28	(0.22 to 0.34)	0.28	(0.22 to 0.35)	0.82
	Part-time	0.28	(0.20 to 0.38)	0.26	(0.20 to 0.33)	0.61
	Full-time	0.30	(0.22 to 0.39)	0.27	(0.18 to 0.38)	0.26

| Outcome variable	Categories	SSLP Estimated numbers (95% CI)		SSLP to be Estimated numbers (95% CI)		P-value
TOTAL SERVICES USED						
	CHILD'S GENDER					
	Male	2.93	(2.70 to 3.17)	2.74	(2.47 to 3.03)	0.12
	Female	2.42	(2.02 to 2.90)	2.52	(2.20 to 2.88)	0.57
	Maternal work status					
	Unemployed	2.92	(2.70 to 3.17)	2.75	(2.48 to 3.05)	0.17
	Part-time	2.52	(2.25 to 2.84)	2.65	(2.38 to 2.94)	0.38
	Full-time	3.10	(2.79 to 3.45)	2.76	(2.38 to 3.19)	0.02

APPENDIX 6　　　　　　　First stage analysis strategy

Variation Between Communities in Overall Effectiveness

**Further analysis:**　　　　**Rankings from family outcome measures**

Appendix 6 - Figure 2: Histogram of overall community effectiveness rankings – complete data

Community performance rating

Mean = 0.0　　　Standard deviation = 3.0　　　Number of communities
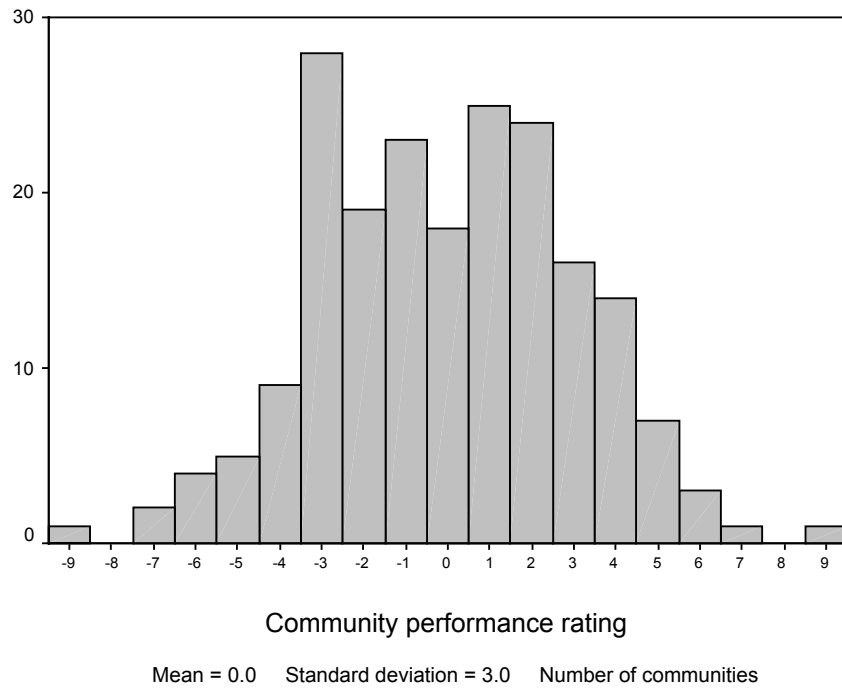
Appendix 6 - Table 6: Performance Relative to Expectance – complete data

Area	Lesser		Average		Greater		Total
	Actual	**Expected**	**Actual**	**Expected**	**Actual**	**Expected**	
SSLP	35	37	79	82	36	32	150
Non-SSLP	14	12	30	27	6	10	50
Total	49		109		42		200

Appendix 6 - Figure 3: Histogram of overall community effectiveness rankings – imputed data

Mean = 0   Standard deviation = 3.8   Number of communities = 200
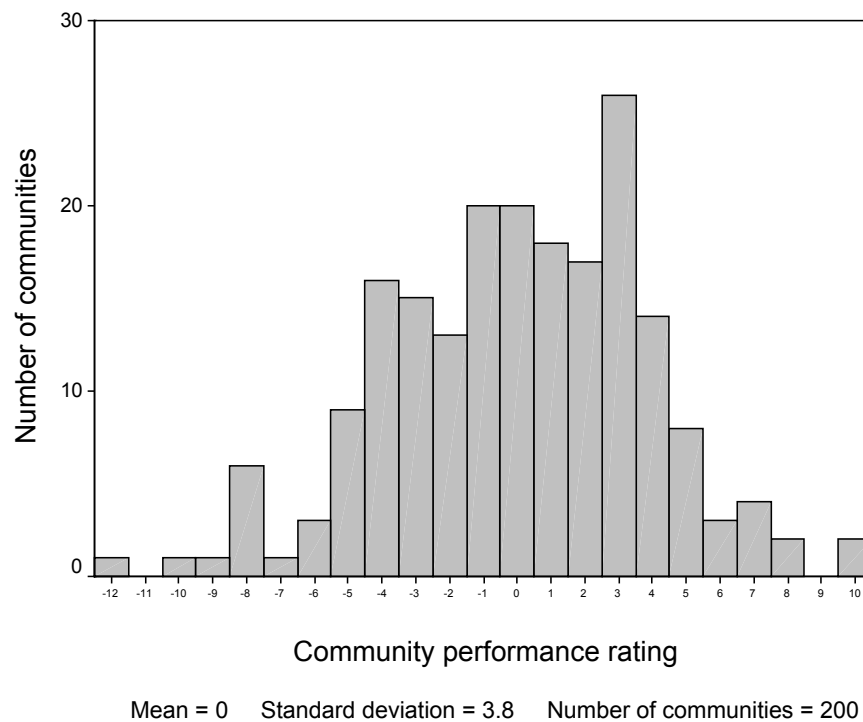
Appendix 6 - Table 7: Performance Relative to Expectance – imputed data

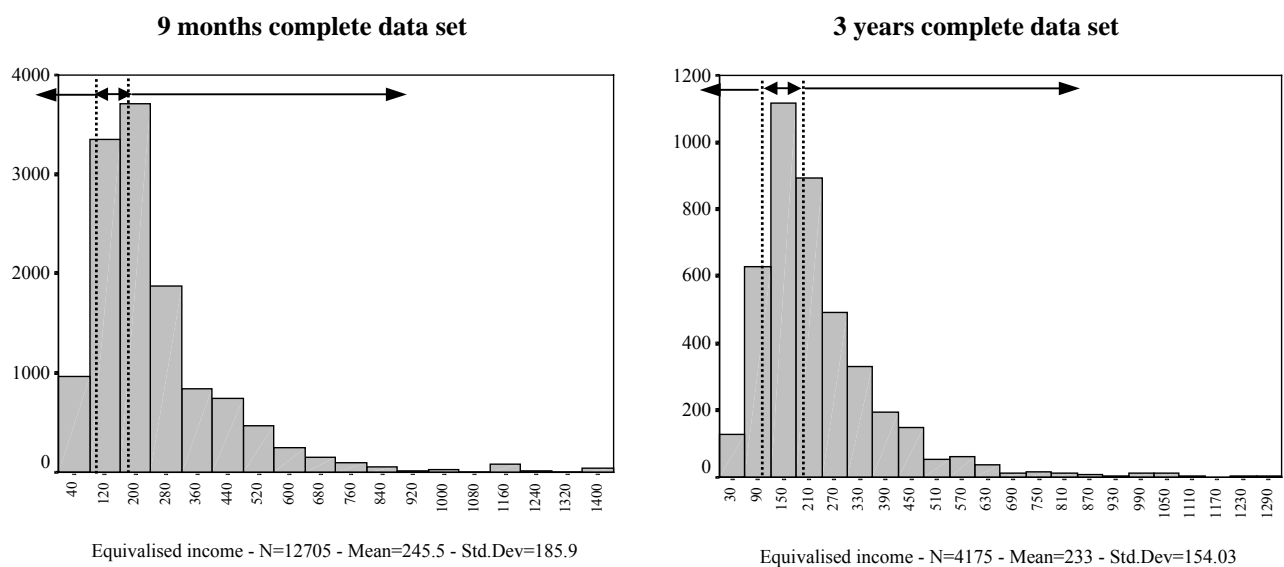| Area	Lesser		Average		Greater		Total
	Actual	Expected	Actual	Expected	Actual	Expected	
SSLP	37	40	64	66	49	44	150
Non-SSLP	16	13	24	22	10	15	50
Total	53		88		59		200

For the community performance rating constructed from 14 family outcome measures, there was no statistical significant difference in the likelihood of SSLP and comparison communities meeting criteria for producing better or worse effects than expected in the analysis of the complete data (p=0.19) or the imputed (p=0.22).

Selected frequencies relating to deprivation

Appendix 7 - Table 8: Relative frequency of 9- and 36-month children from more and less advantaged families (complete-cases only)*

Characteristic	9 months (Total = 12705)		36 months (Total = 4175)	
	Number	**%**	**Number**	**%**
Lone parent status				
Lone parent	4243	33.4	1508	36.1
Not a lone parent	8462	66.6	2667	63.9
Maternal age				
Teenager	1747	13.8	544	13.0
Not a teenager	10958	86.2	3631	87.0
Maternal work status				
Unemployed	8517	67.0	2779	66.6
Part-time	1460	11.5	568	13.6
Full-time	2728	21.5	828	19.8
Weekly Income				
< £100	1703	13.4	439	10.5
£100 - £194	5208	41.0	1838	44.0
> £194	5794	45.6	1898	45.5
WORKING HOUSEHOLD STATUS				
Working household	7692	60.5	2538	60.8
Workless household	5013	39.5	1637	39.2

* Figures were virtually identical for imputed-data set

Appendix 7 - Figure 4: Histogram of weekly 'equivalised' income

9 months complete data set

Equivalised income - N=12705 - Mean=245.5 - Std.Dev=185.9

3 years complete data set

Equivalised income - N=4175 - Mean=233 - Std.Dev=154.03

* The dotted lines in the graphs indicate the 3 weekly income categories, starting from the left: <£100 (13%), £100-£194 (42%), and >£194 (45%)