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Pre-school experience and social/behavioural development at the end of year 2 of primary school

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Pre-school experience and social/behavioural development at the end of year 2 of primary school

Abstract

This longitudinal study assesses the attainment and development of children followed from the age of 3 until the end of Key Stage 1 (age 8). Over 700 children were recruited to the study during 1998 and 1999 from 80 pre-school centres in Northern Ireland. Both qualitative and quantitative methods are used to explore the effects of pre-school experience on children's cognitive attainment and social/behavioural development at entry to school and any continuing effects on such outcomes up to 8 years of age. In addition to the effects of pre-school experience, the study investigates the contribution to children's development of individual and family characteristics such as gender, family size, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in England (EPPE).

Keywords

school, experience, pre, behavioural, development, end, year, 2, social, primary

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Effective Pre-school Provision Northern Ireland (EPPNI)

Pre-school Experience and Social/Behavioural Development At the End of Year 2 of Primary School

Technical Paper No.9

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2006

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Overview of the Project

This longitudinal study assesses the attainment and development of children followed from the age of 3 until the end of Key Stage 1 (age 8). Over 700 children were recruited to the study during 1998 and 1999 from 80 pre-school centres in Northern Ireland. Both qualitative and quantitative methods are used to explore the effects of pre-school experience on children's cognitive attainment and social/behavioural development at entry to school and any continuing effects on such outcomes up to 8 years of age. In addition to the effects of pre-school experience, the study investigates the contribution to children's development of individual and family characteristics such as gender, family size, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in England (EPPE).

Previous Research on the Effects of Early Education in the UK

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994; Sylva 1994) reviewed the evidence of UK research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established.

Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies & Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies & Brember 1997). Feinstein, Robertson & Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress but birth cohort designs may not be appropriate for the study of the influence of pre-school education. The absence of data on children's attainments at entry to pre-school means that neither the British Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore the effects of pre-school education on children's progress. These studies are also limited by the time lapse and many changes in the nature of pre-school provision that have occurred. To date no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision and individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others.

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. Playgroup, Local Authority or Private Nursery or Nursery Classes) and in different parts of the country reflecting funding and geographical conditions (i.e. urban/rural and local access to centres). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether pre-school education in the UK is as effective as it might be and have urged better co-ordination of services and research into the impact of different forms of provision (Siraj-Blatchford 1995). The EPPNI and EPPE projects are thus the first large-scale studies in the UK on the effects of different kinds of pre-school provision relating experience in particular centres and type of centre to child development.

Overview of Research Methods

The EPPNI and EPPE projects investigate three issues that have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

The research design was chosen to enable investigation of the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at entry to school, through to age 8.

The 8 aims of the EPPNI Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and the first four years of primary school.
- To compare and contrast the developmental progress of 800+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences.
- To separate out the effects of pre-school experience from the effects of education in the primary school period years 1, 2, 3 and 4.
- To establish whether some forms of pre-school experience are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-4) and the first four primary years (4-8 years).
- To discover the individual characteristics (structural and process) of pre-school education in centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at age 8 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.
- To relate the use of pre-school provision to parental labour market participation.

The sample: centres and children

In order to maximise the likelihood of identifying the effects of various types of provision, the EPPNI sample was stratified by type of centre and geographical location. The centres were chosen to include a selection of Nursery Classes and Schools, Playgroups, Private Day Nurseries, Reception Classes and Reception Groups. Thus examples of all major types of pre-school centre in Northern Ireland were included in the study.

Over 700 children were recruited from 80 pre-school centres from all Education & Library Boards (ELB) in Northern Ireland. Children and their families were selected randomly in each centre to participate in the EPPNI Project. All parents gave written permission for their children to participate. In order to examine the impact of no pre-school provision, an additional sample of 150 children with no pre-school experience were recruited from the Year 1 classes that EPPNI children entered.

The progress and development of pre-school children in the EPPNI sample is being followed over five years until the end of Key Stage 1 of primary school. Details about length of sessions and number of sessions normally attended per week have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample. Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from Playgroup to nursery class) and some will attend more than one centre in a week. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed.

Child assessments

Child Measures at 3+ years

Around the third birthday, or up to a year later if the child entered pre-school provision after three, each child was assessed by a researcher on four cognitive tasks of the British Ability Scales, BASII (Elliott et al 1996). These tasks were; verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and behavioural adjustment (Hogan, Scott, and Bauer, 1992) was completed by the member of the pre-school staff who knew the child best. If the child changed pre-school before school entry, he or she was assessed again.

Child Measures at the Start of P1

At school entry, a trained researcher administered a similar battery of cognitive assessments. These included pattern construction, verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures and early number concepts. Knowledge of the alphabet, rhyme and alliteration (literacy measures) were also administered. These literacy measures were then computed to give an overall measure of pre-reading ability. The Year 1 teacher completed a social behavioural profile of the child.

Child Measures at the End of P1

Children were again assessed individually at the end of their first year of primary school. The measures included early number concepts, BAS word reading, Marie Clay dictation and literacy measures. A similar social behavioural profile of the child was again completed by the primary 1 teacher.

Child Measures at the End of P2

Further assessments were made at the end of Year 2. In addition to NFER-NELSON standardised assessments of reading and mathematics, information on school progress, attendance and special

needs was collected. Goodman's (1997) Strengths & Difficulties Questionnaire and related measures were completed by the P2 teacher as measures of the child's social behaviour.

Child Measures at the End of P3

At age 7, children are invited to report themselves on their attitudes to school. The Goodman's (1997) Strengths & Difficulties Questionnaire and related measures were again completed by the P3 teacher.

Child Measures at the End of Key Stage 1

The end of Key Stage 1 results will be collected directly from the school that each child attends.

Measuring child/family characteristics known to have an impact on children's development

Parental interview

Shortly after the initial assessments of cognitive and social/behavioural development had been completed, one of the child's parents or guardians was interviewed. In the vast majority of cases the interview was with the child's mother. Parents were interviewed either in person when they were at the pre-school centre, or by telephone. The interview contained questions dealing with the parents, the family, the child's health, development and behaviour, the child's activities in the home, the use of pre-school provision and the childcare history. Information on individual 'child factors' such as gender, language and birth order was collected. Family factors were also investigated. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and pre-school attendance. In addition, details about the child's day care history and parental involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc), and also the activities of the child have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc. 'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied. The Early Childhood Environment Rating Scale (ECERS), which has been recently adapted (Harms, Clifford & Cryer 1998), and the Caregiver Interaction Scale (Arnett 1989) were also administered. In addition four additional ECERS sub-scales (ECERS-E) (Sylva, Siraj-Blatchford & Taggart, 2003), describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity were also used in each pre-school centre.

Case Studies

In addition to the quantitative data collected about children, their families and their pre-school centres, detailed qualitative data has been collected using case studies. The case studies were chosen retrospectively on the basis of the analyses of ECERS-R, ECERS-E and Inspection Reports. The case studies add fine-grained detail to how processes within centres articulate, establish and maintain good practice. There are case studies of three pre-school centres in EPPNI and these will be detailed in a separate report.

The methodology of the EPPNI project is thus mixed. The detailed case studies use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results help to illuminate the characteristics of more successful pre-school centres and assist in generating guidance on good practice. Particular attention has been paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics of centres and it is important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

Analytic Strategy

The EPPNI research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the characteristics of pre-school centre attended. Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to primary school will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family).

The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to primary school will provide evidence about whether particular forms of pre-school provision have greater benefits in promoting development by the end of the pre-school period. Analyses will test out the impact of measures of pre-school process characteristics, such as the scores on various ECERS scales and pre-school centre structural characteristics such as ratios. This will provide evidence as to which measures are associated with better cognitive and social/behavioural outcomes in children.

Identifying continuing effects of pre-school centres until the end of Key Stage 1

In the EPPNI research it is planned to explore the possible mid-term effects of pre-school provision on later progress and attainment in primary school until the end of Key Stage 1. Children's educational experiences are complex and over time different institutions may influence cognitive and social/behavioural development for better or worse. This study will allow the relative strength of any continuing effects of pre-school attendance to be ascertained, in comparison with the primary school influence.

The Linked Study in England 1997-2003

The Effective Provision of Pre-school Education (EPPE) project is a linked project and is under the directorship of Professor Kathy Sylva, Professor Edward Melhuish, Professor Pam Sammons, and Professor Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to the age of 7 years at the end of Key Stage 1 in England. It will help to identify the aspects of pre-school provision that have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 141 pre-school centres randomly selected throughout 5 regions of England. The study investigates all main types of pre-school provision attended by 3 to 4 year olds in England: Playgroups, Private Day Nurseries, Nursery Classes, Nursery Schools, Local Authority Nurseries and Integrated Centres. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

Summary

The EPPNI project studies the complicated effects of amount and type of pre-school provision experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes are made. The relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selected centres can inform both policy and practice. Comparisons with the English study (EPPE) can further illuminate the interpretation of results.

Executive Summary

The Effective Pre-school Provision in Northern Ireland (EPPNI) project is a longitudinal study that assesses the development of children followed between the ages of 3 and 8 years. Both qualitative and quantitative methods are used to explore the effects of pre-school experience on children's attainment and progress on social/behavioural development at entry to school and up to 8 years of age. In addition to pre-school effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, family size, parental education and employment. A parallel study is being carried out in England (Effective Provision of Pre-school Education – EPPE). The EPPNI and EPPE projects are the first large-scale studies in the UK to investigate the effects of different kinds of pre-school provision. They relate experience in particular centres and type of centre to child development. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

The EPPNI and EPPE projects investigate three issues that have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

Over 700 children were recruited from 80 pre-school centres from all Education & Library Boards in Northern Ireland. Children and their families were selected randomly in each centre to participate in the EPPNI project. In order to examine the impact of no pre-school provision, an additional sample of 150 children without pre-school experience were recruited from the Year 1 classes, which EPPNI children entered. The progress and development of the children is being followed from age 3 until the end of Key Stage 1 of primary school.

End of Year 2 Summary

This report considers children's social/behavioural development at the end of the second year of primary school. Aspects of social/behavioural development are considered in two ways, overall attainment at the end of P2 and progress over the first and second years of statutory schooling. Children's social/behavioural development was measured through a questionnaire completed by their class teacher. This questionnaire produced measures of the following factors:

Self Regulation *e.g. can independently select and return equipment as appropriate*

This factor relates to children's capacity to regulate their behaviour in a purposeful, responsible manner, without being easily distracted.

Pro-social Behaviour *e.g. is sympathetic to other children when they are upset*

This factor refers to children's capacity to engage in behaviours that foster good relationships, help other children, share and show empathy.

Conduct Problems *e.g. teases other children, calls them names*

This factor refers to a child's antisocial behaviour or conduct problems.

Anxious Behaviour *e.g. often unhappy, down-hearted or tearful*

This factor refers to worried or anxious behaviour.

Social Isolation *e.g. rather solitary, tends to play alone*

This factor refers to a behaviour shown by a small subset of children who do not 'fit in' in their peer group and can be seen as awkward outsiders.

Social Competence *e.g. generally liked by other children*

This factor refers to child's success in engaging in good peer relationships.

The analyses have considered both the child's level of development at the end of P2 and the developmental gain (progress) over the first two years of primary school having allowed for previous attainment measured at entry to primary school. The effects of child, family, home environment and child care variables on children's social behaviour are measured at the end of P2, and on developmental gains or change over the P1 and P2 years are summarised below. In all cases the relationships are statistically significant, when the influence of other measures is controlled. The findings identify general tendencies for different groups of children, but do not apply to every individual in a specific group.

Summary of the effects of independent variables

Significant effects of independent variables upon children's social/behavioural development are summarised here, after allowing for other child, parent and home characteristics. The summary deals with the overall pattern of results across all attainment and progress analyses. In considering these results it is clear that some variables influence attainment, some influence progress and some influence both attainment and progress.

Where an analysis of children's attainment indicates that some factor influences children's development, but the analysis of progress does not reveal a significant effect for that factor, this indicates that the significant effect for that variable has occurred prior to school entry and that during the time in primary school no further effect has occurred.

When a variable shows a significant effect on progress but not on attainment, this indicates that the effect occurs over the first two years of primary school, but that the effect has been a 'catching up' effect whereby some children have reached a similar level as other children but from a lower starting point at the beginning of primary school.

Where both attainment and progress analyses reveal significant effects this indicates that the variable has had an effect over the first two years of school, and that the overall attainment at the end of P2 is affected either because;

- the effect over the school period is more than a 'catching up' effect or
- the variable exerted an influence in the pre-school period that affected the start of school performance and that the effect continues into the first two years of primary school.

Child Variables

Age: Older children did better on self-regulation, pro-social behaviour and social competence subscales, and were less likely to show social isolation, than younger children.

Gender: Gender affected children's scores on self-regulation, pro-social behaviour, conduct problems and social isolation subscales. Girls attained higher scores and made more progress on both self-regulation and pro-social behaviour than boys. Boys attained higher scores and showed an increase on conduct problems and social isolation at the end of P2 compared with girls.

Birth Weight: Heavier birth weight children attained better scores and made more progress on self-regulation than lower birth weight children.

Behavioural Problems in the first 3 years: Compared with children who did not have any behavioural problems in their first three years, children who had early behavioural problems without treatment displayed more anxious behaviour, attained lower scores and made less progress on self-regulation, pro-social behaviour and social competence, and attained higher scores and showed an increase on conduct problems and social isolation. Children who had behavioural problems and did

receive treatment were more socially isolated than children who did not have any previous behavioural problems.

Socio-Economic Status Variables

Parental Socio-Economic Status: Parental socio-economic status was an important predictor of children's social/behavioural development, having varying effects on all subscales.

Compared with children from a professional socio-economic status, children from;

- All other socio-economic backgrounds, with the exception of children from a skilled manual background for attainment, attained lower scores and made less progress on social competence.
- All other socio-economic groups made less progress on self-regulation.
- All other socio-economic groups, with the exception of unskilled for progress, attained higher scores and showed an increase on social isolation.

In addition to these general effects, there were some more limited effects; compared with children from a professional socio-economic status;

- Children from an intermediate background attained lower scores on pro-social behaviour.
- Children from a skilled non-manual background attained lower scores on pro-social behaviour, and attained higher scores and showed an increase on conduct problems.
- Children from a skilled manual group showed an increase on anxious behaviour.
- Children from a semi-skilled background attained lower scores on self-regulation and pro-social behaviour.
- Children from an unskilled background showed an increase on anxious behaviour.
- Children from an unemployed background attained lower scores on self-regulation and pro-social behaviour, made less progress on pro-social behaviour, and attained higher scores and showed an increase on conduct problems.

Area Deprivation: Children from areas where there is greater child poverty attained lower scores and made less progress on pro-social behaviour during P1 and P2.

Parental Variables

Parental qualifications were important for children's attainment and progress on pro-social behaviour, self-regulation, social competence, conduct problems and social isolation.

Mothers' Education/Qualifications: Compared with children whose mothers do not have any qualifications, children whose mothers have any type of qualifications, with the exception of 16 vocational, attained higher scores and made more progress on social competence. In addition, children whose mothers have 18 vocational or degree and above qualifications scored higher on self-regulation and showed a decrease on conduct problems, compared with children whose mothers do not have any qualifications.

Fathers' Education/Qualifications: Compared with children whose fathers do not have any qualifications, children whose fathers have 16 academic qualifications made more progress on self-regulation and pro-social behaviour across the P1 and P2 period; children whose fathers have 18 vocational qualifications also made more progress on pro-social behaviour. Children whose fathers have 18 academic qualifications attained higher scores and made more progress on self-regulation and pro-social behaviour and attained lower scores and showed a decrease on conduct problems and social isolation. Children whose fathers have degree and above qualifications attained higher scores and made more progress on self-regulation, displayed fewer conduct problems, and attained lower scores and showed a decrease on social isolation compared with children whose fathers do not have any qualifications.

Fathers' Employment: Fathers' employment was associated with attainment and progress on both conduct problems and social isolation. Compared with children whose fathers are full time employed, children whose fathers are part time employed showed more conduct problems and social isolation in terms of attainment and progress across the P1 and P2 period.

Family Variables

Developmental Event: Children who experienced an event in their first three years that could affect normal development scored lower and made less progress on self-regulation, and showed more conduct problems at the end of P2 compared with children who did not experience any such event.

Home Variables

Home Play with Friends: Peer play at home had an effect on all social/behavioural subscales, except anxious behaviour. Compared with children who did not have any home play with friends, children who experienced a low amount scored higher on self-regulation; children who had a high amount of peer play at home attained higher scores and made more progress on pro-social behaviour and social competence, did better in terms of attainment and progress on conduct problems and social isolation and made more progress on self-regulation.

Regular bedtime: Children who had a regular bedtime in their first three years displayed less anxious behaviour, attained higher scores on social competence, but also did worse in terms of attainment and progress on conduct problems across the P1 and P2 period than children who did not have a bedtime routine.

Home Learning Environment: Children from homes rated higher on the home learning index attained higher scores on self-regulation, displayed less conduct problems and showed a decrease on anxious behaviour during P1 and P2.

Childcare Characteristics

Relative Care: Children who experienced more relative care in the first 3 years displayed less anxious behaviour at the end of P2.

Group care: Children who had more group care in the first 3 years attained lower scores and made less progress on pro-social behaviour and showed more conduct problems at the end of P2.

Pre-school Attendance

Home versus Pre-school Comparison

Compared with children who did not attend pre-school, children who attended;

- Nursery Class/School provision attained higher scores on social competence, and had less anxious behaviour.
- Playgroups and Private Day Nurseries did less well in terms of both attainment and progress on conduct problems and displayed less anxious behaviour.
- Reception Classes did less well in terms of attainment and progress on conduct problems.

There appeared to be no difference between home children and children who attended reception groups on any of the social/behavioural scales.

Pre-school Type Comparison

Compared with children who attended reception groups, children who attended;

- Playgroups made less progress on pro-social behaviour and showed an increase on conduct problems.

- Private Day Nurseries and Reception Classes attained higher scores and showed an increase on conduct problems.
- Private Day Nurseries also attained lower scores on self-regulation, and made less progress on pro-social behaviour.

Pre-school Characteristics

Duration of Pre-school: Children who spent a longer duration of time at pre-school scored higher on self-regulation at the end of P2.

Full time versus Part time Sessions: Children who attended pre-school full time attained lower scores on pro-social behaviour at the end of P2. There appeared to be no difference between children who attended pre-school full time or part time in relation to all other measures of social behaviour.

Pre-school staff qualifications: Compared with children who attended pre-school where the leader did not have any qualifications, children who attended pre-school where the leader had BTEC/NNEB qualifications scored higher and made an increase on social isolation during P1 and P2.

**P2 Social/Behavioural Development
Summary Table of Significant Effects
Attainment**

	Age	Gender	Birth weight	Behavioural Problems	Home versus pre-school	Pre-school Type	Socio-Economic Status	Child Poverty Mean	Mothers' Qualifications	Fathers' Qualifications	Fathers' Employment	Siblings	Developmental Event	Peer play at Home	Regular Bedtime	Home Learning Environment	Relative Care	Group Care	Duration of Pre-school Sessions	Full vs Part time	Pre-school Leader Qualifications
Home vs Pre-school																					
Self-Regulation	✓	✓	✓	✓			✓		✓	✓		✓	✓	✓							
Pro-social Behaviour	✓	✓		✓			✓	✓						✓				✓			
Conduct problems		✓		✓	✓		✓			✓	✓			✓		✓					
Anxious Behaviour				✓	✓										✓		✓				
Social Isolation	✓	✓		✓			✓			✓	✓			✓							
Social Competence	✓			✓	✓		✓		✓						✓						
Pre-school Type																					
Self-Regulation	✓	✓	✓	✓		✓	✓		✓	✓			✓			✓			✓		
Pro-social Behaviour	✓	✓		✓			✓	✓		✓				✓						✓	
Conduct problems		✓		✓		✓	✓			✓	✓		✓	✓	✓	✓		✓			
Anxious Behaviour																					
Social Isolation	✓	✓		✓			✓			✓	✓										✓
Social Competence	✓			✓			✓		✓					✓							

**P2 Social/Behavioural Development
Summary Table of Significant Effects
Progress**

	Pre-school Leader Qualifications	ELB Area	Group Care	Home Learning Environment	Regular Bedtime	Peer play at Home	Lone Parent Family	Developmental Event	Fathers' Employment	Fathers' Qualifications	Mothers' Qualifications	Child Poverty Mean	Socio-Economic Status	Pre-school Type	Home versus pre-school	Behavioural Problems	Birth weight	Gender	Age	P1 Social Development
Home vs Pre-school																				
Self-Regulation						✓				✓			✓				✓	✓		✓
Pro-social Behaviour			✓			✓						✓						✓		✓
Conduct problems						✓			✓	✓			✓		✓			✓		✓
Anxious Behaviour													✓							✓
Social Isolation						✓				✓			✓					✓		✓
Social Competence													✓							✓
Pre-school Type																				
Self Regulation						✓				✓			✓					✓		✓
Pro-social Behaviour			✓			✓				✓		✓	✓	✓				✓		✓
Conduct problems						✓			✓	✓			✓	✓				✓		✓
Anxious Behaviour																				✓
Social Isolation										✓			✓							✓
Social Competence											✓		✓							✓

Introduction

The Effective Pre-school Provision in Northern Ireland (EPPNI) project is a research study of children's progress and development from age three to eight years, and how progress relates to their pre-school centre experience and family background.

In the first stage of the study parents were interviewed concerning child and family characteristics. Children were also assessed on social/behavioural and cognitive development. The data provided on child and family characteristics and social/behavioural and cognitive development at the start of the study can be used to investigate social/behavioural and cognitive development at 3–4 years in relation to a range of parental, family, child, home and childcare factors. This analysis has been done and is reported in technical paper 2 (Melhuish et al, 2001). Social/behavioural and Cognitive attainment and progress across the pre-school years has also been analysed and reported in earlier technical papers 4 and 5 (Melhuish et al. 2002). Analyses have been completed and reported for cognitive attainment of children at the end of P1, and their progress across the first year of primary school in technical paper 6 (Quinn et al, 2003). Analyses have also been completed for children's social/behavioural attainment at the end of P1 and their progress during the first year of primary school.

This paper considers social/behavioural attainment of children at the end of Primary 2, and the progress across the first two years of primary school relating children's attainment and progress to child, parental, family, home and childcare history variables. A wide range of variables is considered and the nature of associations between family background and children's development are explored.

The Sample

The focus of the EPPNI study is on the effects of pre-school experience upon children's development. The EPPNI sample was stratified by type of centre and geographical location.

The first stage of the study involved 683 children recruited from 80 pre-school centres, including 188 children from nursery classes, 157 children from Playgroups, 117 children from Private Day Nurseries and 221 children from Reception Groups/Classes. The children were aged between 3 years and 4 years 6 months (mean 43.3 months; S.D. = 5.5 months) at the beginning of the study. For 7 families, parents were unavailable for interview. Hence this paper is based on the analysis of data from 676 parental interviews of the original sample. 151 children with no pre-school experience, for whom all parent interviews were collected, were also recruited to the study at the beginning of their P1 year. Data for these children are included for relevant analyses.

Methods

Social/Behavioural Development

Year 2 Primary Assessments of Social/Behavioural Development

In year 2 of primary school, social/behavioural data on the children were collected at the end of the summer term. The P2 teacher would rate the child on a 45-item Social/Behavioural Questionnaire.

The Social/Behaviour Questionnaire

The questionnaire consists of 45 items rated on a 3 point scale.

1 = Not true 2 = Somewhat true 3 = Certainly true

The first 25 items are from the Strengths and Difficulties Questionnaire developed by Goodman (1997). To these 25 items another 20 items were taken from other questionnaires on social development to extend the range of social behaviours covered beyond that covered in Goodman's Strengths and Difficulties Questionnaire. Using a principal components analysis with varimax rotation, 6 factors were extracted from the 45-item version of the questionnaire. These 6 factors were further refined using an analysis of internal consistency of items. The 6 factors are:

Self-Regulation *e.g. can independently select and return equipment as appropriate*

Pro-social Behaviour *e.g. is sympathetic to other children when they are upset*

Conduct Problems *e.g. teases other children, calls them names*

Anxious Behaviour *e.g. often unhappy, down-hearted or tearful*

Social Isolation *e.g. rather solitary, tends to play alone*

Social Competence *e.g. generally liked by other children*

Further details of the items contributing to each factor and reliability (Cronbach's Alpha) of each factor are included in Appendix 2.

Relationship with Goodman's Original Factors

The 6 factors can be related to Goodman's original 5 factors in the following way:

Pro-social Behaviour is very similar to Goodman's original pro-social scale extended with some additional items.

Conduct problems is similar to Goodman's original conduct problems scale with some additional items.

Anxious Behaviour is identical with Goodman's emotional symptoms scale.

Social Competence can be considered to be the inverse of the Goodman's peer problems scale with some additional competence items.

Self-Regulation could be considered to be the inverse of Goodman's hyperactivity subscale with additional items.

Social Isolation is related to both Goodman's hyperactivity and peer problems subscales.

The original Goodman factors were also extracted and analysed in the same manner as for the 6 new factors. The results of these analyses are presented in the appendices section. Note that the anxious behaviour scale is the same for the new factor and for Goodman's original emotional

symptoms factor, and the two pro-social scales and externalising and conduct problems are very similar.

Parental interview

Shortly after the child and family were recruited to the study, one of the child's parents or guardians was interviewed. In the vast majority of cases the interview was with the child's mother. Parents were interviewed either in person when they were at the pre-school centre, or by telephone. The interview followed a semi-structured format with answers to most questions being coded into an established set of categories, and a small number of open-ended questions that were coded post hoc. The length of the interviews varied, depending on the complexity of the information to be collected, the conciseness of the parents and other factors. A typical interview might take between twenty and forty minutes of the parent's time depending upon the complexity of the information supplied by the parent. The interview contained questions dealing with the parents, the family, the child's health, development and behaviour, the child's activities in the home, the use of pre-school provision and the childcare history.

Pre-school Environments

685 children in the study attended one of the following types of pre-school

Playgroup	N=15
Private Day Nurseries	N=19
Nursery Class	N=7
Nursery School	N=9
Reception Class	N= 9
Reception Group	N=21

In addition to the children in pre-school centres there were 151 children recruited to the study who had not attended a pre-school centre (Home children). These children were recruited at the start of Year 1 in Primary School.

Distribution of Children Across Pre-school Settings

Area	Nursery class/school	Playgroup	PDN	Reception class/group	Home	Total
Belfast	33	32	28	38	11	142
West	33	30	14	44	43	164
North-east	34	30	41	39	30	174
South-east	37	26	22	49	21	155
South	51	39	12	51	46	199
Total	188	157	117	221	151	834

Data Collection on Pre-school Centre Characteristics

For the centres attended by the children in the study interviews were conducted with the pre-school centre manager. The topics covered in this interview included group size, child staff ratio, staff training, aims, policies, curriculum, and parental involvement.

In addition to the visits to the centres to conduct interviews there were visits to collect observational data. Process characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were studied. The Early Childhood Environment Rating Scale (ECERS-R) that has been recently adapted (Harms, Clifford & Cryer 1998) was administered.

The ECERS-R includes the following sub-scales:

- Space and furnishings
- Personal care routines
- Language reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing

In addition four sub-scales (ECERS-E) (Sylva et al., 2003) describing educational provision and based on Desirable Learning Outcomes were used:

- Language
- Mathematics
- Science and the Environment
- Diversity

Also, after observation visits to pre-school centres, researchers completed the Caregiver Interaction Scale (Arnett, 1989) that provided ratings of:

- Positive relations
- Permissiveness
- Punitiveness
- Detachment

Results

Analysis of Social/Behavioural Data

The analyses presented in this report consider the children's social/behavioural development in two ways; attainment up to the end of the second year of primary school (P2), and progress over the first two years of primary school, i.e. the P1 and P2 period.

Attainment: these analyses answer the question 'What affects the child's level of development at the end of the second year of primary school?'

In analysing attainment the child, socio-economic (area & parent), parent, family, home and childcare characteristics affecting the child's level of attainment at the end of P2 were considered. The child's earlier level of social/behavioural functioning is not taken into account. Attainment analyses can include a comparison between the home group and the different pre-school groups as well as comparing the different pre-school types.

Progress over the first and second years of primary school. These analyses answer the question 'What affects the progress the child makes over the first two years of primary school?'

In analysing progress, all possible predictor variables used in attainment were analysed, but, in addition, the child's level of social/behavioural functioning at the start of P1 is taken into account.

The strategy of analysing the end of P2 social/behavioural outcomes in a regression model where the start of P1 social/behavioural scores are always used as potential predictor variables is the equivalent to analysing the child's progress or developmental gain in social/behavioural outcomes as the initial level of social/behavioural development is taken into account.

There are consequences of this strategy for progress models.

1. The child's level of functioning at the start of P1 will absorb the effects of several child, parent, family and home factors, where their effects do not persist additively over the P1 and P2 period.
2. Where children are not showing high levels of attainment in relation to their age at the start of P1, there is more scope for progress for such children. Hence such children may show bigger progress effects, without necessarily showing high attainment at the end of the first two years of primary school.

The social/behavioural factor scores for children were the outcome variables in a series of regression analyses. Each end of P2 social/behavioural subscale was analysed as a factor of;

- a) Children's attainment at the end of the second year of primary school and
- b) Progress across the year 1 and year 2 period.

The predictor variables were entered into a regression model using the "enter" method. The variables that had statistically significant ($p < .05$) effects were retained in the model. The other factors were removed one at a time to ensure all variables with statistically significant effects were retained. The final regression models for each outcome variable retained only the predictor variables found to have statistically significant effects on the outcome variable. The chosen significance level (conventional cut-off point) of $p < .05$ means that there is a less than 5% chance that the observed result is due to chance.

The predictor variables considered in analyses are listed in full below

Child characteristics

Age
Gender
Birth weight
Perinatal health difficulties
Previous developmental problems
Previous behaviour problems
Previous health problems

Parental characteristics

Socio-economic status
Mother's level of employment
Father's level of employment
Mother's qualifications
Father's qualifications
Mother's age
Father's age
Age mother left education
Age father left education
Marital status

Index of Area Deprivation

Child poverty mean

Various measures of deprivation were considered. They were all highly correlated. Therefore it was sensible to choose one and the child poverty index seemed most appropriate.

Family characteristics

Lone parent
Number of siblings
Birth position
Life events

Home characteristics

Home learning environment (HLE)
Rules about bedtime
Rules about TV
Play with friends at home
Play with friends elsewhere

Childcare history

Total relative care before entering the study
Total individual care before entering the study
Total group care before entering the study
Time in target centre before entering the study

Pre-school experience variables

Type of pre-school
Adult/Child Ratio
Number of sessions
Duration of time spent in pre-school
Pre-school leader qualifications

Area

Education and Library Board (ELB)

ECERS-R

ECERS-R total score
ECERS-R sub-scales scores
Space and furnishings
Personal care routines
Language reasoning
Activities
Interaction
Programme structure
Parents and staff facilities

ECERS-E

ECERS-E total score
ECERS-E sub-scales scores
Maths
Literacy
Science/environment
Diversity

Caregiver Interaction Scale (CIS)

Positive Relations
Punitiveness
Permissiveness
Detachment

Compositional variables

Within each pre-school centre the study has a representative sample of children recruited during the setting up phase of the project. Hence an average of the children's scores on a characteristic, leaving out the target child's score, gives a measure of the rest of the pre-school group's composition in terms of that characteristic. Such a composition variable is a useful way to incorporate analysis of peer group effects during the pre-school period.

Composition variables were computed for:

Child cognitive ability
Child co-operation
Child peer sociability
Child confidence
Child anti-social behaviour
Child worried behaviour
Mother's education

Regression Analyses

In this section we deal with two separate types of regression models, attainment and progress, for each of the six sub-scales. These types of regression are used for the Home versus Pre-school comparison and then for the Pre-school type comparison, because the latter is necessary to investigate pre-school characteristics.

Attainment

For each social/behavioural outcome the first attainment model compares the attainment of children with pre-school experience and children who entered the study with no pre-school experience (Home versus Pre-school). In this regression we cannot include pre-school variables, as they are not available for the Home children because they did not attend any form of pre-school setting. To further investigate children's social/behavioural attainment, an additional attainment model compares children attending different types of pre-school, and includes the full range of pre-school variables, including type, process and compositional variables.

Progress

The second type of model looks at the children's progress over the P1 and P2 period and includes comparisons for the home versus pre-school distinction, and is repeated for the children attending different types of pre-school. The progress models include the start of P1 social/behavioural scores in the regression model. The comparisons for the home children cannot include pre-school factors, as they are unavailable for this group. Hence the pre-school type model is given as it includes the full range of pre-school variables, including type, process and compositional variables.

Individual child, socio-economic, parent, family and home characteristics are analysed in successive stages. However in this report only the final model, which contains all significant predictor variables are presented. The intermediate steps of the analyses are omitted. Examples of each progressive stage of the analyses are presented in Technical Paper 4 (Melhuish et al 2002).

Self-regulation

Self-regulation is a factor that aggregates teacher's ratings of a child on a number of items of behaviour that tend to cluster together. These include children's concentration, independence and responsibility. Only statistically significant results are discussed.

Table 1: Self-regulation Attainment (Home versus Pre-school)

$R^2 = .21$

Adj $R^2 = .18$

$F(28, 721) 6.88, p < .0001$

	Beta	Significance
Child Variables		
Age	.21	.000
Gender	-.19	.000
Birth weight	.11	.001
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.08	.014
Behavioural Problems with Treatment	-.05	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.09	ns
Skilled Non-Manual	-.09	ns
Skilled Manual	-.06	ns
Semi-Skilled	-.15	.002
Unskilled	-.07	ns
Unemployed	-.08	ns
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	.02	ns
16 Academic	.03	ns
18 Vocational	.03	ns
18 Academic	.02	ns
Degree and Above	.14	.008
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.004	ns
16 Academic	.06	ns
18 Vocational	-.004	ns
18 Academic	.09	.012
Degree and Above	.09	.047
Father Not Resident	.01	ns
Family Variables		
No. of Siblings (<i>compared with none</i>)		
1 Sibling	-.03	ns
2 Siblings	.01	ns
3 or more Siblings	-.10	.042
Event	.08	.015
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.09	.024
High	.05	ns

Home versus Pre-school

A number of child variables affected children's attainment on the social/behavioural subscale, self-regulation. Older children were more self-regulating than younger children at the end of P2. Girls attained higher scores on self-regulation at the end of P2 than boys. Heavier birth weight children were more self-regulating than lower birth weight children at the end of P2. Compared with children who did not have any behavioural problems in their first three years, children who had previous behavioural problems without treatment were less self-regulating at the end of P2.

Compared with children from a professional background, children from a semi-skilled background attained lower scores on self-regulation at the end of P2. There appeared to be no difference between children from a professional background and children from the remaining socio-economic groups in relation to self-regulation attainment at the end of P2.

Parental level of qualifications was important for children's attainment on self-regulation at the end of P2. Children whose mothers have degree and above qualifications were more self-regulating at the end of P2 than children whose mothers do not have qualifications. Children whose fathers have 18 academic or degree and above qualifications attained higher scores on self-regulation than children whose fathers do not have any qualifications.

Compared with children who do not have any siblings, children who have 3 or more siblings were less self-regulating at the end of P2. Children who experienced a potentially disruptive life event in their first three years were less self-regulating at the end of P2 than children who did not have any such event.

Compared with children who did not have any peer play at home, children who had a low level of home play attained higher scores on self-regulation at the end of P2.

There appeared to be no difference between home children and children who attended any type of pre-school provision in relation to self-regulation attainment at the end of P2.

Pre-school type attainment model

In order to explore further children's attainment on self regulation, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school, (i.e. Home group excluded). The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model. Only the variables that are additional to those that were significant in the home versus pre-school attainment model are discussed.

Table 2: Self-Regulation Attainment (Pre-school Type)R²= .24Adj R²= .20

F (29, 571) 6.30, p< .0001

	Beta	Significance
Child Variables		
Age	.23	.000
Gender	-.16	.000
Birth weight	.08	.028
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.09	.014
Behavioural Problems with Treatment	-.06	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	.07	ns
Playgroup	-.08	ns
Private Day Nursery	-.22	.019
Reception Class	-.07	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.09	ns
Skilled Non-Manual	-.07	ns
Skilled Manual	-.03	ns
Semi-Skilled	-.13	.010
Unskilled	-.09	ns
Unemployed	-.11	.023
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	.03	ns
16 Academic	.07	ns
18 Vocational	.11	.032
18 Academic	.08	ns
Degree and Above	.22	.001
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.03	ns
16 Academic	.06	ns
18 Vocational	-.02	ns
18 Academic	.12	.004
Degree and Above	.11	.036
Father Not Resident	.04	ns
Family Variables		
Event	.12	.002
Home Variables		
Home Learning Environment	.10	.010
Pre-school Characteristics		
Duration of Pre-school	.17	.024

Pre-school Type model

Compared with children from a professional background, children from an unemployed background were less self-regulating at the end of P2.

Compared with children whose mothers do not have any qualifications, children whose mothers have 18 vocational qualifications were more self-regulating at the end of P2.

Children from homes rated higher on the home learning index were more self-regulating at the end of P2.

Children who attended pre-school for a longer duration of time were more self-regulating at the end of P2, than children who attended for a shorter time period.

The type of pre-school attended was important for children's attainment on self-regulation. Compared with children who attended reception groups, children who attended private day nurseries appeared to be less self-regulating at the end of P2. Children from reception groups appeared to attain similar scores on self-regulation to children who attended nursery classes/schools, playgroups and reception classes.

Progress models

The next two regression models for self-regulation are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 3: Self-Regulation Progress (Home versus Pre-school)R²= .39Adj R²= .38

F (19, 618) 21.18, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.52	.000
Child Variables		
Gender	-.14	.000
Birth weight	.08	.009
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.10	.003
Behavioural Problems with Treatment	-.02	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.12	.019
Skilled Non-Manual	-.14	.007
Skilled Manual	-.10	.047
Semi-Skilled	-.12	.004
Unskilled	-.09	.018
Unemployed	-.09	.026
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.03	ns
16 Academic	.10	.011
18 Vocational	.03	ns
18 Academic	.10	.004
Degree and Above	.08	ns
Father Not Resident	.02	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.05	ns
High	.08	.029

Home versus Pre-school

Children who attained higher scores on independence and concentration at the beginning of P1 made more progress on self-regulation during the P1 and P2 period.

Girls made more progress on self-regulation during P1 and P2 than boys. Children who had a heavier birth weight made more progress on self-regulation than children who had a lower birth weight. Compared with children who did not have any behavioural problems during their first three years, children who had behavioural problems and did not receive treatment, made less progress on self-regulation across the P1 and P2 period.

Parental socio-economic status was important for children's progress on self-regulation during P1 and P2. Children from a professional background made more progress on self-regulation than children from all other socio-economic groups.

Compared with children whose fathers do not have any qualifications, children whose fathers have 16 academic or 18 academic qualifications made more progress on self-regulation across the P1 and P2 period.

Children who had a high level of peer play at home made more progress on self-regulation than children who did not have any home play.

There appeared to be no difference between home children and children who attended any type of pre-school centre in terms of their progress on self-regulation across the P1 and P2 period.

Pre-school type progress model

In order to explore further children's progress on self regulation, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 4: Self-Regulation Progress (Pre-school Type)R²= .42Adj R²= .39

F (23, 483) 14.95, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.51	.000
Child Variables		
Gender	-.12	.001
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.09	.010
Behavioural Problems with Treatment	-.03	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.15	.010
Skilled Non-Manual	-.15	.010
Skilled Manual	-.10	ns
Semi-Skilled	-.12	.010
Unskilled	-.10	.021
Unemployed	-.16	.000
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.07	ns
16 Academic	.13	.004
18 Vocational	.06	ns
18 Academic	.14	.001
Degree and Above	.12	.018
Father Not Resident	.06	ns
Family Variables		
Event	.09	.021
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.04	ns
High	.09	.040

Pre-school Type

Compared with children whose fathers do not have any qualifications, children whose fathers have degree and above qualifications made more progress on self-regulation across the P1 and P2 period.

Children who experienced a potentially disruptive life event during their first three years made less progress on self-regulation during P1 and P2 than children who did not experience any such event.

There appeared to be no difference between children who attended reception groups and children who attended nursery classes/schools, playgroups, private day nurseries or reception classes on self-regulation progress during the first two years of primary school.

Pro-social Behaviour

Pro-social behaviour refers to an aggregate of scores from teacher's ratings of a child on a number of items of behaviour including how considerate, sharing, helpful and kind children are, and politeness and sympathetic behaviours.

Table 5: Pro-social Behaviour Attainment (Home versus Pre-school)

R²= .13

Adj R²= .11

F (14, 666) 7.04, p< .0001

	Beta	Significance
Child Variables		
Age	.10	.008
Gender	-.21	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.10	.004
Behavioural Problems with Treatment	-.01	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.10	.ns
Skilled Non-Manual	-.15	.005
Skilled Manual	-.01	ns
Semi-Skilled	-.13	.003
Unskilled	-.03	ns
Unemployed	-.11	.012
Area Child Poverty Mean	-.13	.001
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.08	ns
High	.10	.015
Childcare Characteristics		
Group Care	-.08	.027

Home versus Pre-school

Older children were more pro-social than younger children at the end of P2. Girls attained higher scores on the pro-social subscale than boys. Compared with children who did not have any behavioural problems in their first three years, children who had behavioural problems without treatment were less pro-social at the end of P2.

Compared with children from a professional background, children from a skilled non-manual, semi-skilled or unemployed background scored lower on the pro-social subscale at the end of P2.

Children who live in areas where there is greater child poverty were less pro-social than children from relatively more affluent areas.

Children who did not have any peer play at home were less pro-social than children who had a high level of home play in their first three years.

Children who experienced a greater amount of group care in their early years were less pro-social at the end of P2.

Home children appeared to attain similar scores on the pro-social behaviour subscale at the end of P2 to children who attended pre-school.

Pre-school type attainment model

In order to explore further children's attainment on pro-social behaviour, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model. Only the variables that are additional to those that were significant in the home versus pre-school attainment model are discussed.

Table 6: Pro-social Behaviour Attainment (Pre-school Type)R²= .16Adj R²= .13

F (24, 577) 4.65, p< .0001

	Beta	Significance
Child Variables		
Age	.12	.009
Gender	-.21	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.11	.006
Behavioural Problems with Treatment	-.01	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.13	.038
Skilled Non-Manual	-.16	.013
Skilled Manual	-.04	ns
Semi-Skilled	-.12	.022
Unskilled	-.06	ns
Unemployed	-.16	.001
Area Child Poverty Mean	-.10	.026
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.000	ns
16 Academic	.09	ns
18 Vocational	.07	ns
18 Academic	.10	.027
Degree and Above	.10	ns
Father Not Resident	.06	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.07	ns
High	.12	.006
Pre-school Characteristics		
Full versus Part time Sessions	-.10	.026

Pre-school Type model

Compared with children from a professional background, children from an intermediate socio-economic group attained lower scores on the pro-social behaviour subscale at the end of P2.

Children whose fathers have 18 academic qualifications were more pro-social at the end of P2 than children whose fathers do not have any qualifications.

Children who attended pre-school on a part time basis appeared to be more pro-social at the end of P2 than children who attended pre-school full time.

There appeared to be no difference between children who attended reception groups and children who attended nursery classes/schools, playgroups, private day nurseries or reception classes in relation to attainment on the pro-social behaviour subscale at the end of P2.

Progress model

The next two regression models for pro-social behaviour are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 7: Pro-social Behaviour Progress (Home versus Pre-school)R²= .24Adj R²= .23

F (9, 563) 19.60, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.22	.000
Peer Empathy	.20	.000
Child Variables		
Gender	-.15	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.11	.004
Behavioural Problems with Treatment	.02	ns
Socio-Economic Status		
Area Child Poverty Mean	-.12	.001
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.05	ns
High	.11	.010
Childcare Characteristics		
Group care	-.11	.002

Home versus Pre-school

Children who scored higher on independence and concentration, or peer empathy at the start of P1 made more progress on the pro-social behaviour subscale across the P1 and P2 period.

Girls made more progress than boys on pro-social behaviour across the P1 and P2 period. Compared with children who did not have any behavioural problems in their first three years, children who had early behavioural problems without treatment made less progress on the pro-social behaviour subscale.

Children from areas of greater child poverty made less progress on the pro-social subscale than children from relatively more affluent areas.

Children who experienced a high level of home play in their first three years made greater gains on the pro-social behaviour subscale than children who did not have any home play.

Children who experienced a greater amount of group care in their first three years made less progress on the pro-social behaviour subscale across the P1 and P2 period.

There appeared to be no difference between home children and children who attended any type of pre-school centre in relation to progress across P1 and P2 on the pro-social behaviour subscale.

Pre-school type progress model

In order to explore further children's progress on pro-social behaviour, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 8: Pro-social Behaviour Progress (Pre-school Type)R²= .29Adj R²= .26

F (25, 487) 8.02, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.24	.000
Peer Empathy	.14	.011
Child Variables		
Gender	-.15	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.13	.001
Behavioural Problems with Treatment	.02	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	-.05	ns
Playgroup	-.14	.020
Private Day Nursery	-.20	.002
Reception Class	-.11	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.10	ns
Skilled Non-Manual	-.11	ns
Skilled Manual	.01	ns
Semi-Skilled	-.04	ns
Unskilled	-.03	ns
Unemployed	-.15	.003
Area Child Poverty Mean	-.13	.004
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.03	ns
16 Academic	.14	.007
18 Vocational	.10	.028
18 Academic	.12	.007
Degree and Above	.09	ns
Father Not Resident	.08	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.04	ns
High	.14	.002
Childcare Characteristics		
Group care	-.10	.011

Pre-school Type

Compared with children from a professional background, children from an unemployed background made less progress on the pro-social behaviour subscale during P1 and P2.

Compared with children whose fathers do not have any qualifications, children whose fathers have 16 academic, 18 vocational, or 18 academic qualifications made more progress on the pro-social behaviour subscale across the first two years of primary school.

Pre-school type was important for children's progress on the pro-social subscale. Compared with children who attended reception groups, children who attended playgroups or private day nurseries appeared to make less progress on pro-social behaviour.

Conduct Problems

Conduct problems refers to the aggregate of teacher's ratings on aspects of child behaviour such as being restless and overactive, fidgeting, bullying, teasing and being disruptive.

Table 9: Conduct Problems Attainment (Home versus Pre-school)

R²= .15

Adj R²= .12

F (25, 723) 5.05, p< .0001

	Beta	Significance
Child Variables		
Gender	.20	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.14	.000
Behavioural Problems with Treatment	.06	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.08	ns
Playgroup	.09	.045
Private Day Nursery	.14	.001
Reception Class	.15	.001
Reception Group	.03	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.04	ns
Skilled Non-Manual	.09	ns
Skilled Manual	.07	ns
Semi-Skilled	.08	ns
Unskilled	-.02	ns
Unemployed	.09	.038
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.06	ns
18 Vocational	-.04	ns
18 Academic	-.09	.015
Degree and Above	-.12	.010
Father Not Resident	.01	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.13	.000
Self Employed	-.004	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.04	ns
High	-.09	.023
Home Learning Environment	-.07	.047

Home versus Pre-school

Boys showed more conduct problems than girls at the end of P2. Compared with children who did not have any behavioural problems in their first three years, children who experienced behavioural problems without treatment displayed more conduct problems.

Children from an unemployed background showed more conduct problems than children from a professional background. There appeared to be no difference between children from a professional socio-economic group and children from any of the remaining socio-economic groups in relation to attainment on conduct problems.

Compared with children whose fathers do not have any qualifications, children whose fathers have 18 academic or degree and above qualifications showed fewer conduct problems. Children whose fathers work part time had more conduct problems than children whose fathers are employed full time.

Compared with children who did not have any peer play at home in their first three years, children who had a high amount of home play showed less conduct problems at the end of P2. Children from homes rated higher on the home learning index did better on conduct problems at the end of P2.

Compared with home children, children who attended playgroups, private day nurseries or reception classes appeared to show more conduct problems at the end of P2. There appeared to be no difference between home children and children who attended nursery classes/schools or reception groups on conduct problems attainment.

Pre-school type attainment model

In order to explore further children's attainment on conduct problems, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model. Only the variables that are additional to those that were significant in the home versus pre-school attainment model are discussed.

Table 10: Conduct Problems Attainment (Pre-school Type)R²= .18Adj R² = .14

F (27, 574) 4.75, p< .0001

	Beta	Significance
Child Variables		
Gender	.19	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.15	.000
Behavioural Problems with Treatment	.05	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	.07	ns
Playgroup	.09	ns
Private Day Nursery	.14	.018
Reception Class	.13	.028
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.07	ns
Skilled Non-Manual	.13	.036
Skilled Manual	.08	ns
Semi-Skilled	.10	ns
Unskilled	.06	ns
Unemployed	.14	.004
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.07	ns
18 Vocational	-.06	ns
18 Academic	-.12	.007
Degree and Above	-.14	.011
Father Not Resident	-.04	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.12	.003
Self Employed	-.02	ns
Family Variables		
Event	-.11	.008
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.03	ns
High	-.10	.021
Regular Bedtime	.11	.009
Home Learning Environment	-.11	.005
Childcare Characteristics		
Group care	.08	.041

Pre-school type model

Children from a skilled non-manual or unemployed family background showed more conduct problems at the end of P2 than children from a professional family background.

Children who experienced an event that could potentially disrupt normal development, in their first three years, showed more conduct problems than children who did not experience any such event.

Children who had a regular bedtime in their first three years had more conduct problems than children who did not have a bedtime routine.

Children who had a greater amount of group care in their first three years displayed more conduct problems at the end of P2.

Compared with children who attended reception groups, children who attended private day nurseries or reception classes appeared to display more conduct problems at the end of P2. Children who attended reception groups appeared to attain similar scores on conduct problems to children from nursery classes/schools and playgroups.

Progress models

The next two regression models for conduct problems are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 11: Conduct Problems Progress (Home versus Pre-school)R²= .32Adj R²= .29

F (28, 615) 10.49, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.14	.017
Cooperation and Conformity	-.23	.000
Conduct Problems	.14	.005
Sociability	.10	.019
Child Variables		
Gender	.14	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.10	.003
Behavioural Problems with Treatment	.04	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.05	ns
Playgroup	.10	.019
Private Day Nursery	.14	.003
Reception Class	.14	.001
Reception Group	-.01	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.07	ns
Skilled Non-Manual	.13	.022
Skilled Manual	.09	ns
Semi-Skilled	.07	ns
Unskilled	.02	ns
Unemployed	.12	.009
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.08	ns
18 Vocational	-.07	ns
18 Academic	-.09	.015
Degree and Above	-.09	ns
Father Not Resident	-.04	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.12	.001
Self Employed	.02	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.01	ns
High	-.10	.014

Home versus Pre-school

Children's level of social development at the beginning of P1 was an important predictor of conduct problems at the end of P2. Children who scored higher on independence and concentration, and cooperation and conformity at the beginning of P1 showed a decrease on conduct problems at the end of P2. Children who scored higher on conduct problems, and sociability at the start of P1 made an increase on conduct problems during P1 and P2.

Boys showed an increase on conduct problems during P1 and P2 compared with girls. Children who had early behavioural problems without treatment made an increase on conduct problems compared with children who did not have any behavioural problems.

Compared with children from a professional socio-economic status, children from a skilled non-manual or unemployed background showed an increase on conduct problems across the P1 and P2 period.

Children whose fathers have 18 academic qualifications showed a decrease on conduct problems compared with children whose fathers do not have any qualifications. Children whose fathers are employed part time showed an increase on conduct problems compared with children whose fathers are employed full time.

Children who had a high level of peer play at home in their early years showed a decrease on conduct problems compared with children who did not have any home play.

Home children appeared to do better on conduct problems across the P1 and P2 period than children who attended playgroups, private day nurseries or reception classes.

Pre-school type progress model

In order to explore further children's progress on conduct problems, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 12: Conduct Problems Progress (Pre-school Type)R²= .33Adj R²= .29

F (31, 475) 7.59, p< .0001

	Beta	Significance
P1 Social Development		
Cooperation and Conformity	-.25	.000
Conduct Problems	.17	.002
Child Variables		
Gender	.15	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.10	.008
Behavioural Problems with Treatment	.03	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	.09	ns
Playgroup	.17	.005
Private Day Nursery	.22	.001
Reception Class	.19	.002
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.09	ns
Skilled Non-Manual	.15	.024
Skilled Manual	.10	ns
Semi-Skilled	.07	ns
Unskilled	.04	ns
Unemployed	.12	.016
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.03	ns
16 Academic	-.10	ns
18 Vocational	-.13	.010
18 Academic	-.07	ns
Degree and Above	-.15	.022
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.04	ns
16 Academic	-.08	ns
18 Vocational	-.07	ns
18 Academic	-.11	.016
Degree and Above	-.06	ns
Father Not Resident	-.04	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.11	.008
Self Employed	-.001	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.03	ns
High	-.10	.021
Regular Bedtime	.09	.021

Pre-school Type

Children whose mothers have 18 vocational or degree and above qualifications showed a decrease on conduct problems compared with children whose mothers do not have any qualifications.

Children who had a regular bedtime showed an increase on conduct problems compared with children who did not have a bedtime routine.

Compared with children who attended reception groups, children who attended playgroups, private day nurseries or reception classes appeared to show an increase on conduct problems across the P1 and P2 period.

Anxious Behaviour

Anxious behaviour refers to an aggregate of teacher's ratings for child behaviours such as complaining of sickness, tummy aches, worrying, being downhearted and easily scared and nervous in new situations. These reflect children's level of worried or anxious behaviour.

Table 13: Anxious Behaviour Attainment (Home versus Pre-school)

$R^2 = .04$

Adj $R^2 = .03$

F (9, 668) 2.92, $p < .01$

	Beta	Significance
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.09	.014
Behavioural Problems with Treatment	.05	ns
Pre-school (<i>compared with Home children</i>)		
Nursery Class/School	-.15	.012
Playgroup	-.13	.017
Private Day Nursery	-.12	.030
Reception Class	-.08	ns
Reception Group	-.08	ns
Home Variables		
Regular bedtime	-.09	.019
Childcare Characteristics		
Relative Care	-.08	.034

Home versus Pre-school

Compared with children who did not have any behavioural problems in their first three years, children who had behavioural problems without treatment had more anxious behaviour at the end of P2.

Children who had a regular bedtime had less anxious behaviour than children who did not have a bedtime routine.

Children who experienced more care by a relative during their first three years had less anxious behaviour at the end of P2.

Compared with home children, children who attended nursery classes/schools, playgroups or private day nurseries appeared to have less anxious behaviour.

Pre-school type attainment model

In order to explore further children's attainment on anxious behaviour, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model.

Table 14: Anxious Behaviour Attainment (Pre-school Type)

R²= .01

Adj R²= .01

F (5, 597) 1.63, p> .05

	Beta	Significance
Home Variables		
Regular Bedtime	-.10	.021

Pre-school Type

This regression model was non-significant (p>.05).

Progress models

The next two regression models for anxious behaviour are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 15: Anxious Behaviour Progress (Home versus Pre-school)

R²= .06

Adj R²= .05

F (7, 636) 6.06, p< .0001

	Beta	Significance
P1 Social Development		
Sociability	-.21	.000
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.01	ns
Skilled Non-Manual	.04	ns
Skilled Manual	.11	.034
Semi-Skilled	.06	ns
Unskilled	.10	.028
Unemployed	.03	ns

Home versus Pre-school

Children who scored higher on sociability at the beginning of P1 showed a decrease on anxious behaviour during P1 and P2.

Compared with children from a professional background, children from a skilled manual or unskilled background showed an increase on anxious behaviour during P1 and P2.

There appeared to be no difference between home children and pre-school children in relation to progress made on anxious behaviour during P1 and P2.

Pre-school type progress model

In order to explore further children's progress on anxious behaviour, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 16: Anxious Behaviour Progress (Pre-school Type)

$R^2 = .04$

Adj $R^2 = .03$

$F(6, 500) 3.77, p < .01$

	Beta	Significance
P1 Social Development		
Sociability	-.16	.000
Home Variables		
Home Learning Environment	-.11	.013

Pre-school Type

Children from homes rated higher on the home learning index showed a decrease on anxious behaviour across the P1 and P2 period.

There appeared to be no difference between children who attended the different types of pre-school provision in relation to progress made on anxious behaviour during P1 and P2.

Social Isolation

The Social Isolation factor is an aggregate of teacher's ratings of children's solitude, obedience, attention span and their relationship with other adults and children. These aspects of behaviour tended to cluster together. A higher score on the Social isolation factor would indicate that the child tends to play alone, is generally disobedient, tends to be picked on by other children, has a better relationship with adults instead of children and has a poorer attention span.

Table 17: Social Isolation Attainment (Home versus Pre-school)

R²= .15

Adj R²= .13

F (20, 735) 6.60, p < .0001

	Beta	Significance
Child Variables		
Age	-.16	.000
Gender	.16	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.12	.001
Behavioural Problems with Treatment	.08	.029
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.10	ns
Skilled Non-Manual	.13	.020
Skilled Manual	.11	.030
Semi-Skilled	.19	.000
Unskilled	.07	ns
Unemployed	.10	.018
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.04	ns
16 Academic	-.07	ns
18 Vocational	-.03	ns
18 Academic	-.10	.007
Degree and Above	-.14	.002
Father Not Resident	-.01	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.10	.003
Self Employed	.01	ns
Home Variables		
Peer Play at Home (<i>compared with none</i>)		
Low	-.08	ns
High	-.09	.031

Home versus Pre-school

Older children attained lower scores on social isolation than younger children at the end of P2. Boys attained higher scores on social isolation than girls at the end of P2. Compared with children who did not have any behavioural problems in their first three years, children who had behavioural problems with or without treatment attained higher scores on social isolation at the end of P2.

Children from a professional background attained lower scores on social isolation than children from skilled non-manual, skilled manual, semi-skilled or unemployed family backgrounds.

Compared with children whose fathers do not have any qualifications, children whose fathers have 18 academic or degree and above qualifications scored lower on social isolation at the end of P2. Children whose fathers are employed full time scored lower on social isolation than children whose fathers are employed part time.

Compared with children who did not have any play with friends at home in their first three years, children who experienced a high level of home play scored lower on social isolation at the end of P2.

There appeared to be no difference between home children and children who attended any type of pre-school provision in relation to social isolation attainment at the end of P2.

Pre-school type attainment model

In order to explore further children's attainment on social isolation, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model. Only the variables that are additional to those that were significant in the home versus pre-school attainment model are discussed.

Table 18: Social Isolation Attainment (Pre-school Type)R²= .20Adj R²= .16

F (29, 579) 4.95, p< .0001

	Beta	Significance
Child Variables		
Age	-.18	.000
Gender	.17	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.13	.000
Behavioural Problems with Treatment	.06	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.12	.038
Skilled Non-Manual	.16	.008
Skilled Manual	.12	.025
Semi-Skilled	.22	.000
Unskilled	.09	.049
Unemployed	.14	.002
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.06	ns
16 Academic	-.08	ns
18 Vocational	-.05	ns
18 Academic	-.16	.000
Degree and Above	-.17	.001
Father Not Resident	-.05	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.012	.002
Self Employed	.01	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.04	ns
High	-.09	.033
Pre-school Characteristics		
Pre-school Leader's Qualifications (<i>compared with none</i>)		
NIPPA	.02	ns
Montessori	.02	ns
BTEC/NNEB	.16	.020
Bachelor of Arts/Bachelor of Science	.04	ns
Bachelor of Education	.12	ns

Pre-school Type

Children from a professional background attained lower scores on social isolation at the end of P2 than children from intermediate or unskilled family backgrounds.

Compared to children who attended pre-school where the leader does not have any qualifications, children who attended pre-school where the leader has BTEC/NNEB qualifications scored higher on social isolation at the end of P2.

There appeared to be no difference between children who attended nursery classes/schools, playgroups, private day nurseries, reception classes and reception groups regarding social isolation attainment.

Progress models

The next two regression models for social isolation are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 19: Social Isolation Progress (Home versus Pre-school)R²= .29Adj R²= .27

F (20, 623) 12.83, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.42	.000
Child Variables		
Gender	.11	.003
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.12	.001
Behavioural Problems with Treatment	.06	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.12	.025
Skilled Non-Manual	.13	.017
Skilled Manual	.11	.029
Semi-Skilled	.15	.001
Unskilled	.07	ns
Unemployed	.08	ns
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.08	ns
18 Vocational	-.06	ns
18 Academic	-.10	.007
Degree and Above	-.09	.046
Father Not Resident	-.01	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.09	.012
Self Employed	.04	ns
Home Variables		
Peer Play at home (compared with none)		
Low	.03	ns
High	-.08	.032

Home versus Pre-school

Children who scored higher on independence and concentration at the beginning of P1 showed a decrease on social isolation across the P1 and P2 period.

Girls made a decrease on social isolation compared with boys during P1 and P2. Compared with children who did not have behavioural problems in their first three years, children who experienced early behavioural problems without treatment showed an increase on social isolation.

Children from an intermediate, skilled non-manual, skilled manual or semi-skilled background made an increase on social isolation compared with children from a professional background.

Compared with children whose fathers do not have any qualifications, children whose fathers have 18 academic or degree and above qualifications showed a decrease on social isolation during P1 and P2.

Compared with children whose fathers are employed full time, children whose fathers are employed part time showed an increase on social isolation during P1 and P2.

Children who had a high amount of home play in their first three years showed a decrease on social isolation compared with children who did not have any home play.

There appeared to be no difference between home children and pre-school children in terms of progress made on social isolation during P1 and P2.

Pre-school type progress model

In order to explore further children's progress on social isolation, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 20: Social Isolation Progress (Pre-school Type)R²= .33Adj R²= .29

F (28, 484) 8.41, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.38	.000
Child Variables		
Gender	-.12	.003
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.13	.001
Behavioural Problems with Treatment	.04	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.15	.013
Skilled Non-Manual	.18	.003
Skilled Manual	.15	.007
Semi-Skilled	.20	.000
Unskilled	.08	ns
Unemployed	.13	.005
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.06	ns
16 Academic	-.07	ns
18 Vocational	-.07	ns
18 Academic	-.13	.003
Degree and Above	-.10	ns
Father Not Resident	-.19	.012
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.11	.003
Self Employed	.06	ns
Family Variables		
Lone Parent	.18	.016
Pre-school Characteristics		
Pre-school Leader's Qualifications (<i>compared with none</i>)		
NIPPA	-.00	ns
Montessori	.04	ns
BTEC/NNEB	.16	.027
Bachelor of Arts/Bachelor of Science	.02	ns
Bachelor of Education	.07	ns

Pre-school Type

Children from an unemployed family background showed an increase on social isolation compared with children from a professional background.

Children whose fathers are not resident at home with the child showed a decrease on social isolation during P1 and P2 compared with children whose fathers do not have any qualifications

Children from a lone parent family showed an increase on social isolation compared with children from a two-parent family during P1 and P2.

Children who attended pre-school where the leader has a BTEC/NNEB qualification increased on social isolation compared with children who attended pre-school where the leader does not have any qualifications.

There appeared to be no difference between children who attended reception groups and any other type of pre-school provision in relation to progress made on the social isolation subscale during P1 and P2.

Social Competence

Social competence refers to the aggregate of a set of teacher's ratings of child behaviour that clustered together. These included how confident a child is with others, their ability to have friendships and join in with social activities.

Table 21: Social Competence Attainment (Home versus Pre-school)

R²= .11

Adj R²= .09

F (20, 729) 4.70, p< .0001

	Beta	Significance
Child Variables		
Age	.12	.004
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.10	.005
Behavioural Problems with Treatment	-.05	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.09	.041
Playgroup	.03	ns
Private Day Nursery	-.02	ns
Reception Class	-.003	ns
Reception Group	.04	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.12	.026
Skilled Non-Manual	-.14	.010
Skilled Manual	-.10	ns
Semi-Skilled	-.18	.000
Unskilled	-.08	ns
Unemployed	-.16	.000
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.02	ns
16 Academic	.10	ns
18 Vocational	.06	ns
18 Academic	.10	.018
Degree and Above	.16	.002
Home Variables		
Regular Bedtime	.10	.006

Home versus Pre-school

Older children were more socially competent at the end of P2 than younger children. Children who experienced behavioural problems without treatment were less socially competent at the end of P2 than children who did not have any behavioural problems.

Compared with children from a professional socio-economic status, children from an intermediate, skilled non-manual, semi-skilled or unemployed family background were less socially competent at the end of P2.

Children whose mothers have 18 academic or degree and above qualifications attained higher scores on social competence than children whose mothers do not have any qualifications.

Children who had a regular bedtime were more socially competent at the end of P2 than children who did not have a bedtime routine.

Compared with home children, children who attended nursery classes/schools appeared to be more socially competent at the end of P2.

Pre-school type attainment model

In order to explore further children's attainment on social competence, a separate set of attainment analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type attainment model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous attainment model. Only the variables that are additional to those that were significant in the home versus pre-school attainment model are discussed.

Table 22: Social Competence Attainment (Pre-school Type)R²= .13Adj R²= .10

F (20, 588) 4.33, p< .0001

	Beta	Significance
Child Variables		
Age	.12	.009
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.11	.007
Behavioural Problems with Treatment	-.07	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.15	.013
Skilled Non-Manual	-.16	.006
Skilled Manual	-.10	ns
Semi-Skilled	-.16	.001
Unskilled	-.13	.005
Unemployed	-.17	.000
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	.01	ns
16 Academic	.14	.014
18 Vocational	.13	.010
18 Academic	.16	.001
Degree and Above	.23	.000
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.04	ns
High	.09	.047

Pre-school Type

Children from a professional background were more socially competent at the end of P2 than children from an unskilled background.

Children whose mothers have 16 academic or 18 vocational qualifications were more socially competent at the end of P2 than children whose mothers do not have any qualifications.

Children who had a high level of home play in their first three years were more socially competent at the end of P2 than children who did not have any home play.

There appeared to be no difference between children who attended different types of pre-school in relation to attainment on social competence at the end of P2.

Progress models

The next two regression models for social competence are progress models, which differ from the attainment models by including the child's measured level of social behavioural development at the start of P1 (start of primary school). By including these measures of previous social/behavioural development the analysis is measuring the progress in social behavioural development over the P1 and P2 period (the first 2 years of primary school).

Table 23: Social Competence Progress (Home versus Pre-school)R²= .21Adj R²= .18

F (17, 626) 9.51, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.28	.000
Cooperation and Conformity	-.17	.011
Conduct Problems	-.14	.005
Sociability	.19	.000
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.10	.006
Behavioural Problems with Treatment	-.03	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.15	.010
Skilled Non-Manual	-.18	.001
Skilled Manual	-.14	.005
Semi-Skilled	-.17	.000
Unskilled	-.12	.005
Unemployed	-.16	.000
Family Variables		
Lone Parent Family	-.08	.044
ELB Area (<i>compared with Southern ELB area</i>)		
Belfast	-.10	.024
Western	-.08	ns
North-Eastern	-.06	ns
South-Eastern	-.07	ns

Home versus Pre-school

Children who scored higher on independence and concentration, and sociability at the beginning of P1 made more progress on social competence during P1 and P2. Children who scored higher on cooperation and conformity, and conduct problems made less progress on social competence across the first two years of primary school.

Children who had behavioural problems in their first three years made less progress on social competence than children who did not have previous behavioural problems.

Children from a professional background made more progress on social competence than children from all other socio-economic backgrounds.

Children from a lone parent family made less progress on social competence across the P1 and P2 period than children from a two-parent family.

Children from the Southern ELB area appeared to make more progress on social competence than children from the Belfast ELB area.

There appeared to be no difference between home children and children who attended any type of pre-school in relation to progress made on the social competence subscale.

Pre-school type progress model

In order to explore further children's progress on social competence, a separate set of progress analyses was completed that included comparisons for children attending different types of pre-school. The pre-school type progress model includes, pre-school type and process variables, and compositional variables that are not available for home children, and so can not be included in the previous progress model. Only the variables that are additional to those that were significant in the home versus pre-school progress model are discussed.

Table 24: Social Competence Progress (Pre-school Type)R²= .24Adj R²= .20

F (23, 489) 6.54, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	.31	.000
Cooperation and Conformity	-.21	.007
Conduct Problems	-.15	.008
Sociability	.14	.004
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.12	.005
Behavioural Problems with Treatment	-.05	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.15	.011
Skilled Non-Manual	-.20	.001
Skilled Manual	-.11	ns
Semi-Skilled	-.16	.002
Unskilled	-.13	.007
Unemployed	-.19	.000
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.02	ns
16 Academic	.13	.023
18 Vocational	.11	.033
18 Academic	.14	.008
Degree and Above	.15	.017
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.02	ns
High	.11	.019

Pre-school Type

Children whose mothers have 16 academic, 18 vocational, 18 academic or degree and above qualifications made more progress on social competence than children whose mothers do not have any qualifications.

Children who had a high level of home play in their first three years made more progress on social competence during P1 and P2 than children who did not have any home play.

There appeared to be no difference between children who attended different types of pre-school in relation to progress made on social competence.

Summary and Discussion

The summary deals with the overall pattern of results across all attainment and progress analyses. The results are grouped by category of predictor variable.

Child Variables

- Older children attained higher scores on self-regulation, pro-social behaviour and social competence subscales, and had less social isolation, than younger children.
- Gender affected children's scores on self-regulation, pro-social behaviour, conduct problems and social isolation subscales. Girls attained higher scores and made more progress on both self-regulation and pro-social behaviour than boys. Boys attained higher scores and showed an increase on conduct problems and social isolation at the end of P2 compared with girls.
- Heavier birth weight children attained better scores and made more progress on self-regulation than lower birth weight children.
- Compared with children who did not have any behavioural problems in their first three years, children who had early behavioural problems without treatment had more anxious behaviours, attained lower scores and made less progress on self-regulation, pro-social behaviour and social competence, and attained higher scores and showed an increase on conduct problems and social isolation. Children who had early behavioural problems with treatment also attained higher scores on social isolation than children who did not have previous behavioural problems.

Socio-Economic Status Variables

Parental socio-economic status was an important predictor of children's social/behavioural development having varying effects on all subscales.

Compared with children from a professional socio-economic status, children from;

- All other socio-economic backgrounds, with the exception of children from a skilled manual background for attainment, attained lower scores and made less progress on social competence.
- All other socio-economic groups made less progress on self-regulation.
- All other socio-economic groups, except unskilled for progress, attained higher scores and showed an increase on social isolation.

In addition to these general socio-economic status effects, compared with children from a professional socio-economic status;

- Children from an intermediate background attained lower scores on pro-social behaviour.
 - Children from a skilled non-manual background attained lower scores on pro-social behaviour, and attained higher scores and showed an increase on conduct problems.
 - Children from a skilled manual group showed an increase on anxious behaviour.
 - Children from a semi-skilled background attained lower scores on self-regulation and pro-social behaviour, and had more conduct problems.
 - Children from an unskilled background showed an increase on anxious behaviour.
 - Children from an unemployed background attained lower scores on self-regulation and pro-social behaviour, made less progress on pro-social behaviour, and attained higher scores and made an increase on conduct problems.
-
- Children from areas where there is greater child poverty attained lower scores and made less progress on pro-social behaviour during P1 and P2.

Parental Variables

Parental qualifications were important for children's attainment and progress on pro-social behaviour, self-regulation, social competence, conduct problems and social isolation.

- Compared with children whose mothers do not have any qualifications, children whose mothers have any type of qualifications, with the exception of 16 vocational, attained higher scores and made more progress on social competence. In addition, children whose mothers have 18 vocational or degree and above qualifications scored higher on self-regulation and showed a decrease on conduct problems, compared with children whose mothers do not have any qualifications.
- Compared with children whose fathers do not have any qualifications, children whose fathers have 16 academic qualifications made more progress on self-regulation and pro-social behaviour across the P1 and P2 period; children whose fathers have 18 vocational qualifications also made more progress on pro-social behaviour. Children whose fathers have 18 academic qualifications attained higher scores and made more progress on self-regulation and pro-social behaviour and attained lower scores and showed a decrease on conduct problems and social isolation. Children whose fathers have degree and above qualifications attained higher scores and made more progress on self-regulation, had less conduct problems and attained lower scores and showed a decrease on social isolation compared with children whose fathers do not have any qualifications.
- Fathers' employment was associated with attainment and progress on both conduct problems and social isolation. Compared with children whose fathers are full time employed, children whose fathers are part time employed attained higher scores and showed an increase on conduct problems and social isolation across the P1 and P2 period.

Family Variables

- Compared with children who do not have any siblings, children who have 3 or more siblings scored lower on self-regulation at the end of P2.
- Children who experienced an event in their first three years that could affect normal development scored lower and made less progress on self-regulation, and had more conduct problems at the end of P2 compared with children who did not experience any such event.
- Children from a lone parent family made less progress on social competence and made an increase on social isolation across the first two years of primary school compared with children from a two-parent family.

Home Variables

- Peer play at home had an effect on all social/behavioural subscales, except anxious behaviour. Compared with children who did not have any home play with friends, children who experienced a low amount scored higher on self-regulation; children who had a high amount of peer play at home attained higher scores and made more progress on pro-social behaviour and social competence, attained lower scores and showed a decrease on conduct problems and social isolation and made more progress on self-regulation.
- Children who had a regular bedtime in their first three years had less anxious behaviour, attained higher scores on social competence, and also attained higher scores and made an increase on conduct problems across the P1 and P2 period compared with children who did not have a bedtime routine.
- Children from homes rated higher on the home learning index attained higher scores on self-regulation, had less conduct problems and showed a decrease on anxious behaviour during P1 and P2.

Childcare Characteristics

- Children who experienced more relative care had less anxious behaviour at the end of P2.
- Children who had more group care in their early years attained lower scores and made less progress on pro-social behaviour and had more conduct problems at the end of P2.

ELB Area

- Compared with children who attended pre-school in the Southern ELB area, children who attended pre-school in the Belfast ELB area made less progress on social competence at the end of P2.

Type of Pre-school

Compared with children who did not attend pre-school, children who attended

- Nursery Class/School provision attained higher scores on social competence, and had less anxious behaviour.
- Playgroups and Private Day Nurseries attained higher scores and made an increase on conduct problems and had less anxious behaviour.
- Reception Classes attained higher scores and showed an increase on conduct problems.

Comparisons were also made between children who attended some type of pre-school. Compared with children who attended reception groups, children who attended;

- Playgroups made less progress on pro-social behaviour and made an increase on conduct problems.
- Private Day Nurseries and Reception Classes attained higher scores and increased on conduct problems.
- Private Day Nurseries also attained lower scores on self-regulation, and made less progress on pro-social behaviour.

Pre-school staff qualifications

- Compared with children who attended pre-school where the leader did not have any qualifications, children who attended pre-school where the leader had BTEC/NNEB qualifications scored higher and showed an increase on social isolation during P1 and P2.

Pre-school Characteristics

Duration of Pre-school

- Children who spent a longer duration of time at pre-school scored higher on self-regulation at the end of P2.

Full time versus Part time Sessions

- Children who attended pre-school full time attained lower scores on pro-social behaviour at the end of P2. There appeared to be no difference between children who attended pre-school full time or part time in relation to all other measures of social behaviour.

Pre-school staff-child interaction

- Children who attended pre-school where the interaction between the staff and children was rated as more positive had more conduct problems.

In considering these results it is clear that some variables influence attainment, some influence progress and some influence both attainment and progress.

Where an analysis of children's attainment indicates that some factor influences children's development, but the analysis of progress does not reveal a significant effect for that factor, this

indicates that the significant effect for that variable has occurred prior to school entry and that during the time in primary school no further effect has occurred.

When a variable shows a significant effect on progress but not on attainment, this indicates that the effect occurs over the first two years of primary school, but that the effect has been a ‘catching up’ effect whereby some children have reached a similar level as other children but from a lower starting point at the beginning of primary school.

Where both attainment and progress analyses reveal significant effects this indicates that the variable has had an effect over the first two years of school, and that the overall attainment at the end of P2 is affected either because;

- a) the effect over the school period is more than a ‘catching up’ effect or
- b) the variable exerted an influence in the pre-school period that affected the start of school performance and that the effect continues into the first two years of primary school.

In relation to the effects found for child variables, older children tend to do better on self-regulation, pro-social behaviour and social competence, which mirrors start of school social/behavioural data where these children attained better scores than younger children. Girls are maintaining their advantage over boys on self-regulation and pro-social behaviour, and boys are displaying more conduct problems and social isolation across the first two years of primary school. Birth weight is having continued effects on self-regulation during P1 and P2 over those found in pre-school. Early behavioural problems without treatment are also having continued effects on decreased self-regulation, pro-social behaviour, social competence and increased anxious behaviour, social isolation and conduct problems compared to children who did not have any previous behavioural problems, indicating the importance of early treatment of children’s behavioural problems for better social/behavioural development.

Regarding socio-economic status variables, when compared to children from a professional background, children from the lower socio-economic groups perform worse in terms of social/behavioural development, particularly children from semi-skilled and unemployed family backgrounds. For social competence, children from a professional background continued their advantage over all other socio-economic groups during P1 and P2. The effects for parental qualifications followed a similar pattern, when compared to children whose mothers do not have any qualifications, children whose mothers have any type of qualifications, from 16 academic and above, attained higher scores and made more progress on social competence during P1 and P2. The effects for fathers’ qualifications show that compared to children whose fathers do not have any qualifications, children whose fathers have 16 academic qualifications made more progress on self-regulation and pro-social behaviour across P1 and P2, indicative of a ‘catching-up’ effect. Children whose fathers have higher qualifications, particularly 18 academic, performed better on social/behavioural development across P1 and P2. The effect for fathers’ employment suggests that full time-employment for fathers is related to better conduct in children. Children from areas of greater deprivation performed less well on pro-social behaviour during P1 and P2.

Children from larger families with three or more siblings attained lower scores on self-regulation, indicating that this effect occurred prior to school entry and that during P1 and P2, no additional effect has occurred. Experiencing a developmental event in the first three years that could affect development is associated with decreased self-regulation during P1 and P2. Children who experienced a developmental event also showed more conduct problems at the end of P2, an effect that is maintained across the first two years of primary school. Children from a lone parent family made less progress on social competence and showed an increase on social isolation compared with children from a two-parent family.

The effects for peer play at home were present for almost all subscales, where generally, children who experienced peer play at home performed better and made more progress on

social/behavioural development than children who did not have peer play at home. Where children had a regular bedtime, they had less anxious behaviour and attained higher scores on social competence but also displayed more conduct problems across P1 and P2. Children from homes rated higher on the home learning index did better on self-regulation and showed better conduct at the end of P2, indicating that these attainment effects occurred primarily in the pre-school period and remained during P1 and P2. These children also showed a decrease for anxious behaviour across the P1 and P2 period.

Effects for early childcare showed that children who had more relative care attained lower scores on anxious behaviour, indicating that this beneficial effect occurred primarily in the pre-school period, but was maintained during P1 and P2. There were continued effects for children who had more group care in terms of lower levels of pro-social behaviour, and these children also had higher levels of conduct problems.

Effects for ELB area revealed that children who attended pre-school in the Belfast ELB area made less progress on social competence at the end of P2 compared with children from the Southern ELB area.

There is a clear indication that pre-school effects are being maintained into the first two years of primary school after considering a wide range of background variables. Children who attended nursery class/school provision appeared to be more socially competent and had less anxious behaviour compared with home children. Children who attended playgroups had less anxious behaviour and more conduct problems than home children, showed an increase on conduct problems compared with home children or reception group children, and also made less progress on pro-social than reception group children. Children who attended private day nurseries or reception classes attained higher scores and showed an increase on conduct problems during P1 and P2, compared with home children or reception group children. Additional effects for private day nursery attendance showed that these children had less anxious behaviour than home children, and attained lower scores on self-regulation and made less progress on pro-social behaviour than reception group children.

Compared with children who attended pre-school where the leader did not have any childcare qualifications, children who attended pre-school where the leader has BTEC/NNEB qualifications attained higher scores and showed an increase on social isolation during P1 and P2.

The effect for duration of time spent at pre-school continued over the first two years of primary school with children who spent a longer period of time at pre-school showing more self-regulation at the end of P2.

Children who attended pre-school on a full time basis did less well on pro-social behaviour at the end of P2, than children who attended pre-school part time, indicating the benefits of part time attendance. These results support earlier findings that the best combination is for a longer duration of part-time pre-school education.

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Appendix 1: Social Behaviour Questionnaire

Social and Behavioural Profile Please ✓ in the appropriate column		Not true	Somewhat true	Certainly true
Considerate of other peoples feelings	1			
Restless, overactive, cannot stay still for long	2			
Often complains of headaches, stomach-aches or sickness	3			
Shares readily with other children (treats, toys, pencils etc)	4			
Often has temper tantrums or hot tempers	5			
Rather solitary, tends to play alone	6			
Generally obedient, usually does what adults request	7			
Many worries, often seems worried	8			
Helpful if someone is hurt, upset or feeling ill	9			
Constantly fidgeting or squirming	10			
Has at least one good friend	11			
Often fights with other children or bullies them	12			
Often unhappy, down-hearted or tearful	13			
Generally liked by other children	14			
Easily distracted, concentration wanders	15			
Nervous or clingy in new situations, easily loses confidence	16			
Kind to younger children	17			
Often lies or cheats	18			
Picked on or bullied by other children	19			
Often volunteers to help other (teachers, other children)	20			
Thinks things out before acting	21			
Steals from home, school or elsewhere	22			
Gets on better with adults than with other children	23			
Many fears, easily scared	24			
Sees task through to the end, good attention span	25			
Can behave appropriately during less structured sessions	26			
Is open and direct about what s/he wants	27			
Is confident with others	28			
Will invite others to join a game	29			
Can move to a new activity on completion of a task	30			
Can independently select and return equipment as appropriate	31			
In social activities, tends to just watch others	32			
Will join a group of children playing	33			
Says 'please' and 'thank you'	34			
Is calm and easy going	35			
Can work easily in a small peer group	36			
Teases other children, calls them names	37			
Prevents other children from carrying out routines	38			
Perseveres in the face of difficulty or challenging tasks	39			
Likes to work things out for self; can work independently	40			
Apologises spontaneously	41			
Offers to help other children having difficulties with a task	42			
Is sympathetic towards other children when they are upset	43			
Shows leadership in group work	44			
Can take responsibility for a task	45			
Makes careless mistakes	46			
Fails to pay attention	47			
Quickly loses interest in what s/he is doing	48			
Vandalised property or destroys things	49			
Shows inappropriate sexual behaviour to others	50			
Has been in trouble with the law	51			

THANK YOU FOR YOUR TIME IN COMPLETING THIS IMPORTANT INFORMATION

Appendix 2

Social/Behavioural Factors For 6-Year Olds

Question	Self-Regulation	
15	Easily distracted, concentration wanders	Reverse
26	Can behave appropriately during less structured situations	
30	Can move to a new activity on completion of a task	
31	Can independently select and return equipment as appropriate	
36	Can work easily in a small peer group	
39	Perseveres in the face of difficult or challenging tasks	
40	Likes to work things out for self; can work independently	
44	Shows leadership in group work	
45	Can take responsibility for a task	
Reliability = .91		
Question	Prosocial behaviour	
1	Considerate of other peoples feelings	
4	Shares readily with other children (treats, toys, pencils etc)	
9	Helpful if someone is hurt, upset or feeling ill	
17	Kind to younger children	
20	Often volunteers to help others (teachers, other children)	
29	Will invite others to join a game	
34	Says 'please' and thank you'	
41	Apologises spontaneously	
42	Offers to help other children having difficulties with a task	
43	Is sympathetic towards other children when they are upset	
Reliability = .90		
Question	Conduct problems	
2	Restless, overactive, cannot stay still for long	Reverse
5	Often has temper tantrums or hot tempers	
10	Constantly fidgeting or squirming	
12	Often fights with other children or bullies them	
18	Often lies or cheats	
22	Steals from home, school or elsewhere	
35	Is calm and easy going	
37	Teases other children, calls them names	
38	Prevents other children from carrying out routines	
Reliability = .84		
Question	Anxious Behaviour	
3	Often complains of headaches, stomach-aches or sickness	
8	Many worries, often seems worried	
13	Often unhappy, down-hearted or tearful	
16	Nervous or clingy in new situations, easily loses confidence	
24	Many fears, easily scared	
Reliability = .75		
Question	Social Isolation	
6	Rather solitary, tends to play alone	Reverse
7	Generally obedient, does what adults request	
19	Picked on or bullied by other children	Reverse
21	Thinks things out before acting	
23	Gets on better with adults than with other children	Reverse
25	Sees task through to the end, good attention span	

Reliability = .84		
Question	Social Competence	
11	Has at least one good friend	Reverse
14	Generally liked by other children	
27	Is open and direct about what s/he wants	
28	Is confident with others	
32	In social activities, tends to just watch others	
33	Will join a group of children playing	
Reliability = .78		

Appendix 3

Pre-School versus Home Children effects

	Self-Regulation		Pro-social Behaviour		Conduct Problems		Anxious Behaviour		Social Isolation		Social Competence	
	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress
Compared to home group												
Nursery class/school							-				+	
Playgroup					+	+	-					
Private Day Nursery					+	+	-					
Reception Class					+	+						
Reception Group												

The above table shows the impact of pre-school type compared with home children on social/behavioural attainment and progress.

In analysing attainment the child, socio-economic (area & parent), parent, family, home, childcare, and type of pre-school attended affecting the child's level of attainment at the end of primary one were considered. The child's earlier level of social/behavioural functioning is not taken into account.

In analysing progress, all possible predictor variables used in attainment were analysed, but, in addition, the child's level of social/behavioural functioning at the start of P1 is taken into account

Key;

‘+’ = Children from this particular type of pre-school appeared to attain significantly higher scores or make more progress across the P1 and P2 period than home children, on the social/behavioural subscale concerned.

‘-’ = Children from this particular type of pre-school appeared to attain significantly lower scores or make less progress across the P1 and P2 period than home children, on the relevant subscale.

Where a cell remains blank, this means that there appeared to be no difference between children who attended pre-school and home children in their attainment or progress on the social/behavioural subscale concerned.

Appendix 4

Pre-School Type Effects

	Self-Regulation		Pro-social Behaviour		Conduct Problems		Anxious Behaviour		Social Isolation		Social Competence	
	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress	Attainment	Progress
Compared to Reception group												
Nursery class/school												
Playgroup				-		+						
Private Day Nursery	-			-	+	+						
Reception Class					+	+						

The above table shows the impact of each type of pre-school provision on children's social/behavioural attainment and progress by comparing the scores of children who attended reception group provision with children who attended the other main types of pre-school provision on each of the subscales.

Key;

‘+’ = Children from this particular type of pre-school appeared to attain significantly higher scores or make more progress across the P1 and P2 period than home children, on the social/behavioural subscale concerned.

‘-’ = Children from this particular type of pre-school appeared to attain significantly lower scores or make significantly less progress across the P1 and P2 period than children who attended reception group, on the relevant subscale.

Where a cell remains blank, this means that there appeared to be no difference in the attainment or progress of children who attended reception group and other types of pre-school provision on the social/behavioural subscale concerned.

Appendix 5 Goodman factor results

The first 25 items of the Social Behaviour Questionnaire come from Goodman's Strengths and Difficulties Questionnaire and hence analysis of the five factors for this more limited questionnaire are possible and are presented in this appendix.

Regression Analyses for Goodman's Factor; Pro-social Behaviour

The Pro-social behaviour factor includes items that measure children's consideration, sharing, helpfulness towards someone who is ill, kindness to younger children and teachers.

Pro-social Behaviour Attainment (Home versus Pre-school)

$R^2 = .11$

Adj $R^2 = .09$

$F(13, 735) 6.87, p < .0001$

	Beta	Significance
Child Variables		
Gender	-.25	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.08	.020
Behavioural Problems with Treatment	-.03	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.07	ns
Skilled Non-Manual	-.11	.047
Skilled Manual	.01	ns
Semi-Skilled	-.10	.027
Unskilled	.02	ns
Unemployed	-.08	ns
Area Child Poverty Mean	-.09	.021
Parental Variables		
Fathers' Employment (<i>compared with Full time</i>)		
Part time	-.09	.014
Self Employed	-.02	ns
Father not resident	-.02	ns

Girls attained higher scores than boys on the pro-social subscale at the end of year 2. Children who had behavioural problems in their first three years without treatment attained lower scores on pro-social than children who did not have any previous behavioural problems.

Compared with children from a professional background, children from a skilled non-manual or semi-skilled background scored lower on pro-social behaviour. Children from areas with greater child poverty scored lower on pro-social than children from relatively more affluent areas.

Fathers' employment status was related to children's attainment on pro-social at the end of P2, where compared to children whose fathers are employed full time, children whose fathers are employed part time attained lower scores on pro-social.

There appeared to be no difference between home children and children who attended any type of pre-school in relation to pro-social attainment at the end of P2.

Pro-social Behaviour Progress (Home versus Pre-school)

R²= .23

Adj R²= .22

F (7, 565) 24.26, p< .0001

	Beta	Significance
P1 Social Development		
Cooperation and Conformity	.27	.000
Peer Empathy	.15	.004
Child Variables		
Gender	-.18	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.09	.02
Behavioural Problems with Treatment	.05	ns
Socio-Economic Status		
Area Child Poverty Mean	-.10	.010
Childcare Characteristics		
Group care	-.08	.036

Children who had higher scores on cooperation and conformity at the start of P1 made more progress on pro-social during P1 and P2. Children who were more empathetic with their peers at the start of P1 made more progress on pro-social during P1 and P2.

Girls made more progress than boys on pro-social across the P1 and P2 period. Children who had behavioural problems without treatment in their first three years made less progress on pro-social than children who did not have behavioural problems in their early years.

Children who live in areas of greater deprivation made less progress on pro-social than children from relatively more affluent areas.

Children who experienced more group care in their first three years made less progress on pro-social across P1 and P2.

There appeared to be no difference between home children and children who attended the different types of pre-school in relation to pro-social progress during P1 and P2.

Pro-social Behaviour Progress (Pre-school Type)

R²= .31

Adj R²= .28

F (24, 461) 8.80, p< .0001

	Beta	Significance
P1 Social Development		
Cooperation and Conformity	.37	.000
Child Variables		
Gender	-.16	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	-.09	.019
Behavioural Problems with Treatment	.04	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	-.09	ns
Playgroup	-.20	.002
Private Day Nursery	-.26	.000
Reception Class	-.18	.003
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	-.09	ns
Skilled Non-Manual	-.10	ns
Skilled Manual	.01	ns
Semi-Skilled	-.03	ns
Unskilled	-.01	ns
Unemployed	-.13	.008
Area Child Poverty Mean	-.09	.045
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	.05	ns
16 Academic	.15	.004
18 Vocational	.11	.016
18 Academic	.13	.005
Degree and Above	.09	ns
Father Not Resident	.07	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	.01	ns
High	.10	.026
Pre-school Characteristics		
Composition/Child Peer Sociability	-.08	.047

Children who scored higher on cooperation and conformity at the beginning of P1 made more progress on pro-social during P1 and P2.

Girls made more progress on pro-social during P1 and P2 than boys. Children who had behavioural problems without treatment in their first three years made less progress on pro-social than children who did not have any behavioural problems.

Compared with children from a professional background, children from an unemployed background made less progress on pro-social during P1 and P2. Children from areas where there is greater poverty made less progress on pro-social than children from more affluent areas.

Compared with children whose fathers do not have any qualifications, children whose fathers have 16 academic, 18 vocational or 18 academic qualifications made more progress on pro-social during P1 and P2.

Children who had a high amount of play with friends at home in their first three years made more progress on pro-social than children who did not have any home play.

Children whose pre-school peer group were more sociable made less progress on pro-social during P1 and P2.

Compared with children who attended reception groups, children who attended playgroups, private day nurseries or reception classes appeared to make less progress on pro-social during P1 and P2.

Regression Analyses for Goodman's factor; Hyperactivity

The hyperactivity factor refers to how restless, overactive, fidgeting, distracted and attentive children appeared to be.

Hyperactivity Attainment (Home versus Pre-school)

R²= .19

Adj R²= .16

F (26, 723) 6.48, p< .0001

	Beta	Significance
Child Variables		
Age	-.16	.000
Gender	.24	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.10	.004
Behavioural Problems with Treatment	.06	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.11	ns
Skilled Non-Manual	.12	.035
Skilled Manual	.10	ns
Semi-Skilled	.14	.005
Unskilled	.04	ns
Unemployed	.11	.018
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.02	ns
16 Academic	-.04	ns
18 Vocational	-.04	ns
18 Academic	-.03	ns
Degree and Above	-.11	.029
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.03	ns
16 Academic	-.05	ns
18 Vocational	-.02	ns
18 Academic	-.10	.006
Degree and Above	-.09	ns
Father Not Resident	.001	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.07	.040
Self Employed	.02	ns
Family Variables		
Developmental Event	-.12	.001
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.08	.039
High	-.09	.022

Younger children and boys were more hyperactive at the end of P2 than older children and girls respectively. Children who had behavioural problems but did not receive treatment in their first three years were more hyperactive than children who did not have previous behavioural problems.

Compared with children from a professional background, children from skilled non-manual, semi-skilled or unemployed backgrounds attained higher scores on hyperactivity at the end of P2.

Children whose mothers have degree and above qualifications were less hyperactive at the end of P2 than children whose mothers do not have any qualifications. Children whose fathers have 18 academic qualifications were less hyperactive than children whose fathers do not have any qualifications. Compared with children whose fathers are employed full time, children whose fathers are employed on a part time basis were more hyperactive at the end of P2.

Children who experienced an event in their first three years that could potentially disrupt normal development were more hyperactive at the end of P2 than children who did not experience an event.

Children who had any amount of peer play at home were less hyperactive at the end of P2 than children who did not have any peer play at home.

Hyperactivity Progress (Home versus Pre-school)

R²= .40

Adj R²= .38

F (26, 611) 15.76, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.44	.000
Cooperation and Conformity	-.13	.009
Sociability	.13	.001
Child Variables		
Gender	.16	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.08	.017
Behavioural Problems with Treatment	.02	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.05	ns
Playgroup	.10	.014
Private Day Nursery	.14	.001
Reception Class	.12	.003
Reception Group	-.01	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.15	.006
Skilled Non-Manual	.15	.004
Skilled Manual	.14	.006
Semi-Skilled	.13	.002
Unskilled	.08	.049
Unemployed	.14	.001
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.07	ns
18 Vocational	-.08	.026
18 Academic	-.12	.001
Degree and Above	-.10	.027
Father Not Resident	-.06	ns
Family Variables		
Developmental Event	-.07	.034
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.05	ns
High	-.12	.001

Children who had greater independence and concentration, or cooperation and conformity at the beginning of P1 made less progress on hyperactivity during the P1 and P2 period. Children who were more sociable at the start of P1 made more progress on hyperactivity during P1 and P2.

Boys made more progress than girls on hyperactivity across the P1 and P2 period. Children who had behavioural problems that were untreated in their first three years made more progress on hyperactivity than children who did not have previous behavioural problems.

Children from a professional background made less progress on hyperactivity than children from all other socio-economic backgrounds during P1 and P2.

Children whose fathers do not have any qualifications made more progress on hyperactivity than children whose fathers have 18 vocational, 18 academic or degree and above qualifications.

Children who experienced a developmental event in their first three years made more progress on hyperactivity than children who did not experience an event.

Compared with children who did not have any peer play at home, children who had a high amount of home play made less progress on hyperactivity during P1 and P2.

Children who attended playgroups, private day nurseries or reception classes appeared to make more progress on hyperactivity than home children during P1 and P2.

Hyperactivity Progress (Pre-school Type)

R²= .42

Adj R²= .38

F (33, 473) 10.46, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.39	.000
Cooperation and Conformity	-.12	.034
Sociability	.10	.017
Child Variables		
Gender	.15	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.08	.039
Behavioural Problems with Treatment	.04	ns
Pre-school (<i>compared with Reception Group</i>)		
Nursery Class/School	.08	ns
Playgroup	.16	.007
Private Day Nursery	.22	.000
Reception Class	.15	.010
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.13	.029
Skilled Non-Manual	.12	.042
Skilled Manual	.10	ns
Semi-Skilled	.10	ns
Unskilled	.06	ns
Unemployed	.13	.007
Parental Variables		
Mothers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.05	ns
16 Academic	-.10	ns
18 Vocational	-.12	.013
18 Academic	-.06	ns
Degree and Above	-.15	.018
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.04	ns
16 Academic	-.06	ns
18 Vocational	-.08	ns
18 Academic	-.13	.001
Degree and Above	-.11	ns
Father Not Resident	-.22	.006
Family Variables		
Developmental Event	-.12	.002
Lone Parent	.18	.018
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.04	ns
High	-.12	.003
Regular Bedtime	.10	.009
Childcare Characteristics		
Group care	.08	.034

Children who had greater independence and concentration, or cooperation and conformity at the beginning of P1 made less progress on hyperactivity during the P1 and P2 period. Children who were more sociable at the start of P1 made more progress on hyperactivity during P1 and P2.

Boys made more progress than girls on hyperactivity across the P1 and P2 period. Children who had behavioural problems that were untreated in their first three years made more progress on hyperactivity than children who did not have previous behavioural problems.

Compared with children from a professional background, children from an intermediate, skilled non-manual or unemployed background made more progress on hyperactivity during P1 and P2.

Compared with children whose mothers do not have any qualifications, children whose mothers have 18 vocational or degree and above qualifications made less progress on hyperactivity during P1 and P2. Children whose fathers do not have any qualifications made more progress on hyperactivity than children whose fathers have 18 academic qualifications or are not resident at home with the child.

Children who experienced a developmental event in their first three years made more progress on hyperactivity than children who did not experience an event. Children from a lone parent family made more progress on hyperactivity than children from a two-parent family.

Compared with children who did not have any peer play at home, children who had a high amount of home play made less progress on hyperactivity during P1 and P2. Children who had a regular bedtime in their first three years made more progress on hyperactivity than children who did not have a bedtime routine.

Children who experienced more group care in their early years made more progress on hyperactivity across the P1 and P2 period.

Compared with children who attended reception groups, children who attended playgroups, private day nurseries or reception classes appeared to make more progress on hyperactivity during P1 and P2.

Regression Analyses for Goodman's factor; Emotional Symptoms

This factor refers to how worried, unhappy, tearful, nervous or clingy children tend to be. It is identical to the previous factor, Anxious Behaviour.

Emotional Symptoms Attainment (Home versus Pre-school)

$R^2 = .04$

Adj $R^2 = .03$

F (9, 668) 2.92, $p < .01$

	Beta	Significance
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.09	.014
Behavioural Problems with Treatment	.05	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	-.15	.012
Playgroup	-.13	.017
Private Day Nursery	-.12	.030
Reception Class	-.08	ns
Reception Group	-.08	ns
Home Variables		
Regular Bedtime	-.09	.019
Childcare Characteristics		
Relative care	-.08	.033

Compared with children who did not have any behavioural problems in their first three years, children who had behavioural problems without treatment scored higher on emotional symptoms at the end of P2.

Children who had a regular bedtime scored lower on emotional symptoms than children who did not have a bedtime routine.

Children who experienced more care by a relative during their first three years attained lower scores on emotional symptoms at the end of P2.

Compared with home children, children who attended nursery classes/schools, playgroups or private day nurseries appeared to score lower on emotional symptoms.

Emotional Symptoms Progress (Home versus Pre-school)

R²= .06

Adj R²= .05

F (7, 636) 6.06, p< .0001

	Beta	Significance
P1 Social Development		
Sociability	-.21	.000
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.01	ns
Skilled Non-Manual	.04	ns
Skilled Manual	.11	.034
Semi-Skilled	.06	ns
Unskilled	.10	.028
Unemployed	.03	ns

Children who scored higher on sociability at the beginning of P1 made less progress on emotional symptoms during P1 and P2.

Compared with children from a professional background, children from a skilled manual or unskilled background made more progress on emotional symptoms during P1 and P2.

There appeared to be no difference between home children and pre-school children on emotional symptoms progress during P1 and P2.

Emotional Symptoms Progress (Pre-school Type)

R²= .04

Adj R²= .03

F (6, 500) 3.77, p< .01

	Beta	Significance
P1 Social Development		
Sociability	-.16	.000
Home Variables		
Home Learning Environment	-.11	.013

Children who scored higher on sociability at the beginning of P1 made less progress on emotional symptoms during P1 and P2.

Children from homes rated higher on the home learning index made less progress on emotional symptoms across the P1 and P2 period.

There appeared to be no difference between children who attended different types of pre-school in relation to emotional symptoms during P1 and P2.

Regression Analyses for Goodman's factor; Conduct Problems.

The subscale, conduct problems, refers to maladaptive behaviours such as temper tantrums, disobedience, fighting, bullying, lying and stealing. A higher score indicates a greater amount of these behaviours.

Conduct Problems Attainment (Home versus Pre-school)

R²= .14

Adj R²= .12

F (19, 729) 6.38, p< .0001

	Beta	Significance
Child Variables		
Gender	.13	.000
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.14	.000
Behavioural Problems with Treatment	.06	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.07	ns
Playgroup	.04	ns
Private Day Nursery	.16	.000
Reception Class	.17	.000
Reception Group	.08	.035
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.03	ns
16 Academic	-.05	ns
18 Vocational	-.03	ns
18 Academic	-.07	ns
Degree and Above	-.13	.002
Father Not Resident	.03	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.18	.000
Self Employed	-.01	ns
Home Variables		
Peer Play at home (<i>compared with none</i>)		
Low	-.05	ns
High	-.10	.013
Home Variables		
Home Learning Environment	-.12	.001

Boys attained higher scores on conduct problems than girls at the end of P2. Children who had behavioural problems without treatment in their first three years attained higher scores on conduct problems than children who did not have previous behavioural problems.

Compared with children whose fathers do not have any qualifications, children whose fathers have degree and above qualifications scored lower on conduct problems. Children whose fathers are employed full time had fewer conduct problems at the end of P2 than children whose fathers are employed part time.

Compared with children who did not have any peer play at home, children who had a high level of home play had fewer conduct problems at the end of P2.

Children from homes that scored higher on the home learning index scored lower on conduct problems at the end of P2.

Compared with home children, children who attended private day nurseries, reception classes or reception groups appeared to attain higher scores on conduct problems at the end of P2.

Conduct Problems Progress (Home versus Pre-school)

R²= .25

Adj R²= .22

F (20, 617) 10.01, p< .0001

	Beta	Significance
P1 Social Development		
Cooperation and Conformity	-.16	.001
Conduct problems	.21	.000
Child Variables		
Gender	.09	.017
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.12	.001
Behavioural Problems with Treatment	.05	ns
Pre-school (<i>compared with Home Children</i>)		
Nursery Class/School	.012	ns
Playgroup	.02	ns
Private Day Nursery	.11	.011
Reception Class	.14	.001
Reception Group	.01	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.07	ns
Skilled Non-Manual	.12	.034
Skilled Manual	.08	ns
Semi-Skilled	.06	ns
Unskilled	.04	ns
Unemployed	.10	.029
Parental Variables		
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.16	.000
Self Employed	.02	ns
Father not resident	.03	ns
Home Variables		
Home Learning Environment	-.12	.001

Children who scored higher on cooperation and conformity at the start of P1 made less progress on conduct problems during P1 and P2. Children who scored higher on conduct problems at the beginning of P1 made more progress on conduct problems during P1 and P2.

Boys made more progress than girls on conduct problems. Children who had behavioural problems without treatment in their first three years made more progress on conduct problems during P1 and P2 compared with children who did not have any behavioural problems.

Compared with children from a professional background, children from a skilled non-manual or unemployed background made more progress on conduct problems across the P1 and P2 period.

Children whose fathers are employed full time made less progress on conduct problems than children whose fathers are employed part time.

Children from homes rated higher on the home learning index made less progress on conduct problems across the P1 and P2 period.

Compared with home children, children who attended private day nurseries or reception classes appeared to make more progress on conduct problems across the P1 and P2 period.

Conduct Problems Progress (Pre-school Type)

R²= .29

Adj R²= .25

F (27, 479) 7.13, p< .0001

	Beta	Significance
P1 Social Development		
Cooperation and Conformity	-.13	.017
Conduct problems	.25	.000
Child Variables		
<i>Behavioural Problems (compared with none)</i>		
Behavioural Problems without Treatment	.13	.002
Behavioural Problems with Treatment	.02	ns
Pre-school (compared with Reception Group)		
Nursery Class/School	-.01	ns
Playgroup	.02	ns
Private Day Nursery	.16	.012
Reception Class	.15	.018
Socio-Economic Status	.11	ns
Parental SES (compared with Professional)		
Intermediate	.11	ns
Skilled Non-Manual	.16	.014
Skilled Manual	.08	ns
Semi-Skilled	.07	ns
Unskilled	.03	ns
Unemployed	.10	.039
Parental Variables		
Mothers' Qualifications (compared with none)		
16 Vocational	-.02	ns
16 Academic	-.06	ns
18 Vocational	-.11	.037
18 Academic	-.04	ns
Degree and Above	-.15	.023
Fathers' Employment (compared with Full time)		
Part time	.14	.000
Self Employed	-.02	ns
Father not resident	.01	ns
Home Variables		
Peer Play at home (compared with none)		
Low	-.03	ns
High	-.18	.001
Peer Play away from home (compared with none)		
Low	.11	.036
High	.17	.001
Home Learning Environment	-.12	.003

Children who scored higher on cooperation and conformity at the start of P1 made less progress on conduct problems during P1 and P2. Children who scored higher on conduct problems at the beginning of P1 made more progress on conduct problems during P1 and P2.

Children who had behavioural problems without treatment in their first three years made more progress on conduct problems during P1 and P2 compared with children who did not have any behavioural problems.

Compared with children from a professional background, children from a skilled non-manual, or unemployed background made more progress on conduct problems across the P1 and P2 period.

Children whose mothers have 18 vocational or degree and above qualifications made less progress on conduct problems than children whose mothers do not have any qualifications. Children whose fathers are employed full time made less progress on conduct problems than children whose fathers are employed part time.

Compared with children who did not have any peer play at home, children who had a high amount of such play made less progress on conduct problems during P1 and P2. Children who had any amount of peer play away from home made more progress on conduct problems during P1 and P2 than children who did not have any peer play away from home. Children from homes rated higher on the home learning index made less progress on conduct problems across the P1 and P2 period.

Compared with children who attended reception groups, children who attended private day nurseries or reception classes appeared to make more progress on conduct problems during P1 and P2.

Regression Analyses for Goodman's factor; Peer Problems.

This subscale, peer problems, refers to how well a child gets on with other children, if he or she is liked by other children and if the child interacts better with adults than peers. A higher score indicates a greater amount of peer problems.

Peer Problems Attainment (Home versus Pre-school)

$R^2 = .06$

Adj $R^2 = .05$

$F(15, 740) 3.39, p < .0001$

	Beta	Significance
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.10	.005
Behavioural Problems with Treatment	.05	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.06	ns
Skilled Non-Manual	.14	.012
Skilled Manual	.11	.033
Semi-Skilled	.18	.000
Unskilled	.08	.045
Unemployed	.10	.026
Parental Variables		
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.12	.001
Self Employed	.02	ns
Father not resident	.02	ns
ELB Area (<i>compared with Southern</i>)		
Belfast	.04	ns
Western	.01	ns
North Eastern	.06	ns
South Eastern	.11	.009

Children who had behavioural problems without treatment in their first three years attained higher scores on peer problems at the end of P2 than children who did not have previous behavioural difficulties.

Children from a professional background attained lower scores on peer problems than children from all other socio-economic groups with the exception of children from an intermediate background.

Children whose fathers are employed full time had fewer peer problems at the end of P2 than children whose fathers are employed part time.

Children from the South Eastern ELB area appeared to have more peer problems at the end of P2 than children from the Southern ELB area.

There appeared to be no difference between home children and children who attended any type of pre-school provision in terms of attainment on peer problems at the end of P2.

Peer Problems Progress (Home versus Pre-school)

R²= .14

Adj R²= .11

F (22, 621) 4.46, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.17	.000
Conduct problems	.10	.017
Child Variables		
Behavioural Problems (<i>compared with none</i>)		
Behavioural Problems without Treatment	.11	.004
Behavioural Problems with Treatment	.04	ns
Socio-Economic Status		
Parental SES (<i>compared with Professional</i>)		
Intermediate	.05	ns
Skilled Non-Manual	.12	ns
Skilled Manual	.06	ns
Semi-Skilled	.14	.007
Unskilled	.07	ns
Unemployed	.05	ns
Parental Variables		
Fathers' Qualifications (<i>compared with none</i>)		
16 Vocational	-.04	ns
16 Academic	-.11	.020
18 Vocational	-.07	ns
18 Academic	-.02	ns
Degree and Above	-.08	ns
Father Not Resident	.002	ns
Fathers' Employment (<i>compared with Full time</i>)		
Part time	.10	.007
Self Employed	.02	ns
ELB Area (<i>compared with Southern</i>)		
Belfast	.07	ns
Western	.02	ns
North Eastern	.09	ns
South Eastern	.12	.008

Children who had higher independence and concentration at the start of P1 made less progress on peer problems during P1 and P2. Children who scored higher on conduct problems at the beginning of P1 made more progress on peer problems during P1 and P2.

Compared with children who did not have any previous behavioural problems, children who had behavioural problems without treatment in their first three years made more progress on peer problems during P1 and P2.

Compared with children from a professional background, children from a semi-skilled background made more progress on peer problems during P1 and P2.

Compared with children whose fathers do not have qualifications, children whose fathers have 16 academic qualifications made less progress on peer problems. Children whose fathers are

employed part time made more progress on peer problems than children whose fathers are employed full time.

Children from the South Eastern ELB area appeared to make more progress on peer problems than children from the Southern ELB area across the P1 and P2 period.

There appeared to be no difference between home children and children who attended the different types of pre-school provision in relation to progress made on peer problems.

Peer Problems Progress (Pre-school Type)

R²= .16

Adj R²= .12

F (27, 485) 3.52, p< .0001

	Beta	Significance
P1 Social Development		
Independence and Concentration	-.19	.000
Child Variables		
Behavioural Problems (compared with none)		
Behavioural Problems without Treatment	.13	.002
Behavioural Problems with Treatment	.02	ns
Pre-school (compared with Reception Group)		
Nursery Class/School	.04	ns
Playgroup	.10	ns
Private Day Nursery	.17	.035
Reception Class	.06	ns
Socio-Economic Status		
Parental SES (compared with Professional)		
Intermediate	.07	ns
Skilled Non-Manual	.16	.016
Skilled Manual	.08	ns
Semi-Skilled	.17	.002
Unskilled	.09	ns
Unemployed	.07	ns
Parental Variables		
Fathers' Qualifications (compared with none)		
16 Vocational	-.01	ns
16 Academic	-.09	ns
18 Vocational	-.09	ns
18 Academic	-.06	ns
Degree and Above	-.07	ns
Father Not Resident	-.21	.013
Fathers' Employment (compared with Full time)		
Part time	.14	.001
Self Employed	.02	ns
Family Variables		
Lone Parent	.22	.007
Pre-school Characteristics		
Pre-school Leader qualifications (compared with none)		
NIPPA	-.02	ns
Montessori	-.003	ns
BTEC/NNEB	.15	.050
Bachelor of Arts/Bachelor of Science		
Bachelor of Education	.14	ns

Children who had higher independence and concentration at the start of P1 made less progress on peer problems during P1 and P2.

Compared with children who did not have any previous behavioural problems, children who had behavioural problems without treatment in their first three years made more progress on peer problems during P1 and P2.

Children from skilled non-manual or semi-skilled backgrounds made more progress on peer problems than children from professional backgrounds.

Children whose fathers do not have any qualifications made more progress on peer problems across P1 and P2 than children whose fathers do not live at home with the child. Children whose fathers are employed part time made more progress on peer problems than children whose fathers are employed on a full time basis.

Children from a lone parent family made more progress on peer problems than children from a two-parent family.

Compared with children who attended pre-school where the pre-school leader does not have any qualifications, children who attended pre-school where the leader has BTEC/NNEB qualifications made more progress on peer problems.

Children who attended private day nurseries appeared to make more progress on peer problems than children who attended reception groups.