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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 6

Characteristics of the Centres in the EPPE Sample: Observational Profiles

A Longitudinal Study funded by the DfEE
1997-2003

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Technical Paper 6
CHARACTERISTICS OF THE CENTRES IN THE EPPE SAMPLE: OBSERVATIONAL PROFILES

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Effective Provision of Pre-school Education

"EPPE"

Overview of the Project

This series of 12 reports describes the research on effective pre-school provision funded by the UK Department for Education & Employment (DfEE). Further details appear in Technical Paper 1 (Sylva, Sammons, Melhuish, Siraj-Blatchford & Taggart 1999). This longitudinal study assesses the attainment and development of children followed longitudinally between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care' (Siraj-Blatchford et al. 1997).

Both qualitative and quantitative methods (including multilevel modelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, 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 Northern Ireland.

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children.

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 British 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 about 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 which 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. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

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 Local Authority 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 Britain's pre-school education 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 EPPE project is thus the first large-scale British study on the effects of different kinds of pre-school provision and the impact of attendance at individual centres.

OVERVIEW OF RESEARCH METHODS

The EPPE project is a major study instituted in 1996 to investigate three issues which 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.

An educational effectiveness research design was chosen to investigate these topics because this enabled the research team to investigate 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 both entry to school (the start of Reception which children can enter between the ages of 4 and 5 plus) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to social and educational research with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, however, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided by Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997. These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

School effectiveness research during the 1970s and 1980s addressed the question "*Does the particular school attended by a child make a difference?*" (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (e.g. Luyten 1994; 1995; Hill & Rowe 1996; Sammons 1996). This is the first research to examine the impact of individual pre-school centres using multilevel approaches. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

The 8 aims of the EPPE 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 completion (or near completion) of Key Stage 1.

- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.

- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.

- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).

- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.

- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.

- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 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: regions, centres and children

In order to maximise the likelihood of identifying the effects of individual centres and also the effects of various types of provision, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]. This will enable comparison of findings across different geographical contexts.)

- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools, nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison of centre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25 centres, from the six types of provision, thus giving a total sample of approximately 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141 centres and over 3000 children.

[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

Children and their families were selected randomly in each centre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision, it was proposed to recruit an additional sample of 500 children pre-school experience from the reception classes which EPPE children entered. However in the five regions selected a sample of only 200+ children was available for this 'home' category.

The progress and development of pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. Details about length of sessions, number of sessions normally attended per week and child attendance 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

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: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to report themselves on their attitudes to school.

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

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' to centres and key staff. 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. The ECERS includes the following sub-scales:

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

In order that the more educational aspects of English centres could be assessed, Sylva, Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Setting the centres in context

In addition to describing how each centre operated internally, qualitative interviews were conducted with centre managers to find out the links of each setting to local authority policy and training initiatives. Senior local authority officers from both Education and Social Services were also interviewed to find out how each local authority implemented Government early years policy, especially the Early Years Development Plans which were established to promote education and care partnerships across providers in each local authority.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several "effective" pre-school centres (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception). This will add the fine-grained detail to how processes within centres articulate, establish and maintain good practice.

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be 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 identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

Analytic Strategy

The EPPE 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).

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions. The first phase of the analysis adopts these three levels in models which attempt to identify any centre effects at entry to reception class.

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 reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

After controlling for intake differences, the estimated impact of individual pre-school centres will be used to select approximately 12 ‘outlier’ centres from the 141 in the project for detailed case studies (see ‘Case Studies’ above). In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel 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 at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons, 1997). In the EPPE research it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school at age 7. The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural development for better or worse. This will allow the relative strength of any continuing effects of individual pre-school centre attendance to be ascertained, in comparison with the primary school influence.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Edward Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. 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 age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Northern Ireland. The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, 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. A series of 12 technical working papers will summarise the findings of the research.

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Characteristics of the Centres in the EPPE Sample: Observational Profiles

EXECUTIVE SUMMARY

The EPPE project investigates the characteristics of early childhood education and care through a variety of research methods; this paper reports on just two instruments. A 'centre profile' was created for each centre through systematic observation and questions to staff. The Early Childhood Environment Rating Scale: Revised (ECERS-R) was used in drawing up each centre's profile along with an extension to it based on the Desirable Learning Outcomes (ECERS-English Extension). The ECERS-R rating scale consisted of seven sub-scales which provide an overview of the pre-school environment, covering aspects of the setting from furnishings to individuality of care and the quality of social interactions (described more fully later). The ECERS-E describes the curriculum within the pre-school, including areas such as mathematics and literacy. Each sub-scale is comprised of a range of items describing 'quality' of the specific type of provision. Each item was rated 1 (inadequate) to 7 (excellent). The ECERS-R and ECERS-E are one approach to describing the 'processes' through which children are cared for and educated.

There are other important sources of information excluded here such as adult–child ratio, unit cost per child, and management of the centre. A fuller analysis of centres in the EPPE research will require the linking of the findings reported here with parent interview data, centre manager interview data and child outcome data when children enter reception class. This will occur in later papers in this series.

This paper describes the characteristics of the 141 centres attended by 3 and 4 year-old children in the EPPE sample. Averaged across all the centres, provision in the sample approached 'good' on the ECERS-R but the curricular profile developed for England (ECERS-E) showed that the learning opportunities in maths and science were limited and sometimes inadequate. However overall scores on ECERS indicate similar quality for much provision in England with that in other industrialised countries.

Considering type of provision, the LEA centres (nursery schools, nursery classes and nursery schools combined with care) had scores in the good-to-excellent range. Social services daycare were next, nearing the good range. However the playgroups and private day nurseries were consistently found to have scores in the 'minimal/adequate' range. These differences in quality are similar to recent Ofsted reports on variation in the quality of pre-school provision (Ofsted, 1999) and to a recent study using ECERS on 44 pre-school centres in London by Lera, Owen and Moss (1996).

This large sample of pre-school centres from different regions in England shows great variation in the curriculum and care on offer, the pedagogical strategies seen in interactions between children and staff, and in the resources available for children's play and learning. Comparisons between types suggest that a ratio of 1:8 as found in the private and voluntary sector do not guarantee high standards by themselves and that ratios of 1:13 in the LEA sector are not associated with low quality. However, the issue of ratio is inevitably confounded with type of preschool and other variation associated with type, e.g. qualifications of staff

Although centres offering full day care generally had lower ratings than those on a sessional basis, the LEA nursery schools which had changed from 'education only' to centres offering full day care and encouragement of parental involvement usually scored highest of all. Further it appeared that adding 'education' to more traditional local authority day care settings (usually one teacher or a peripatetic teacher) is not associated with higher quality. This implies that there is still some way to go before the ideal of combined education and care can be achieved and that the training of all staff is important.

ASSESSING PRE-SCHOOL ENVIRONMENTS

Researchers have been debating for years about the concept of 'quality' in early childhood education and care. Judgement of quality involves values and what is a 'high quality' centre to one parent may be quite low in the eyes of a local authority officer or indeed another parent. Munton, Mooney and Rowland's (1995) have suggested that there are six dimensions of quality: effectiveness, acceptability, efficiency, access, equity and relevance. The main thrust of the EPPE study (see technical paper 1) is on the 'effectiveness' aspect of quality as defined by Munton and his colleagues. Munton et al. (1995) further identified three basic dimensions in describing the early years setting. These are the **structure** which includes both facilities and human resources; the educational and care **processes** which children experience every day; and the **outcomes** or the longer term consequences of the education and care the child receives. The observational measures described in this technical paper focus on educational and care processes but also include some structure in their description of quality. That dimension of quality which relates to the **outcomes** for children will be addressed in later papers in the EPPE series.

One of the most widely used observational measures for describing the characteristics of early childhood education and care is the **Early Childhood Environment Rating Scale** (ECERS, now revised; Harms, Clifford & Cryer 1998). The revised ECERS-R has 43 items which are divided into 7 sub-scales. These sub-scales are space and furnishing, personal care routines, language and reasoning, activities, social interactions, organisation and routines, adults working together. Each item is rated on a 7 point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent). Completion of the ECERS usually involves approximately one day of observation, as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or seasonal outings). The word 'environment' in the rating scale is taken in its broadest sense to include social interactions, pedagogical strategies and relationships between children as well as adults and children. Matters of pedagogy are very much to the fore in ECERS-R. For example the sub-scale Organisation and Routine has an item 'Schedule' which gives high ratings to a balance between adult-initiated and child-initiated activities. In order to score a 5 the centre must have 'a balance between structure and flexibility' but a 7 requires 'variations to be made in the schedule to meet individual needs, for example a child working intensively on a project should be allowed to continue past the scheduled time'. Further attention to pedagogy can be found in the item Free Play where to earn a 5 centres must have 'free play occurring for a substantial portion of the day/session both indoors and outdoors' Although entitled 'Environmental Rating Scale' the ECERS-R describes processes of the educational and care environment even more than the physical space and materials on offer.

Construct validity for the original ECERS has been demonstrated in previous studies through its agreement with professional judgements and predictive validity through the results of child outcome measures applied to the 'graduates' of higher or lower quality provision (see Appendix A). Discriminant validity has been based on the ability of the items to distinguish between classrooms of varying quality which were assessed by trainers/experts. Reliability has been established in many studies carried out elsewhere on the ECERS and in general Kappa inter-rater agreement varies between .75 and .95. A summary of research papers on reliability and validity of the ECERS appears in Appendix A and reliability within the EPPE research is reported in the Methods section.

In the EPPE study, the ECERS-R was supplemented by a new rating scale (ECERS-Extension, Sylva, Siraj-Blatchford, Taggart and Colman, 1998), devised by the EPPE team based on the Desirable Learning Outcomes for 3 and 4 year-olds and pedagogical practices associated with it (Siraj-Blatchford and Wong, 1999). Both the ECERS-R and ECERS-E are based on a conceptual framework which takes account of pedagogical processes and curriculum.

As the ECERS was developed in the United States of America and intended for use in both care and educational settings, the EPPE team thought it necessary to devise a second early childhood environment rating scale which was focused on provision in Britain as well as good practice in catering for diversity (Sylva et al., 1998). The ECERS-E was devised after wide consultation with experts and piloted extensively. The ECERS-E consists of 4 sub-scales: literacy, mathematics, science and environment, and diversity. Both the ECERS-R and the ECERS-E will be described as they were applied in 141 pre-school settings across five regions in England.

Both ECERS ratings were carried out by a senior research officer responsible for the region. The research officers had, in every instance, experience of assessing children for at least 6 months in the centre before carrying out the ECERS observation and ratings. Moreover, each observer put aside a full day to complete the ECERS. This was necessary because the two rating scales contained very detailed information about curricular provision, pedagogy, planning, resources and relationships.

METHODS

Rating Scales: the Early Childhood Environment Rating Scale (ECERS-R) and the English Extension (ECERS-E)

Each pre-school centre was assessed using the ECERS-R and its extension. The ECERS-R consists of 7 sub-scales; each sub-scale is composed of 4-10 individual items which describe the 'quality' of provision along a continuum centred on materials, facilities, pedagogy or social interactions. The ECERS-R sub-scales are listed below with their titles and items. In this study the wording of the ECERS-R was adjusted very slightly to conform to current language use in the U.K.. Minor changes to the sub-scale titles were made and these appear in brackets:

Space and furnishings – items 1-8
Personal care routines (Personal care practices) – items 9-14
Language and reasoning – items 15-18
Activities (Pre-school activities) – items 19-28
Interaction (Social interaction) – items 29-33
Programme structure (Organisation and routines) – items 34-37
Parents and staffing (Adults working together) – items 38-43

The ECERS-E consists of 4 sub-scales:

Literacy – items 1-6
Mathematics – items 7-9
Science and environment – items 10-12
Diversity – items 13-15

The structure of the two environmental scales is presented on the following pages while examples of individual items in the ECERS-R and ECERS-E appear in Appendix B.

Procedure

All 141 centres involved in the EPPE study were rated on the ECERS-R and ECERS-E rating scales by the regional Research Officer. Completion of the ECERS involved one day of observation as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or seasonal outings).

Structure of the Environmental Rating Scale

I. Space and furnishings
1. Indoor space
2. Furniture for routine care, play and learning
3. Furnishings for relaxation and comfort
4. Room arrangement for play
5. Space for privacy
6. Child related display
7. Space for gross motor
8. Gross motor equipment

II. Personal care practices
9. Greeting/departing
10. Meals/snacks
11. Nap/rest
12. Toileting/diapering
13. Health practices
14. Safety practice

III. Language and reasoning
15. Books and pictures
16. Encouraging children to communicate
17. Using language to develop reasoning skills
18. Informal use of language

IV. Pre-school activities
19. Fine motor
20. Art
21. Music/movement
22. Blocks
23. Sand/water
24. Dramatic play
25. Nature/science
26. Math/number
27. Use of TV, video, and/or computers
28. Promoting acceptance of diversity

V. Social interaction
29. Supervision of gross motor activities
30. General supervision of children (other than gross motor)
31. Discipline
32. Staff-child interactions
33. Interactions among children

VI. Organisation and routines
34. Schedule
35. Free play (free choice)
36. Group time
37. Provisions for children with disabilities

VII. Adults working together
38. Provisions for parents
39. Provisions for personal needs of staff
40. Provisions for professional needs of staff
41. Staff interaction and cooperation
42. Supervision and evaluation of staff
43. Opportunities for professional growth

(Harms, T., Clifford, M. & Cryer, D., 1998)

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix B):

- A score of 1 must be given if any indicator under 1 is scored “Yes”.
- A rating of 2 is given when all indicators under 1 are scored “No” and at least half of the indicators under 3 are scored “Yes”.
- A rating of 3 is given when all indicators under 1 are scored “No” and all indicators under 3 are scored “Yes”.
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored “Yes”.
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored “Yes”.
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored “Yes”.
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored “Yes”.
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet. Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores. Harms, T., Clifford, M. & Cryer, D. (1998)

Structure of the Environmental Rating Scale - Extension

I. Literacy	II. Mathematics	III. Science and Environment	IV. Diversity
1. 'Environmental print': Letters and words	7. Counting and the application of counting	10. Natural materials	13. Individual learning needs
2. Book and literacy areas	8. Reading and writing simple numbers	11. Areas featuring science/science resources	14. Gender equity
3. Adult reading with the children	9a. Mathematical Activities: Shape and space (select either 9a or 9b for evidence; choose the one which you observed most)	12a. Science Activities: Science processes: Non Living (select one of a, b, c for evidence; choose one you observed most)	15. Multicultural Education
4. Sounds in words	9b. Mathematical Activities: Sorting, matching and comparing	12b. Science Activities: Science processes: Living processes and the world around us	
5. Emergent writing/mark making		12c. Science Activities: Science processes: Food preparation	
6. Talking and Listening			

(Sylva, K., Siraj-Blatchford, I., Taggart, B., & Colman, P., 1998)

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix B):

- A score of 1 must be given if any indicator under 1 is scored "Yes".
- A rating of 2 is given when all indicators under 1 are scored "No" and at least half of the indicators under 3 are scored "Yes".
- A rating of 3 is given when all indicators under 1 are scored "No" and all indicators under 3 are scored "Yes".
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored "Yes".
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored "Yes".
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored "Yes".
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored "Yes".
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet.

Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

Occasionally centre records were consulted as evidence for rating an item. There were a number of items in the ECERS-R and –E which were not relevant for the centres in this sample, e.g. provision for 'nap/rest' was only considered to be relevant in 27 out of the 141 centres. Where items were not appropriate the item was excluded from further analysis, i.e. sub-scale scores were calculated from only the items which were scored/relevant. Inter-observer reliability was established to be of a high standard.

Inter-observer reliability

Before using observational rating scales in research it is necessary to establish inter-observer agreement. Good levels of agreement depend on a sound choice of instruments and good researcher training. EPPE observers spent many days in each centre before formal observation began. All research officers were trained extensively on the observational instruments and research officer from the University of Cardiff acted as the 'standard' in a reliability exercise. In each region five centres were observed by the regional research officer and the person acting as 'standard'. Each centre was observed and rated over the course of a whole day. At the end of the day the two observers who had independently scored the ECERS-R and ECERS-E compared their scores on the same observations. Hence reliability was established for two instruments in 25 centres chosen randomly throughout the regions.

The reliability for each pair of observers was computed on the basis of:

a) where each observer scored exactly the same point on a scale (% exact agreement)

b) a Kappa value was computed. Kappa is a statistic which measures the degree of agreement between two observers while allowing for the level of 'chance' agreement. The Kappa statistic is computed by the following formula:

$$\text{Kappa} = \frac{Ro - Rc}{1 - Rc}$$

where Ro = proportion agreement observed
Rc = proportion agreement that would occur by chance

The reliability figures broken down by ECERS-R, ECERS-E and combined ECERS for the 5 regions can be seen below.

ECERS

	% exact agreement	Kappa
West Midlands	82.0%	0.79
East Anglia	78.2%	0.75
North East	85.5%	0.83
Shire County	83.6%	0.81
Inner London	91.4%	0.90

ECERS-E

	% exact agreement	Kappa
West Midlands	88.4%	0.86
East Anglia	97.6%	0.97
North East	87.0%	0.85
Shire County	85.2%	0.83
Inner London	91.8%	0.90

Overall ECERS

	% exact agreement	Kappa
West Midlands	83.3%	0.81
East Anglia	84.0%	0.81
North East	86.0%	0.84
Shire County	84.0%	0.81
Inner London	91.4%	0.90

The results of this exercise indicated good to excellent inter-observer reliability in all regions.

Sample of regions and centres

The five regions in EPPE were strategically chosen to represent urban, suburban, and rural areas and also to include neighbourhoods with social and ethnic diversity. All local authorities in the EPPE sample were divided into five sampling areas, usually geographic divisions that already existed. Official lists of playgroups, nursery classes, nursery schools, private day nurseries, social services/voluntary day nurseries, and nursery schools combining care and education were obtained with the help of the local early years co-ordinators in every authority. Within each sampling area, one of each type of provision was randomly selected, yielding approximately 25 centres of various types in each region. Some over- and under-sampling occurred in each category of provision because not all authorities had sufficient numbers of local authority day nurseries. The ECERS observations were carried out in each of the 141 centres in the full EPPE sample in the period May 1998 – June 1999. The final sample of centres can be seen in Table 1.

Table 1. Pre-school sample for main analysis

Type of provision	N
Nursery Classes	25
Playgroups	34
Private day nurseries	31
Local authority centres	24
Nursery schools	20
Combined centres	7

Summary of the different types of provision

For the main analysis pre-schools were divided into six types.

1. Local Education Authority nursery classes (n=25)
   These are part of primary schools, have an adult:child ratio of 1:13, (one in every two adults is normally a 4 year graduate qualified teacher and the other adult has had 2 years childcare training) and usually offer only half-day sessions in term time, 5 days/week.

2. Voluntary playgroups and / or pre - schools (n=34)
   These have an adult:child ratio of 1:8, (training of adults is variable from none to graduate level. The most common type of training is based on short Pre-school Learning Alliance courses). All offer sessional provision in term time. Many children attend fewer then 5 days/week. Playgroups usually have fewer resources (facilities, materials and sole use of space) than other types of centres.

3. Private day nurseries (n=31)
   These have an adult:child ratio of 1:8, (normally the adults have a two-year childcare training, but some have less training). All offer full day care for payment.

4. Local authority (day care) centres (n=24)
   These came from the social services day care tradition, although in recent years many have come under the authority of the LEA. Thirteen in this group combined care and education with one teacher per centre or a peripatetic teacher shared with other centres. Eleven centres have not officially incorporated education into care. The ratio is 1:8, (normally the adults have a two-year childcare training. The combined centres have a small input from a teacher), and all offer full day care.

5. Nursery schools (n=20)
   These are 'traditional' nursery schools under the LEA with adult:child ratios of 1:13, (the headteacher would be a 4 year graduate qualified teacher with an early years background, other staff would reflect nursery classes in training), usually offering half-day provision. One in this group was an 'Early Excellence Centre'.

6. Nursery schools combining education and care (n=7)
   These are similar to nursery schools but have developed their provision of extended care to include full day care and parent involvement. They would have adult:child ratio of 1:13, (staffing would be the same as nursery schools for the over 3s). Even though these centres were chosen as a stratified random sample four in this group were 'Early Excellence Centres'.

RESULTS

A score for each sub-scale was calculated for the ECERS-R and the ECERS-E using the following equation:

$$\text{Sub-scale score} = \frac{\text{Sum of scores for each (applicable) item in the sub-scale}}{\text{Number of items scored}}$$

Total ECERS-R and ECERS-E scores were then calculated by summing the mean sub-scale scores (7 and 4 sub-scales respectively). Some items were not considered to be applicable for the centres, most notably the 'nap/rest' item on the Personal care practices sub-scale was not relevant to 114 centres. Only relevant items (i.e. those that were rated) were used in the calculation of sub-scale scores, thus non-relevant items had no effect on the results.

Distribution of scores and an overview of the sub-scales

The total ECERS-R and total ECERS-E scores were normally distributed (see Figures 1 and 2 respectively) and met parametric assumptions. Analysis of Variance (ANOVA) tests with Tukey's HSD post hoc tests were employed to compare differences between types of centres for total ECERS-R and ECERS-E scores. Furthermore, with one exception, the mean sub-scale scores were normally distributed and therefore ANOVA and Tukey's HSD tests were also employed in the analysis of the sub-scales. The exception to this is the ECERS-E science and environment sub-scale. As the parametric assumptions are not satisfied for this sub-scale, Kruskal-Wallis tests were used to explore the differences, and Mann-Whitney tests were used to test the significance of pair-wise comparisons and these will be reported later.

Figure 1. Histogram of total ECERS-R scores

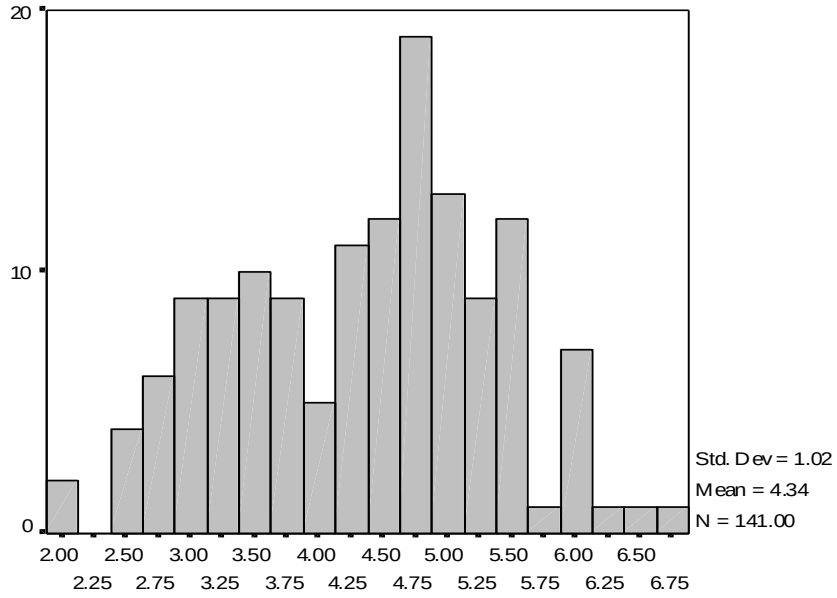


Figure 2. Histogram of total ECERS-E scores

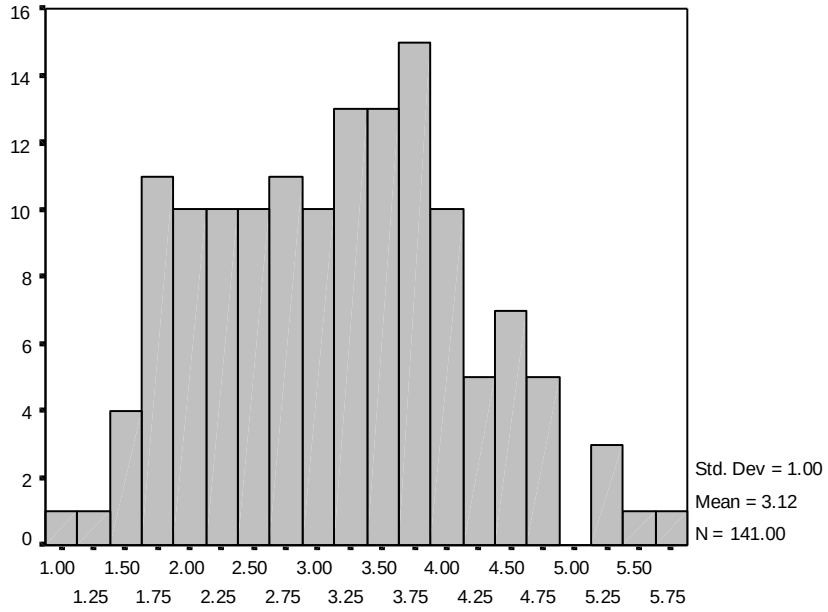


Figure 3 shows the means for the ECERS-R and the new scale based on Desirable Learning Outcomes, ECERS-E. The ECERS-R scores tend towards the top of the 'adequate' range and sometimes approach 'good'. The ECERS-E scores are more disappointing with provision for mathematics, science and diversity hovering around 'minimal' ratings. Note that these means are not weighted by proportion of children attending each type of provision.

Figure 3. Mean ECERS-R and ECERS-E scores

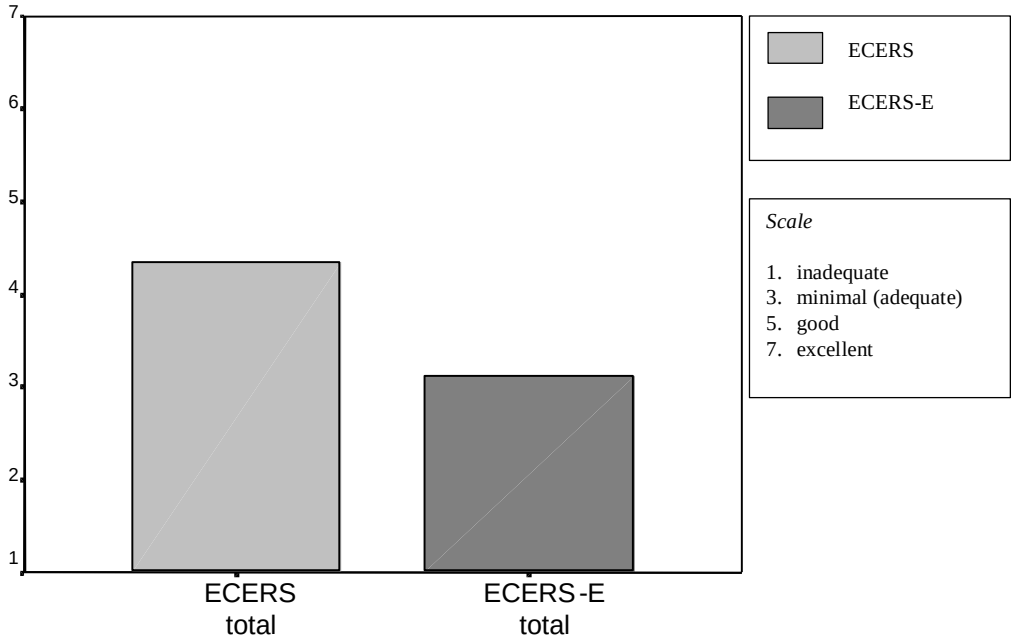
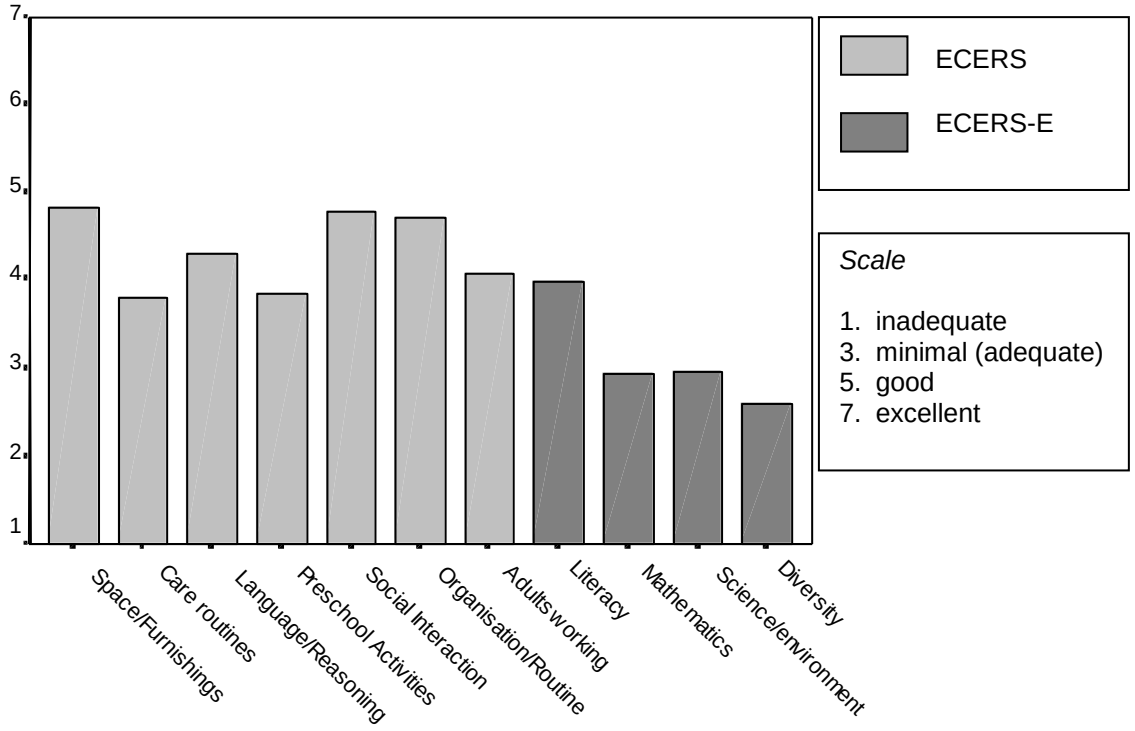


Figure 4 breaks down the two scales into their sub-scale components. The highest scores are found in 'social interactions', 'organisation and routines' and 'space and furnishings' while the lowest scores are seen in 'personal care', 'pre-school activities'. Although the ratings averaged across all types of provision are broadly satisfactory, closer inspection within types of provision reveals some striking differences. In this sample many centres were found to be exciting places where children were challenged and supported in their learning and where the interactions between staff and children were sensitive and enabling. Unfortunately, other centres were characterised by hasty planning and poor implementation of the curriculum.

Figure 4. ECERS-R and ECERS-E sub-scale scores

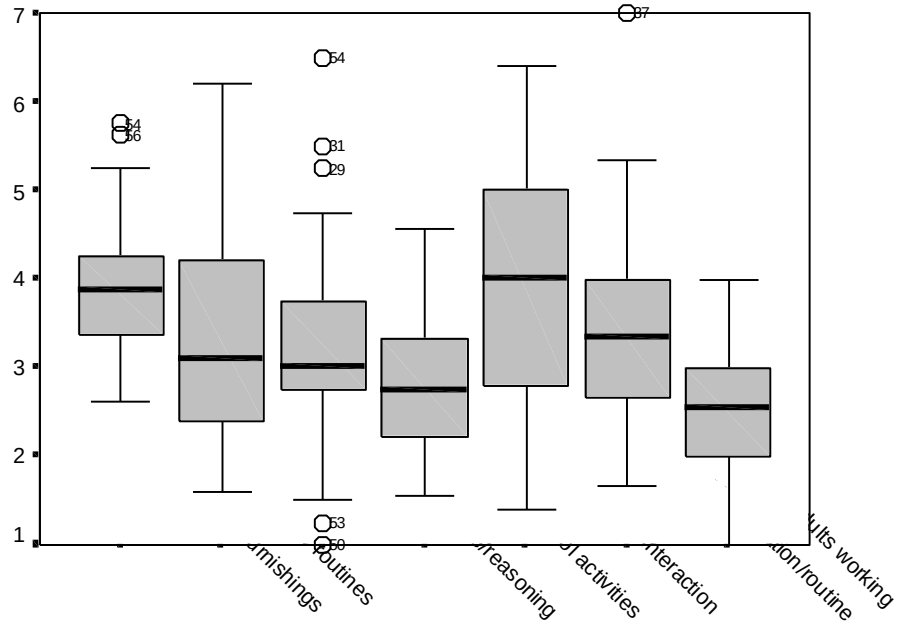


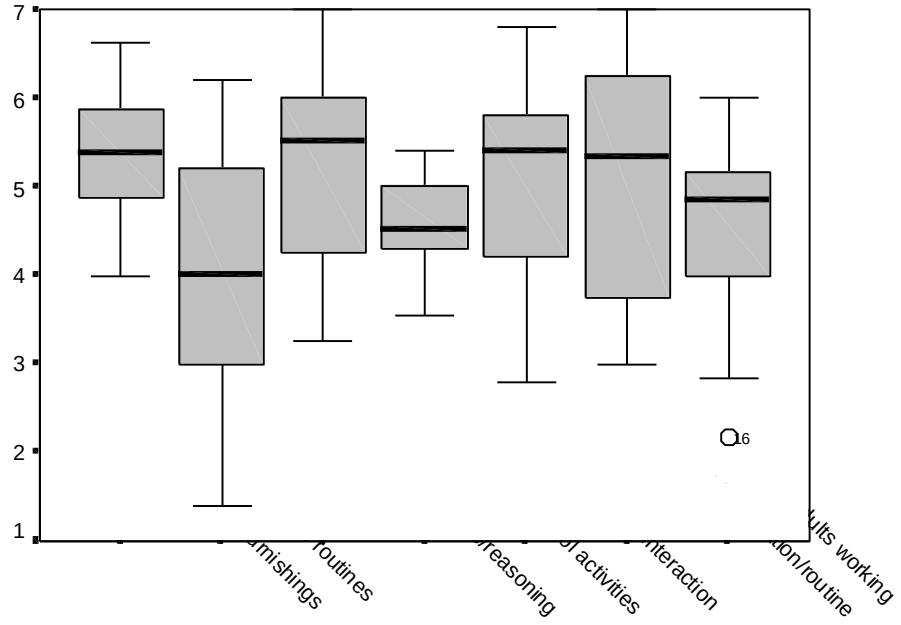
A descriptive profile of two settings: playgroups and nursery classes

As playgroups and nursery classes are the types of provision most commonly attended by 3 and 4-year-olds in England their ECERS-R profiles will be explored (see Figure 5). Playgroup provision is highest on the 'social interaction' sub-scale followed closely by 'space and furnishings'. They are weakest on 'adults working together'. Nursery classes also have their highest scores in 'social interactions' and 'space and furnishings' but they also have very good scores in 'language and reasoning' and 'organisation and routines'. Taken all together the nursery classes have higher scores overall when compared to playgroups and particular strength in language/reasoning and organisation/routine.

The comparative profiles of playgroups and nursery classes are similar to those found in an earlier study in London by Lera et al. (1996) who studied the ECERS profiles of 44 centres. Compared to Lera and colleagues, in this study playgroups were rated at a slightly lower level, but the particular strengths and weakness were the same. For example, the playgroups in this sample scored most highly on 'social interaction', and in Lera the social sub-scale was very high.

Figure 5. Box-plots of ECERS-R scores for playgroups (top) and nursery classes (bottom)





A comparison of pre-school environments according to type of provision

We turn now to the analyses on differences in the environment according to type of provision. Figure 6 shows that the three types of provision managed by the LEA had significantly higher scores for total ECERS-R when compared to other types of provision. A one-way ANOVA

revealed that there were pre-school differences in the total ECERS-R scores ($F_{5,135} = 29.01$, $p<.001$). Post hoc tests were carried out to identify exactly which pre-school types differed significantly from each other (see Appendix C). Local authority day centres, nursery classes, nursery schools and combined centres all had significantly higher scores than playgroups and private day nurseries. Additionally private day nurseries had a significantly higher total ECERS-R score than playgroups, and local authority centres had significantly lower total ECERS-R scores than nursery schools and combined centres.

We shall now consider ECERS-R sub-scales which focus specifically on aspects of the educational and care environment experienced by children and staff. Some sub-scales focus more on facilities while others describe pedagogical practices and the ways adults and children interact with one another in a purely social way. The pedagogy is described in terms of the balance between child-initiated activity and adult-led activities.

The trends seen in the ECERS-R total scores are fairly consistent throughout the sub-scale scores (see Figures 7-13). Of the six pre-school types, playgroups had the lowest mean sub-scale score for all 7 sub-scales; private day nurseries had the second lowest mean sub-scale scores for all sub-scales except language and reasoning in which they were rated slightly higher than local authority day nurseries. Nursery classes, nursery schools and combined centres were rated consistently high on all the sub-scales. One-way ANOVAs revealed that there were significant pre-school differences for 6 out of the 7 sub-scales (see Appendix D). (No significant pre-school differences were found in personal care routines.) Tukey's post hoc tests were again performed to identify which types of pre-school differed significantly from each other. The Tukey test results show that, in terms of quality measured on ECERS-R, the LEA provision generally scored highest followed by Local Authority day care, then private day nurseries, and finally playgroups. Although the pattern of significant pair-wise differences varied slightly across the sub-scales, in general post-hoc tests were similar to the Tukey test results for the total ECERS-R scores.

Figure 6. Total ECERS-R scores by pre-school type

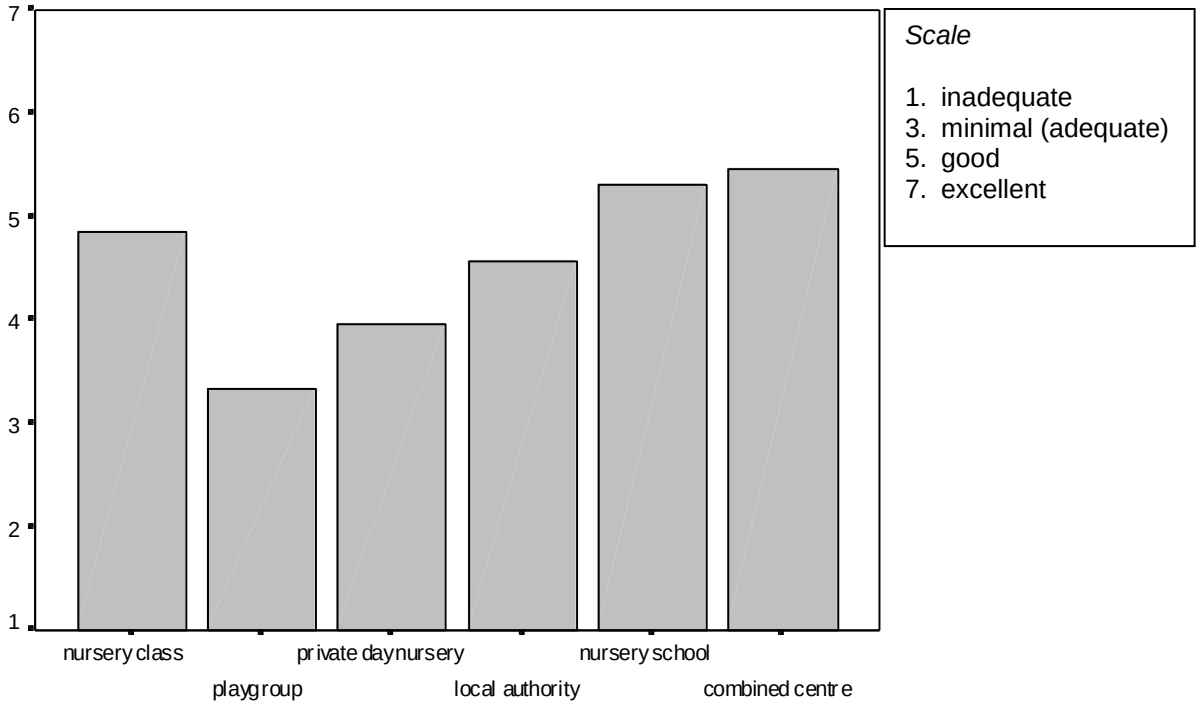


Figure 7. Space and furnishings by pre-school type

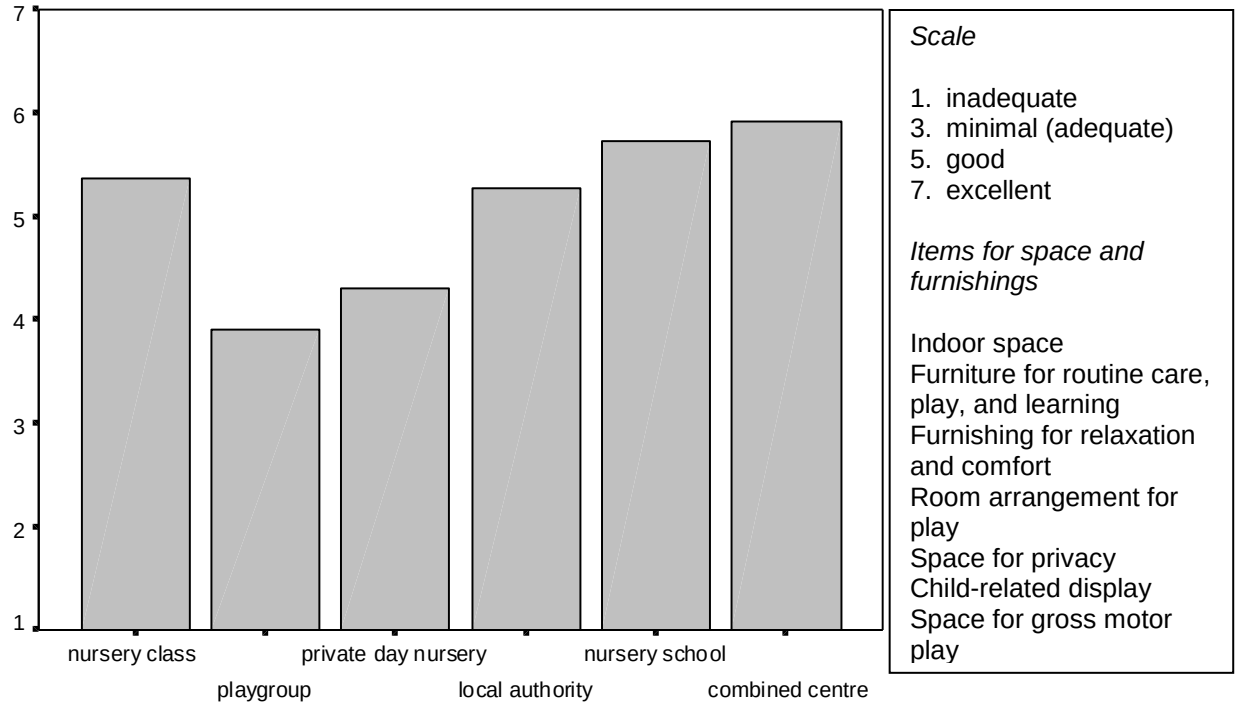


Figure 8. Personal care practices by pre-school type

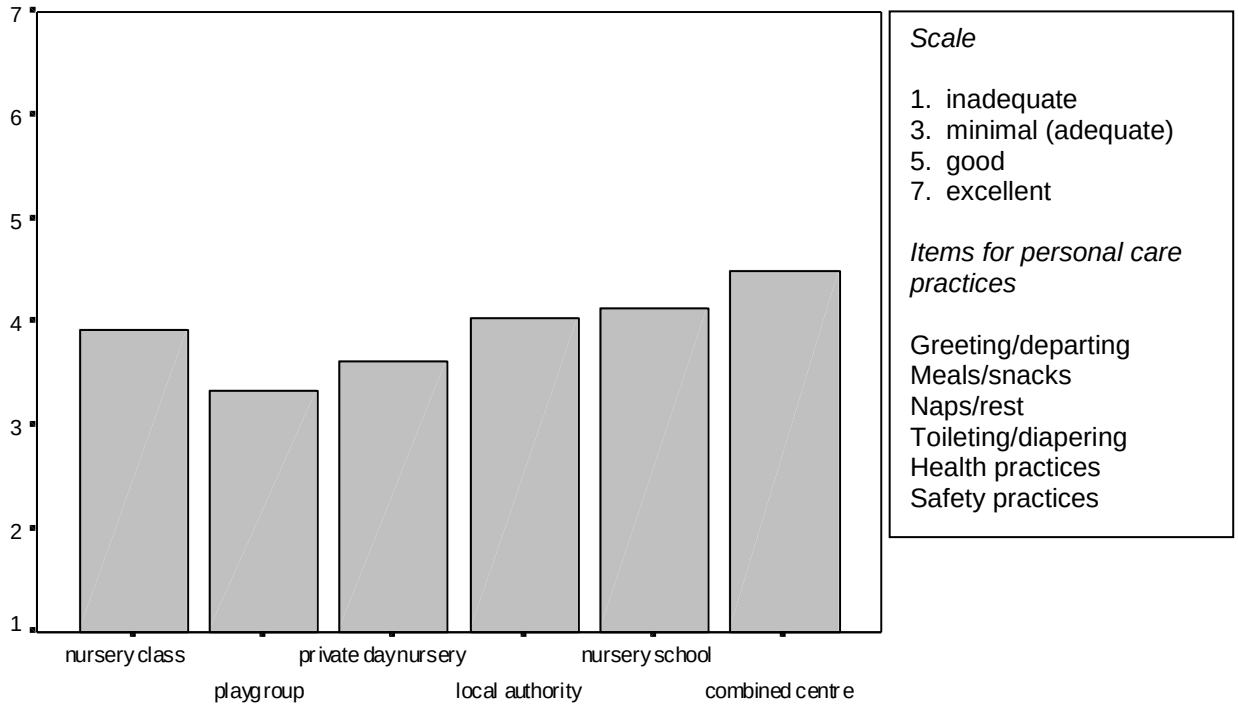
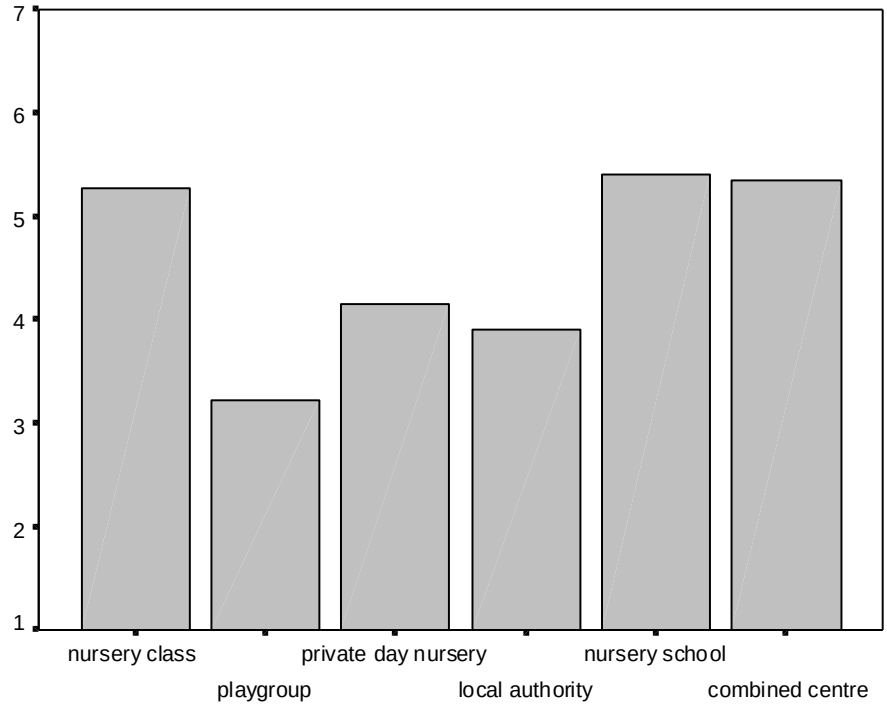


Figure 9. Language and reasoning by pre-school type



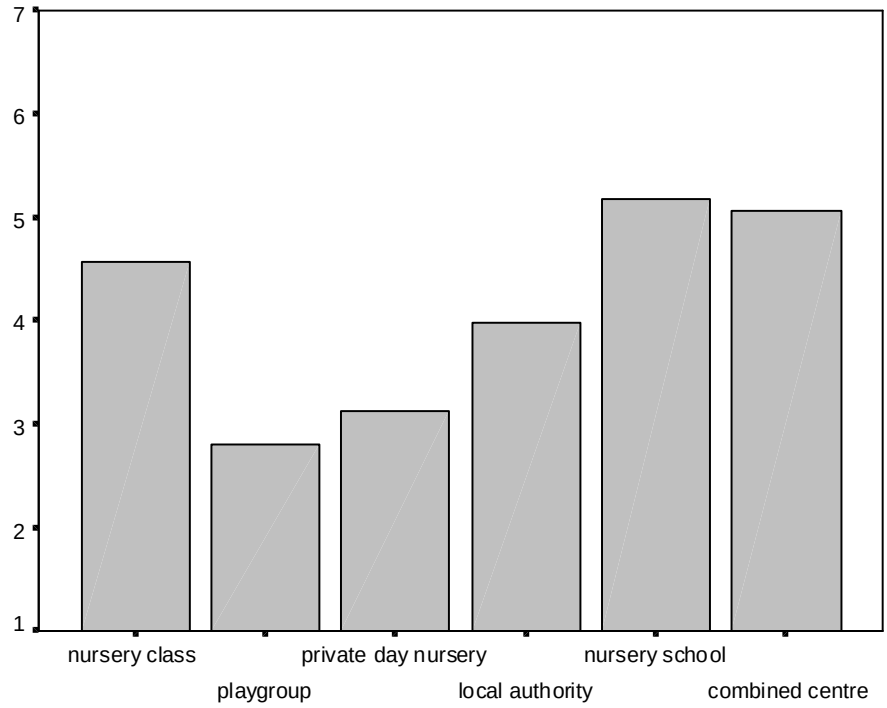
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for language and reasoning

Books and pictures
Encouraging children to communicate
Using language to develop reasoning skills
Informal use of language

Figure 10. Pre-school activities by pre-school type



Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for pre-school activities

Fine motor
Art
Music/movement
Blocks
Sand/water
Dramatic play
Nature/science
Maths/number
Use of TV/video/computers
Promoting acceptance of diversity

Figure 11. Social interaction by pre-school type

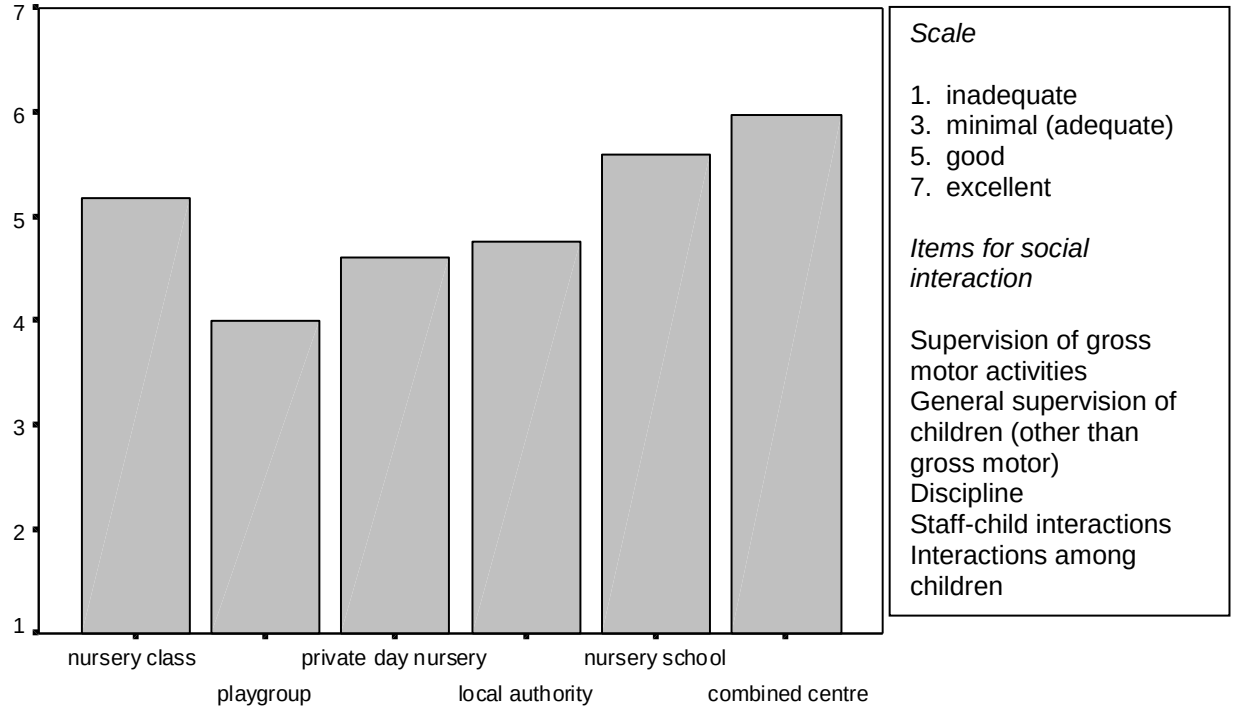


Figure 12. Organisation and routines by pre-school type

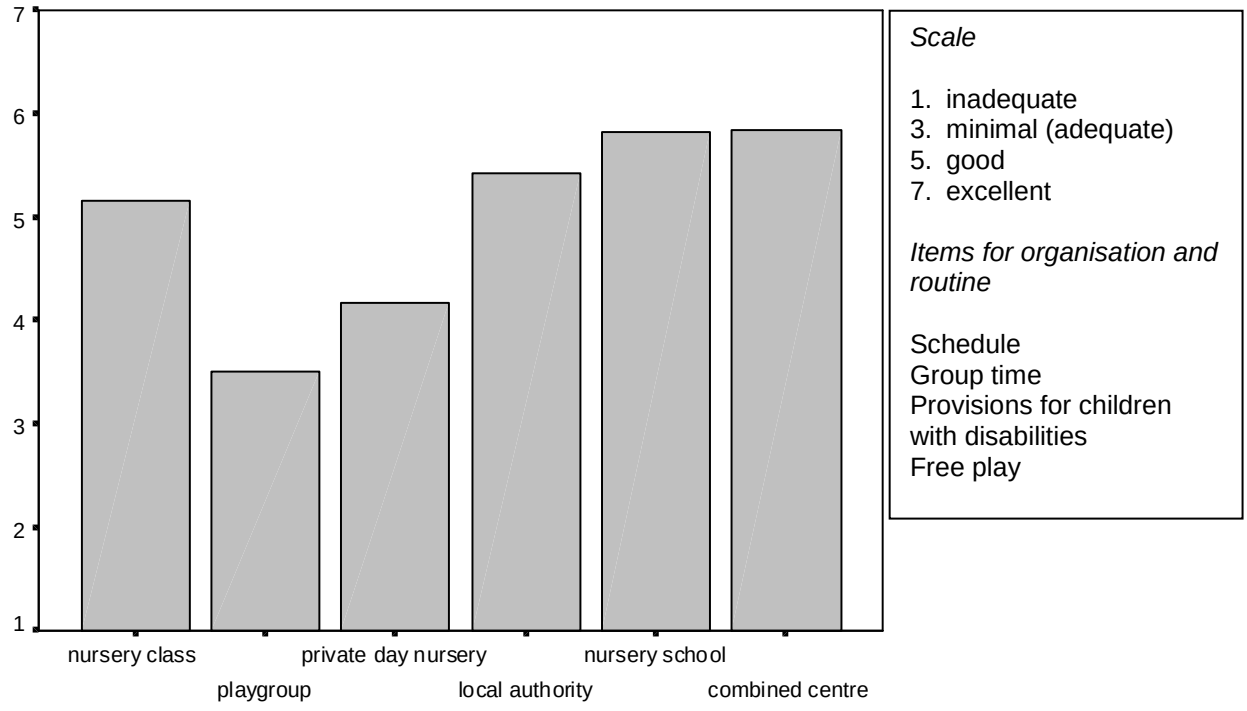
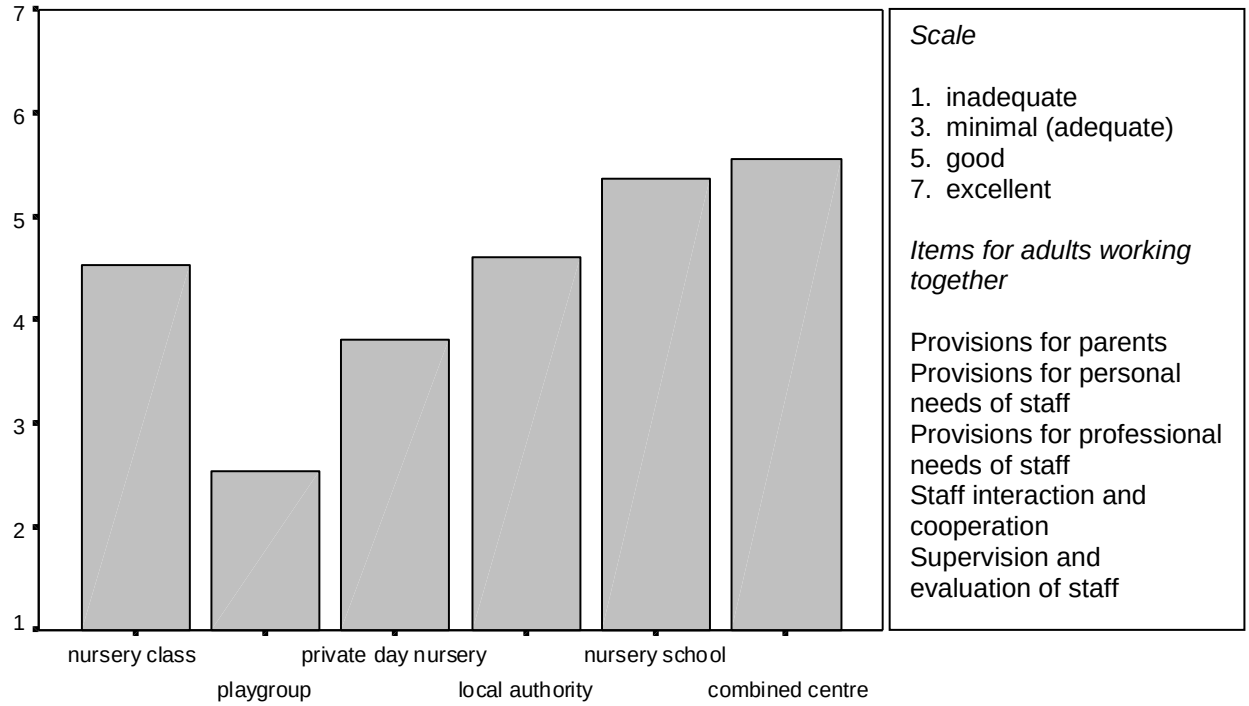


Figure 13. Adults working together by pre-school type

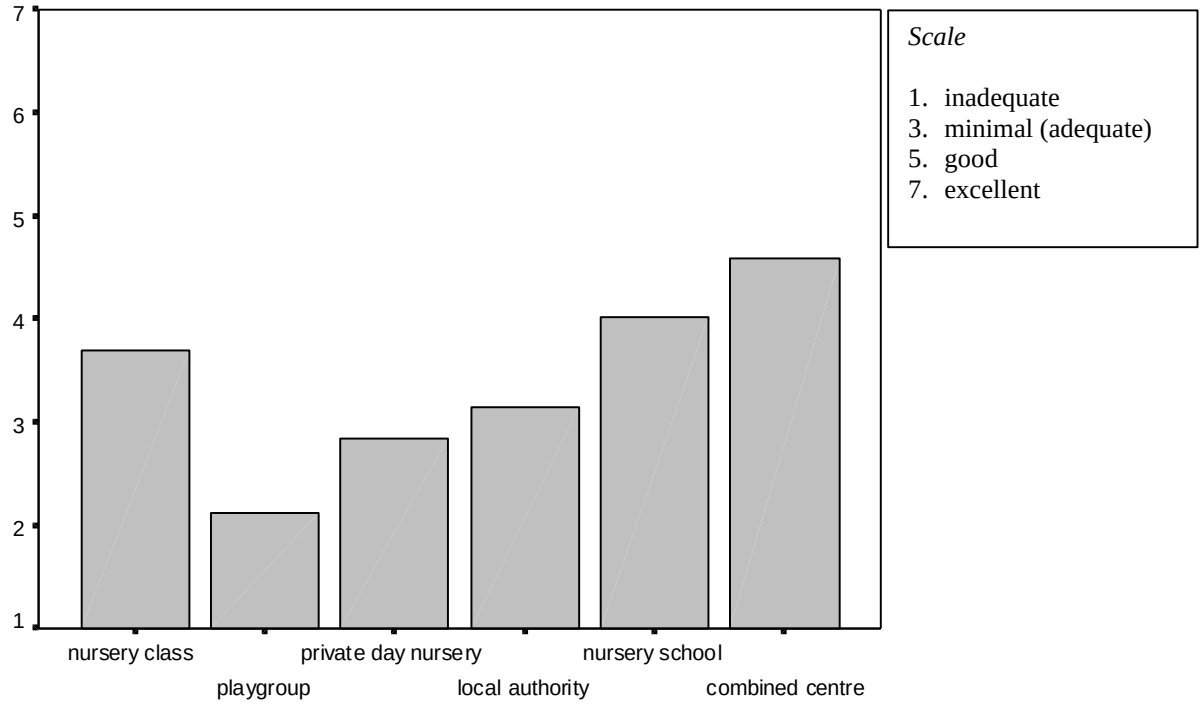


Of the six pre-school types, nursery classes, nursery schools and combined centres were rated consistently higher on all the sub-scales compared to other forms of provision. Playgroups had the lowest mean sub-scale score for all 7 sub-scales; private day nurseries had the second lowest mean sub-scale scores for all sub-scales except language and reasoning in which they were significantly higher than local authority day nurseries. Statistical tests revealed that there were significant differences for 6 out of the 7 sub-scales according to type of provision. (No significant pre-school differences were found in personal care routines.) The fine-grained statistical testing shows that there are broad bands in terms of quality measured on ECERS-R with the LEA provision always scoring highest followed by Local Authority day care, then private day nurseries, and finally playgroups.

The focus on curriculum in ECERS-E

The total ECERS-E scores for the 6 types of provision show an almost identical trend to the ECERS-R scores (see Figure 14). Playgroups and private day nurseries are rated lowest, nursery schools and nursery schools combining care and education are rated highest on most sub-scales. Total ECERS-E scores were found to differ significantly ($F_{5,135} = 31.76$, $p<.001$) and post hoc Tukey tests were employed to identify precise pair-wise differences (see Appendix E). The results were almost identical to those found for the ECERS-R: LEA nursery classes, nursery schools and nursery schools combining care and education score most highly, significantly higher than playgroups and private day nurseries. Local authority (day care) centres score significantly more highly than playgroups, *but not* private day nurseries (this difference was significant for total ECERS-R scores); local authority (day care) centres also score significantly lower than *both* nursery schools and nursery schools combining care and education. Additionally, private day nurseries score significantly higher than playgroups, and centres combining care score significantly higher than nursery classes.

Figure 14. Total ECERS-E scores by pre-school type



LEA nursery classes, nursery schools and nursery schools combining care and education score most highly, significantly higher than playgroups and private day nurseries. Local authority (day care) centres score significantly higher than playgroups, *but not* private day nurseries; local authority (day care) centres also score significantly lower than *both* nursery schools and nursery schools combining care and education. Additionally, private day nurseries score significantly higher than playgroups, and centres combining care score significantly higher than nursery classes.

Moving away from total scores to sub-scale scores, ANOVAs on all four ECERS-E sub-scales show that there were significant differences according to type of provision (Kruskal-Wallis tests were used to analyse the Science and Environment sub-scale as it was not normally distributed; see Appendix F for test results). Nursery schools and nursery schools combining care and education are consistently rated more highly than playgroups and private day nurseries (see Figures 15-18).

Figure 15. Literacy by pre-school type

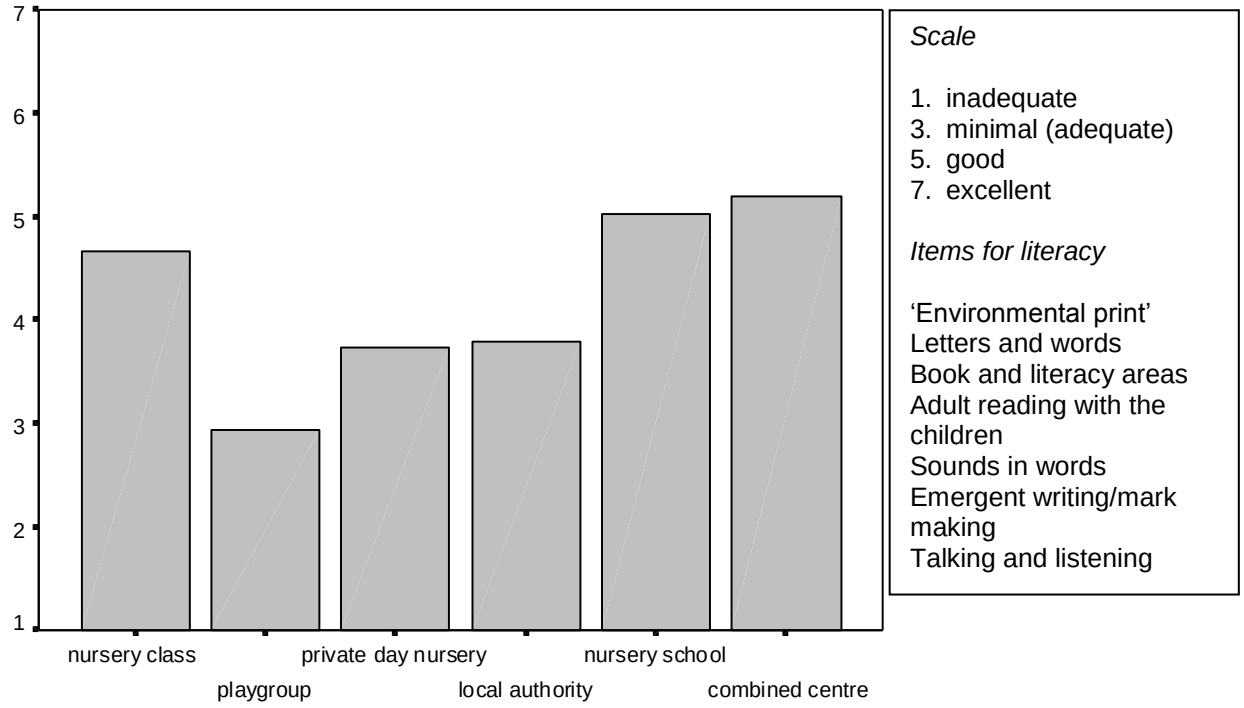


Figure 16. Mathematics by pre-school type

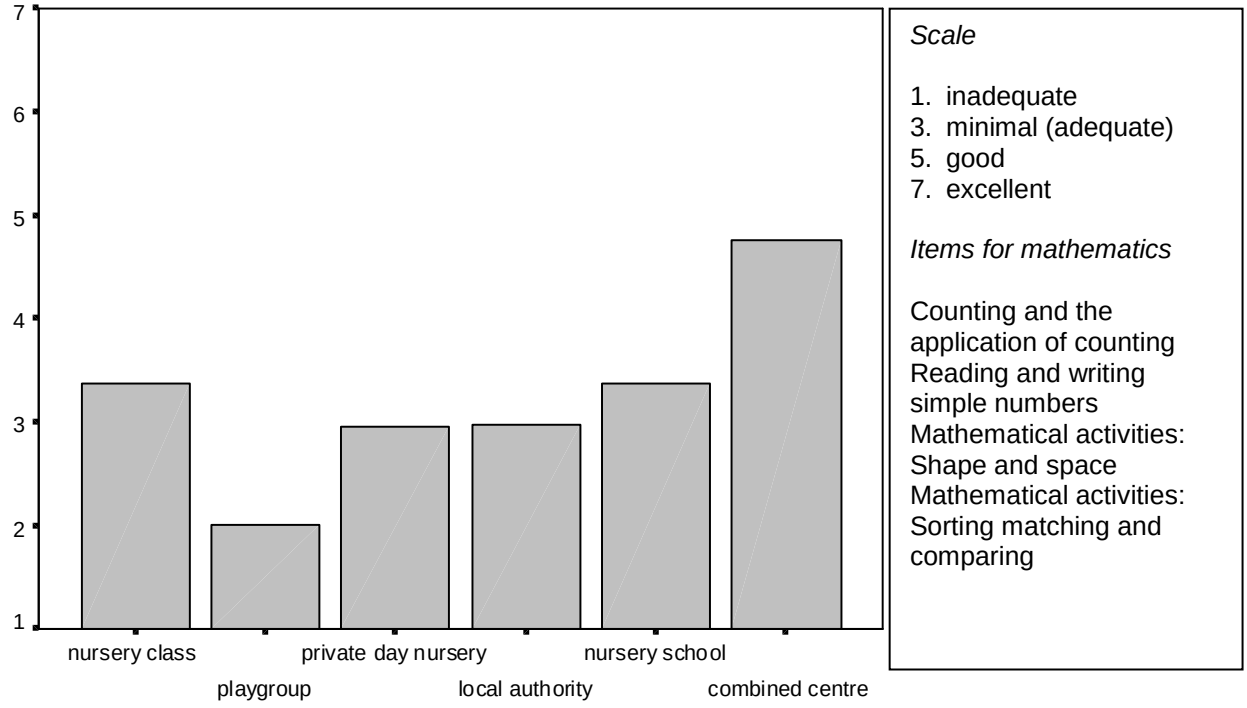


Figure 17. Science and Environment by pre-school type

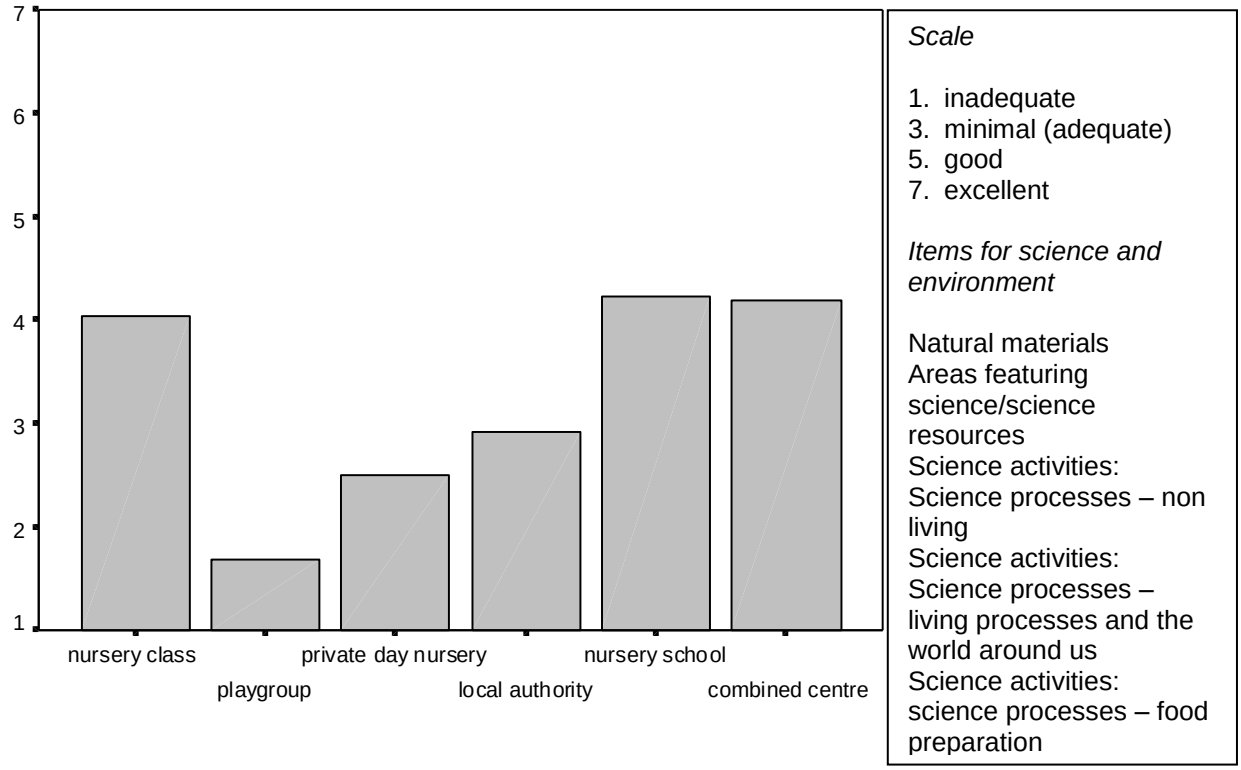
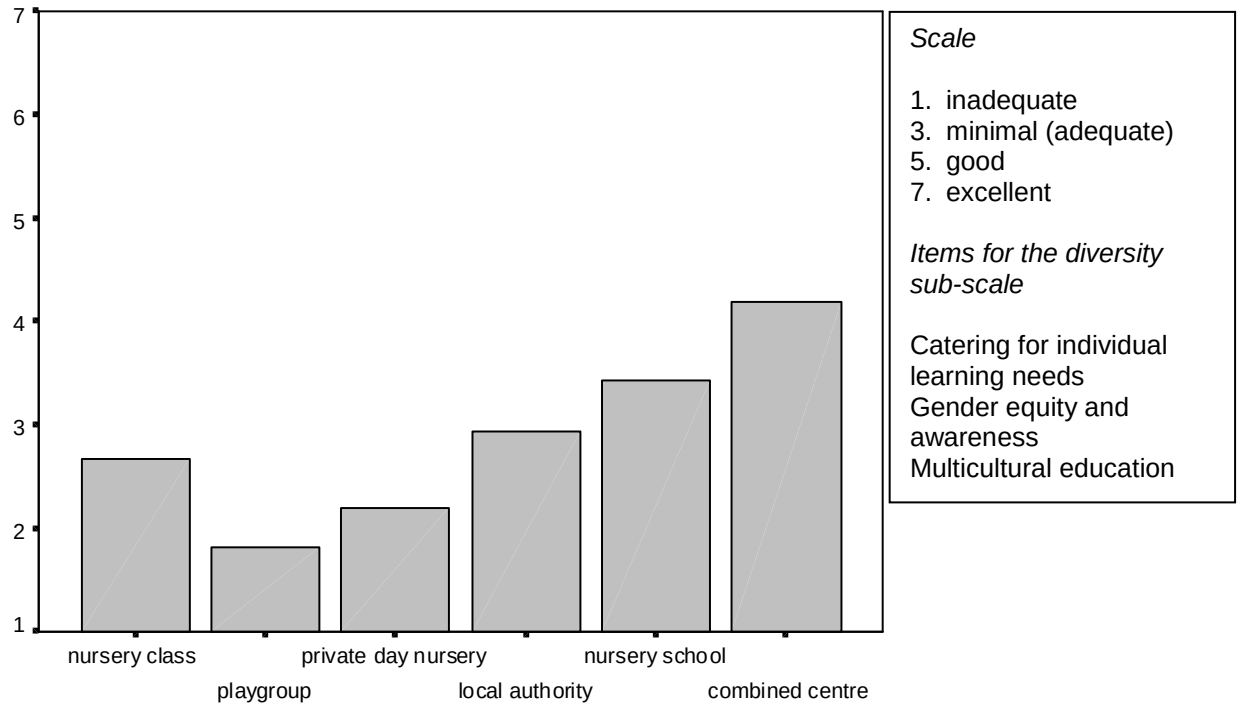


Figure 18. Diversity by pre-school type



To summarise, the findings on both rating scales showed that nursery schools, nursery schools combining care and education, and to a slightly lesser degree nursery classes, are rated in the 'good' range on both observations. Playgroups and private day nurseries are rated with lower 'quality' (minimal/adequate) provision while local authority day care (social service) centres are identified as medium provision. Social service centres combining care and education had significantly lower quality of provision than nursery schools which combine education and care.

Focus on Combined Centres

The results were re-analysed using an alternative method of grouping the pre-school types to explore the effects of joining together the social services combined centres (which have added a small amount of 'education') with the nursery schools combined centres which came from a strong tradition of education. Thus all maintained centres combining education and care were merged together in one group such that the 13 local authority day centres which combined care and education were combined with the 7 nursery schools which also combined education and care. (Note that all other pre-school groupings remained the same.) This new grouping of provision was analysed statistically because it will show how the scores of the group of former nursery schools now combining care are affected by adding combined centres which come from a social services tradition.

Table 2. Re-grouped sample for the analysis of combined centres.

Type of provision	N
Nursery Classes	25
Playgroups	34
Private day nurseries	31
Local authority centres	11
Nursery schools	20
Combined centres	20
Social service	(13)
Nursery schools 'plus'	(7)

The results for the total scores and sub-scale scores all show a fairly consistent pattern when the social services centres are added: the ratings of the combined centres group falls whereas ratings of the local authority centres often increase with the removal of the combined centres. With the original grouping the total ECERS-R scores for combined centres is the highest. When the scores for social services combined centres are added to this group their rating drops considerably and falls below that of the nursery schools and nursery classes. This indicates that the social services combined centres (which combine a small amount of education with care) diluted the quality of the nursery schools which have added care to education. As expected, significant pre-school differences were found for the total ECERS-R score ($F_{5,135} = 25.76$, $p<.001$). There were only two changes in significance levels for pair-wise comparisons with this new grouping: although there is a trend in this direction, nursery schools and combined centres no longer performed significantly better than local authority day care centres.

Re-grouping the combined centres leads to similar changes in the sub-scales. For example, the score for the personal care dimension shows a similar pattern. The low score of the social services centres combining care and education dramatically brings down the group score of the nursery schools combining care and education. This is consistent with their high rank on the 'personal care' sub-scale. Significant pre-school differences were found for all ECERS-R sub-scales. ECERS-R sub-scale results are reported in Appendix G which compares the original grouping of combined centres (labelled A) with this new grouping (labelled B).

In this analysis there was significant variation across centre types on total ECERS-E score ($F_{5,135} = 28.34$, $p<.001$). Post hoc analyses showed that the nursery schools, nursery classes and combined nursery schools did not differ from one another but were significantly higher than the other pre-school settings. Additionally, private day nurseries and local authority centres were significantly better than playgroups. These results are reported in Appendix H with the original grouping (labelled A) and the new grouping (labelled B).

Variation within type of provision

Although there was some variation in ECERS-R and ECERS-E scores within each type of provision, the amount of variation within type of provision did not differ between the different types of provision. A graphic summary of the variation found within each type of provision will be seen in the box-plots in Figures 19 and 20. In them the horizontal line inside the box represents the median score on each sub-scale and the length of the box shows the range in which 75% of the centres fall. The lines reaching up and down (called 'whiskers') show the location of higher and lower scores in that particular distribution.

Although playgroups generally had fewer resources and lower environmental ratings, there were exceptions to this. Coldspring Playgroup (not the real name) had a very strong ECERS-R profile, usually scoring above the combined average for all centres (see Playgroup 54 in Figure 19). Coldspring is an 'Outlier' because it scored substantially higher than other centres in the same group. It has good to excellent provision for furnishings, language and reasoning, science and the environment. These last two scales are closely related to curricular strength and attest to the sophisticated learning environment achieved in this exceptional playgroup which had no place for staff to store their belongings and no separate room for staff or parents. Despite this the staff met daily for planning and participated regularly in PLA training courses. So, it was possible for playgroups to achieve high ECERS-R ratings, especially on items which did not require expensive materials.

Figure 19. Box plot of mean ECERS-R score by pre-school type

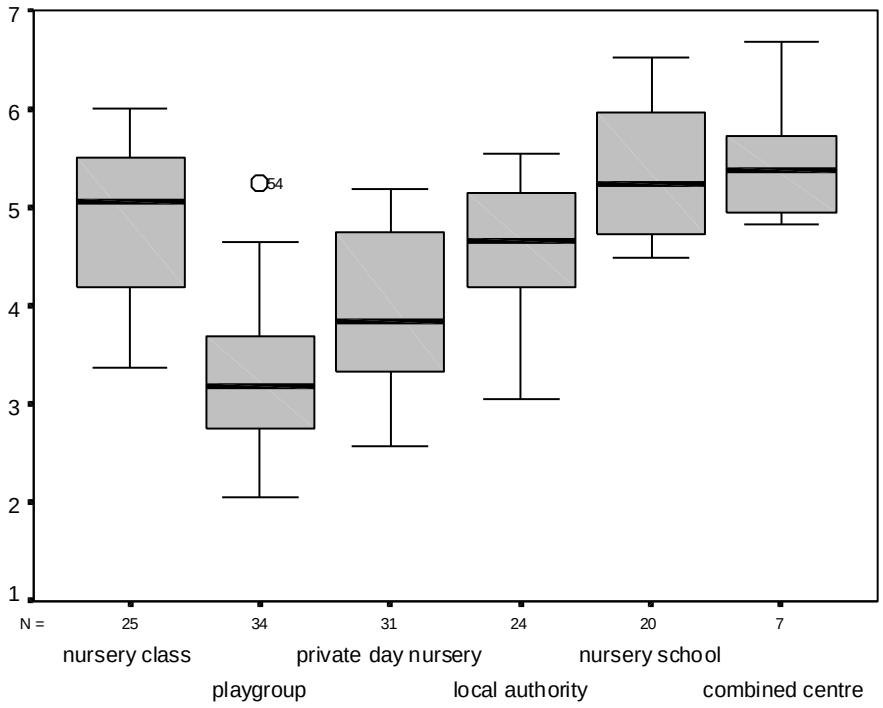
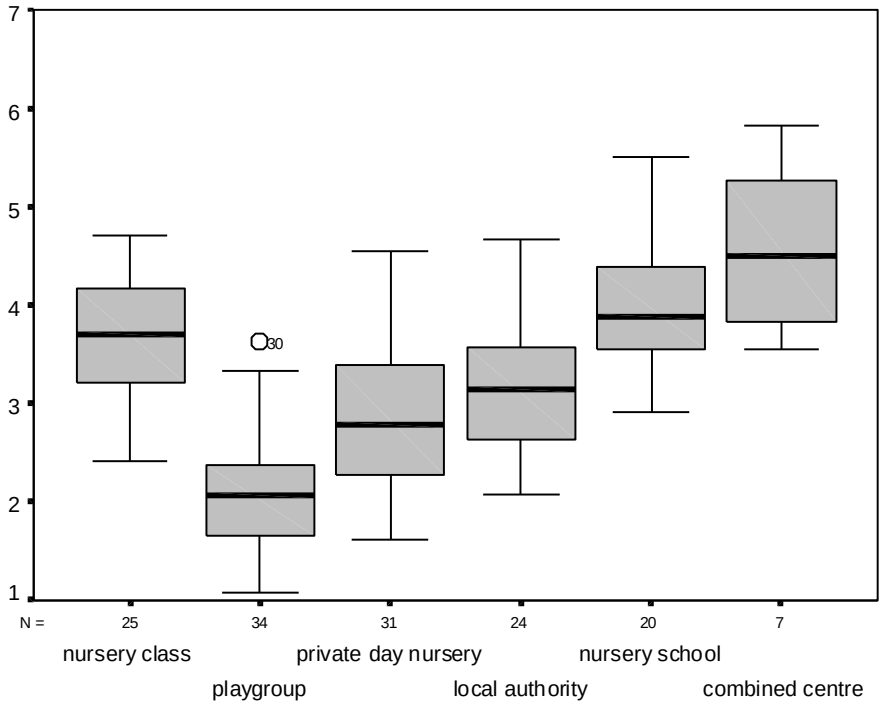


Figure 20. Box plot of mean ECERS-E score by pre-school type



Careful study of the box-plots shows that there was a range of scores within all the types of provision but that no one type of provision had exceptional amounts of 'spread'. This indicates that the use of means for comparisons earlier in the paper is appropriate and that there were few 'rogue' centres pulling down the means for any provision group (or 'angels' either, pulling them up). Lera et al.'s (1996) study reported similar box plots revealing that the highest scores were found in nursery classes, the next highest in social services day nurseries, and the lowest scores were seen in private day nurseries and playgroups. The earlier study in London by Lera et al. gives support to the EPPE findings from various regions around the country.

As ECERS-R and ECERS-E profiles may vary by the type of inspection received, the playgroups were divided into two categories: those receiving Ofsted and those receiving Children's Act inspections. Twenty-two centres underwent Ofsted inspection, 10 underwent Children's Act inspections and 2 did not supply this information. It was possible that playgroups with Ofsted inspection (with its strong focus on Desirable Learning Outcomes) would be rated differently from the rest of the playgroups and this possibility was explored by statistical tests.

On total ECERS-R and on 6 of the 7 ECERS-R sub-scales there were no significant differences between the two groups of playgroups. The one exception was that the Ofsted-inspected playgroups scored significantly higher on the 'adults working together'. On the ECERS-E ratings, however, the Ofsted-inspected playgroups were higher on the total and also on all four of the sub-scales. This demonstrates that those choosing Ofsted inspection were providing a more rigorous learning environment, at least according to the DLO's.

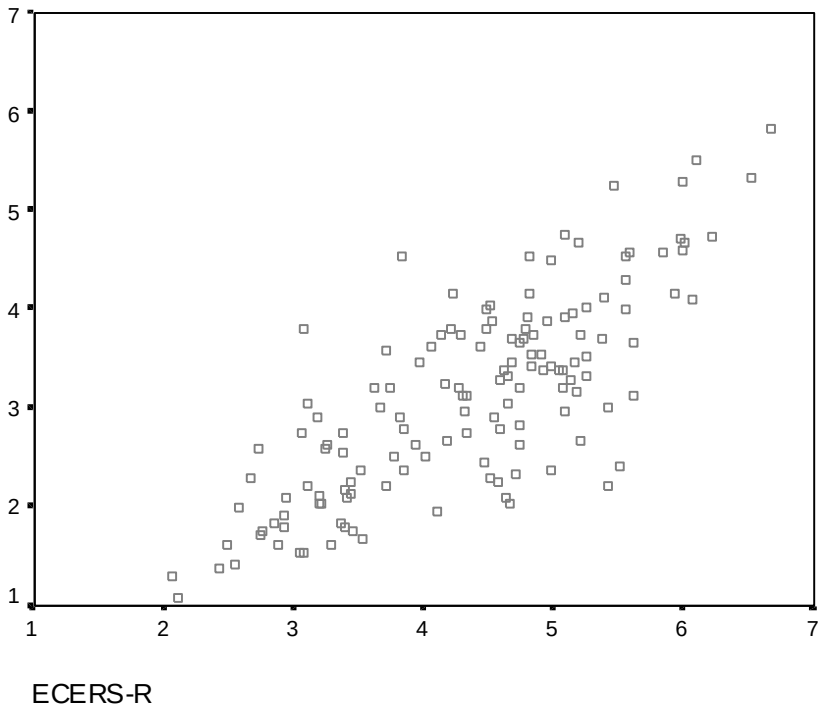
Next we compared this sub-group of Ofsted-inspected playgroups (N = 22) with all the other forms of provision to see if removing those with Social Services inspection from the category 'playgroup' altered the relative performance across the types of provision. This reduced group of playgroups continues to have the lowest scores on every measure. ANOVAs and Tukey post-hoc tests were performed once more but the Ofsted-inspected playgroups rarely changed their relative position. (Note that the means scores in the Ofsted-inspected playgroups were usually

higher than those with Children's Act inspection - but the relative position rarely changed.) There was one difference, however, and this was that Ofsted-inspected playgroups no longer have significantly lower scores on the ECERS-R total when compared to private day nurseries. They continue to have significantly lower ECERS-R scores when compared to the Social Services nurseries and all the LEA provision.

THE RELATIONSHIP BETWEEN ECERS-R AND ECERS-E

Figure 21 is a scattergram depicting the relationship between the two ECERS measures. The Pearson product moment correlation of 0.78 is consistent with the view that the different rating scales are tapping into 'quality' whilst measuring slightly different aspects of it. (Note that Tables 4 and 5 show the inter-correlations amongst sub-scales in each of the two ECERS scales). With the exception of 'personal care routines' most of the sub-scales are moderately correlated with one another. This means that centres high on one sub-scale tend to be high on others.
A copy of these tables may be obtained by writing to the authors.

Figure 21: Scattergram – ECERS (total) and ECERS-E (total)



ECERS-R AND ECERS-E FACTOR ANALYSIS

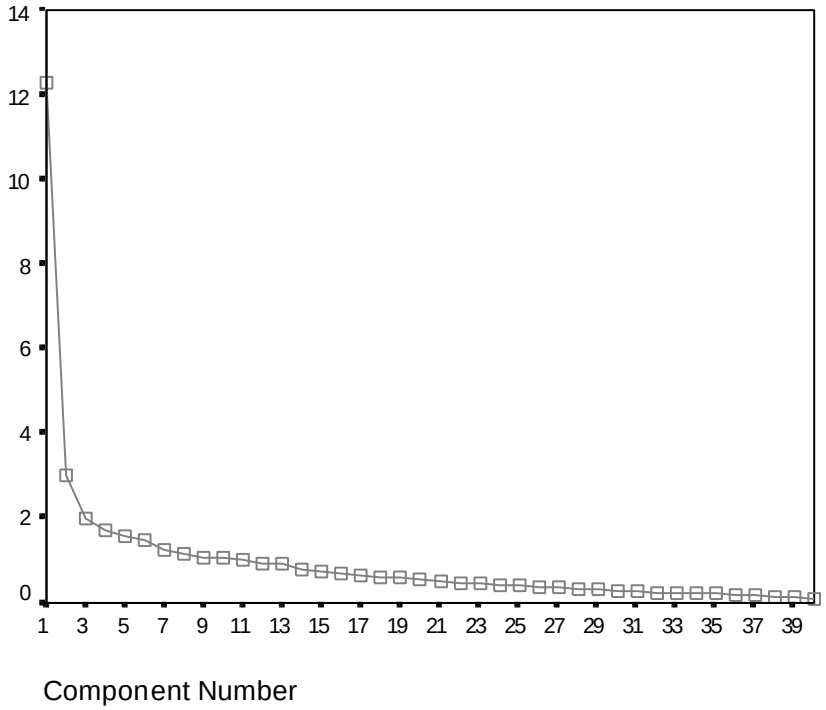
Global dimensions of quality

Factor analysis (principal component analysis, varimax rotated solution) was used to examine the structure of the ECERS-R and the ECERS-E, and to establish whether any clear dimensions could be identified in either scale. For some centres there were item scores missing in the ECERS-R and/or the ECERS-E. Most frequently this was due to the item being irrelevant to that particular centre, and for some items the item was irrelevant to more centres than it was relevant.

For example, item 11 gives a score for 'nap/rest' (e.g. sensitivity to individual children's needs and sleeping habits and sanitary provision); for 114 out of the 141 centres this item is not relevant as the children did not nap whilst at the pre-school centre. Items where a considerable number of centres had missing data were excluded from the analysis; where only a few centre scores were missing for an item these were replaced with the mean score for that item.

Factor analysis of the ECERS-R indicated the existence of two factors. Factor 1 accounts for a large proportion of the total variance, over 30%, factor 2 accounts for a more modest 7% of the variance, resulting in just over 38% of the variance being accounted for by these two factors (see Appendix I). Forty-one components were identified to account for 100% of the variance, eleven of which had Eigenvalues over 1, a method sometimes used to identify factors. However, the scree plot (figure 22) clearly indicates the existence of only two factors, the remaining components accounting for only small amounts of variance. The factors can be charaterised by the items which load most strongly (higher than 0.60) on these two factors and these are shown below. (The factor loadings of all 40 items included in the ECERS-R are detailed in Appendix I).

Figure 22. Scree plot for ECERS-R Factor analysis



Factor 1: Activities and facilities

Sand/water
Opportunities for personal growth
Art
Child related displays
Blocks
Provision for professional needs of staff
Provision for personal needs of staff

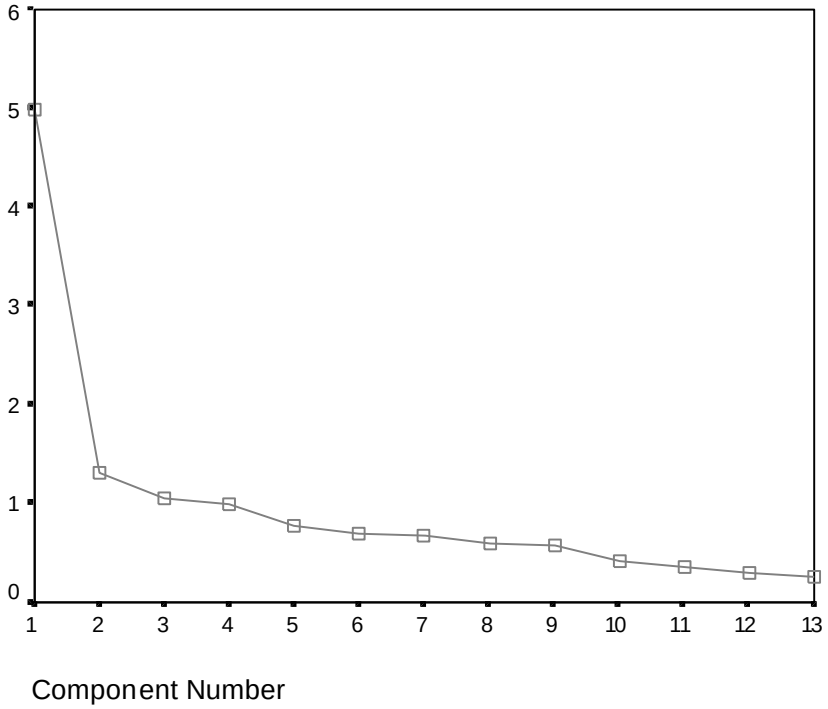
Factor 2: Communication and supervision

General supervision of children
Discipline
Staff-child interactions
Informal use of language
Language to develop reasoning skills
Interactions among children

Factor 1 includes items related to 'activities and facilities' (for children, staff and parents); and factor 2 includes items related to 'communication and supervision'. Note that factor 2 does not require material resources. Furthermore, Cronbach's alpha is very high for both factors 1 and 2 (alpha = 0.92 and 0.88 respectively) indicating that there is internal consistency in both factors.

Factor analysis of the ECERS-E again indicates the existence of 2 factors (see figure 23). Factor 1 accounts for just over 38% of the variance and factor 2 accounts for 10% of the variance, therefore almost 50% of the total variance is accounted for by these two factors. The items which load most strongly (higher than 0.60) on these two factors are shown below. (The factor loadings of all 13 items included in the ECERS-E are detailed in Appendix J).

Figure 23. Scree plot for ECERS-E Factor analysis



Factor 1: Curriculum Areas

'Environmental print' letters and words
Natural materials
Counting
Science resourcing
Talking and listening
Sounds in words

Factor 2: Diversity

Gender equity
Multicultural education
Book and literacy areas (provision for 'inclusive' literacy)

Two factors are again apparent, thirteen components were identified to account for 100% of the variance but again the scree plot, figure 23, indicates the existence of only 2 factors. Factor 1 contains items related to the Desirable Learning Outcomes: literacy, numeracy and science. Factor 2 consists of only three items related to diversity and inclusive literacy. Cronbach's alpha is high for factor 1 (alpha = 0.84) but only moderate for factor 2 (alpha = 0.64) suggesting that there is good internal reliability only for factor 1. With the exception of item 6 ('talking and listening') all items in this factor could potentially fall into the 'activities and facilities' factor identified in the ECERS-R factor analysis, a combined ECERS-R and ECERS-E factor analysis will be carried out to see if any common factors are identifiable.

The two ECERS were combined for a final factor analysis. This analysis was carried out for exploratory purposes only. The sample of centres is too small for the number of items but may provide support for the previous two factor analyses. The combined ECERS-R and ECERS-E scree plot closely resembles the ECERS-R scree plot, indicating the existence of two factors again. Factor 1 accounts for just over 30% of the total variance and factor 2 accounts for nearly 7% of the variance, just over 37% of the total variance is accounted for by these two factors. The factors which load most strongly (higher than 0.65) on both factors are shown below.

Factor 1

Sand/water
Art
Emergent writing and mark making
Opportunities for professional growth
Child-related displays
'Environmental print' letters and words
Natural materials

Factor 2

General supervision of children
Discipline
Informal use of language
Staff-child interactions
Talking and listening
Using language skills to develop reasoning skills

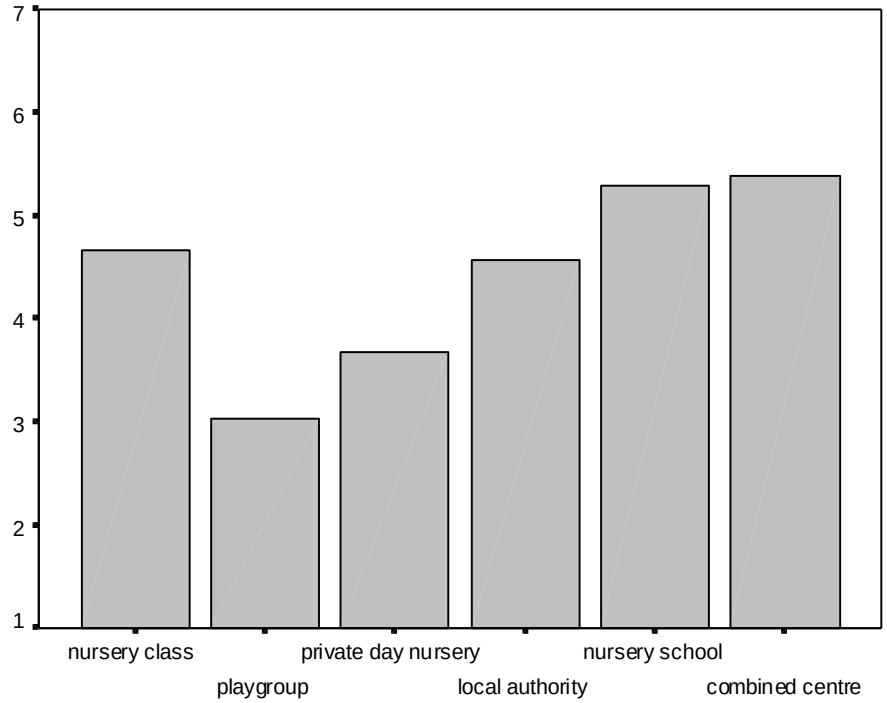
This combined factor analysis yields almost identical results to those found in the ECERS-R analysis on its own. Again two factors were identified, but there were two minor exceptions. Firstly, group time was mostly highly loaded on factor 1 in the ECERS-R analysis but is mostly highly loaded on factor 2 in this combined analysis. (Note however that in both instances this item is loaded comparatively highly on both factors.) Secondly, there is some change in rank order of the items. For example, in the ECERS-R analysis opportunities for professional growth was the second most highly loaded item on factor 1, with the combined analysis it is the fourth highest loaded item, and the third highest item from the ECERS-R scale. All except three ECERS-E factors are most highly loaded on factor 1. As expected 'talking and listening' is most highly loaded on factor 2. The other two ECERS-E factors that load most highly onto factor 2 are: adult reading with the child, and sounds in words. As with the ECERS-R analysis, factor 1 can be interpreted as 'activities and facilities' where as factor 2 can be interpreted as 'communication and supervision'. The rating scale for 'adult reading with the child' requires discussion and close supervision (e.g. one-to-one reading) for a high score suggesting that this item could fit into the 'communication and supervision' factor. The item 'sounds in words' does not belong so clearly in

this factor but it is worth noting that it is loaded at fairly similar (low) levels on both factors, and the same is true of the 'group time' item (see Appendix G). Again, Cronbach's alpha is very high for both factors (alpha = 0.94 for factor 1 and alpha = 0.89 for factor 2) indicating there is good internal consistency in both factors.

Comparison between types of provision on the two dimensions

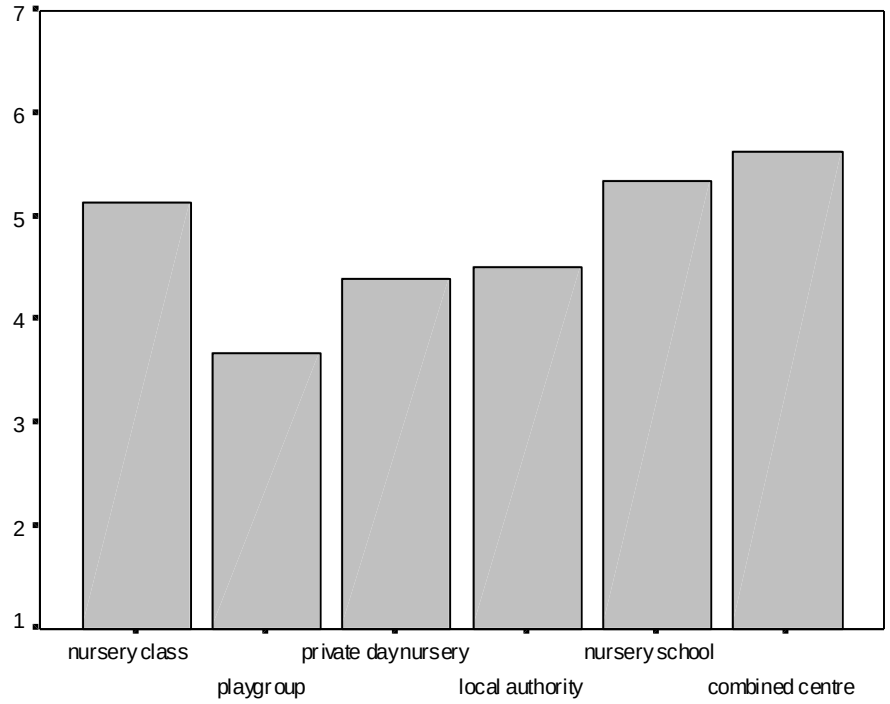
Each centre was given an unweighted factor score for the two factors in ECERS-R. The scores of the 6 pre-school types on the 'activities and facilities' were compared first. Nursery schools and nursery schools combining care with education are rated the highest, with playgroups and private day nurseries rated the lowest (see figure 24). The differences in scores between types of provision follows the same trend as seen in the previous analysis but ANOVAs revealed that these differences were not significant.

Figure 24. Mean scores for activities and facilities factor by pre-school type



The scores of the different pre-school types were compared for the second factor identified by factor analysis, 'communication and supervision'. Significant pre-school differences were found for the 'communication and supervision' factor ($F_{5,135} = 9.43$, $p < 0.001$). This is interesting in that these items do not require well-resourced premises or materials. Further analysis using Tukey H.S.D tests showed that, for the communications and supervision factor, nursery classes, nursery schools and nursery schools combining care had significantly higher ratings than playgroups, and additionally, nursery schools had significantly higher ratings than private day nurseries.

Figure 25. Mean score for communication and supervision factor by pre-school type



DISCUSSION

Relating this study to previous research

The main findings from this large study on the characteristics and quality of pre-school provision are supported by other sources. Research in London by Lera et al in 1996 showed higher scores on ECERS for nursery classes, followed by social services day nurseries and then playgroups. The latest OFSTED inspection report (1999) describes more favourably provision in the maintained sector (local authority day nurseries) followed by the private day nurseries, followed by the voluntary playgroups. Further confirmation of the stronger provision in the maintained sector is found in the latest inspection report for Wales (OHMCI, 1999).

Looking back at Figure 4 reveals the sub-scale scores for the entire sample, undivided as to type of provision. Across the sample, the totals and sub-scale scores on ECERS-R range from 4 to 5, just short of 'good' provision. Kwan (1997) summarised comparative data from studies using ECERS in other countries. How does the U.K. compare? The other countries with sub-scale means similar to the U.K. include Canada (a small group of 'superior' centres studied in Montreal) and Sweden along with one study from the U.S.A. (Head Start). Studies in Germany and New Zealand report sub-scale means just under 4 with studies in Bermuda reporting means closer to 3. Hence findings from other 'western' countries indicate that the U.K. is not too different from Sweden and parts of North America; it is marginally better than Germany and New Zealand. All these comparisons must be taken with some caution as they may not be fully representative of the country and only one of the studies reported here had a sample as large as that in the EPPE study.

Profiles found in different types of provision

Although the EPPE results present a picture of satisfactory pre-school environments, centres varied considerably in their ECERS profiles according to type of provision. The traditional nursery schools and LEA nursery-combined-with-care usually had the highest scores, often close to 'excellent', followed by nursery classes. Unfortunately many young children are attending

centres where the provision is 'minimal' rather than 'good'. The playgroups and private day care nurseries typically had the lowest scores, with social services day care nurseries somewhere in between. This study shows clearly that well-resourced pre-school centres which had a history of 'education' (including a more substantial number of trained teachers, LEA in-service training, Ofsted 'Section 10' rather than 'pre-school Section 5' inspection) were providing the highest quality of care and education. The centres from the 'care' tradition, despite their more favourable ratios, were offering a different level of care and education. It is relevant here to mention that care-oriented provision usually offers the lowest salaries to staff, employs workers with the lowest level of qualifications, and has limited access to training and higher staff turnover. We found that provision above the 'minimal' level was concentrated in well-resourced centres.

The group of seven LEA nursery schools with a long history of combined education and care had very high ratings when they were a stand-alone group. When the 13 social service combined centres were grouped with them, the average score of the new grouping was depressed (or the 'quality became diluted'). This indicates that the newer emphasis on 'education' in social service nurseries, established by introducing one (often part-time) teacher, is slow to filter through the system and that the more traditional social services day care nurseries (when grouped on their own) had adequate to good scores.

Appropriateness of ECERS-R and ECERS-E

This preliminary report on the EPPE centres has concluded that they vary in 'quality' as measured on an international instrument (devised initially in North America) and one devised in the UK based on the Desirable Learning Outcomes. It is necessary to ask whether some types of provision have been 'disadvantaged' by the structure and the content of ECERS-R. For example, it is not easy for a playgroup to provide special facilities for parents or for staff, both of which are required for high ECERS-R ratings on certain items. Brophy, Statham, and Moss (1992) have suggested that the focus of playgroups on parental involvement is not adequately assessed through ECERS. (Note that ECERS-R has been used by the EPPE project but the same arguments will apply). The ECERS-R includes an item on parental involvement but the main data on this topic within the EPPE sample will be derived from interviews with centre managers (n = 141) and with parents (n = 2,000+) which will be reported in later publications.

Although it remains a possibility that ECERS-R disadvantaged some sectors of provision, the pattern of results seen in the ECERS-E analyses was so similar to the ECERS-R findings that we cannot conclude that ECERS-R is inappropriate to the UK. Because the curriculum sub-scales in ECERS-E were devised to tap educational and care provision based on the UK Desirable Learning Outcomes, they are well tuned to assess English provision and their agreement with the original ECERS-R validates its use here in England. Moreover the playgroups were rated rather low on the 'communication and supervision' factor which requires no material resources.

To conclude, this study found that the standard of education and care in pre-school provision was of adequate standard in the vast majority of settings. In the 'educational' settings, it was particularly good. Future papers in this series will describe the outcomes of such provision in terms of children's cognitive, social and behavioural development. When the 'value added' analyses of children's outcomes are available, we will know better whether these observational profiles predict children's longer-term intellectual, social and behavioural progress. If they do, we will have established a firm link between educational and care processes and children's developmental outcomes. Although studies using the ECERS in other countries have sometimes shown such links, their applicability to the UK needs to be confirmed. The identification of 'quality characteristics' in pre-schools awaits confirmation from analyses of children's progress when entering school and at the end of Key Stage 1.

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Appendix A

Reliability and validity of the ECERS-R in previous research

ECERS-R is a revision of the well-known and established original ECERS scale. It maintains the same conceptual framework as well as the same basic scoring approach and administration. Since the original version has a long history of research and demonstrating that quality as measured by the ECERS has good predictive validity (i.e., Peisner-Feinberg & Burchinal, 1997; Whitebook, Howes & Phillips, 1990) the revised version would be expected to maintain that form of validity. The major question to be answered here is whether the changes to the scale have affected the inter-rater reliability.

An extensive set of field tests of the ECERS-R was conducted in the spring and summer of 1997 in 45 classrooms. The authors were not satisfied with the inter-rater reliabilities obtained and decided that further revision was needed. Data from this first study were used to determine changes needed to obtain a fully reliable instrument. Substantial revisions were made to the first field-test draft of the scale, using the indicator-level reliabilities as a guide to focus the revision process. After the revisions were made, a second test, focusing on inter-rater reliability, was conducted in a sample of 21 classrooms, equally distributed among high-, medium-, and low-scoring rooms in the initial test. Even though this test was conservative, with minimal chances to develop reliability through the discussions that customarily take place following a practice observation, the results of the second test were quite satisfactory.

Overall, the ECERS-R is reliable at the indicator and item level, and at the level of the total score. The percentage of agreement across the full 470 indicators in the scale is 86.1%, with no item having an indicator agreement level below 70%. At the item level, the proportion of agreement was 48% for exact agreement and 71% for agreement within one point. Perhaps the most appropriate measure of reliability on a scale such as the ECERS is the Kappa, which takes into account the distance between scores given by two independent raters, rather than simple agreement or nonagreement (Weigel & Castellan, 1988). Kappas of 0.50 and higher are considered acceptable. All the interrater weighted Kappas had scores over .50; most were much higher. Only Item 17, Using language to develop reasoning skills, had a Kappa in the low range.

For the entire scale, the correlations between the two observers were .92 product moment correlation (Pearson) and .865 rank order (Spearman). The interclass correlation was .92. These figures are all within the generally accepted range with the total levels of agreement being quite high. These overall figures are comparable with the levels of agreement in the original ECERS.

Internal consistency of the scale at the subscale and total score levels was also examined. Subscale internal consistencies range from .71 to .88 with a total scale interval consistency of .92. These levels of internal consistency indicate that the subscales and total scale can be considered to form reasonable levels of internal agreement providing support for them as separate constructs. Many questions regarding reliability and validity remain unanswered. For example, studies will be required to answer questions such as: To what degree does the revised version maintain the same magnitude of score as the original version? And do the two versions both predict child development outcomes similarly? In addition, larger data sets will be required to examine empirically the factor structure of the scale. Research on the original ECERS usually has provided two factors, one focusing on the teaching aspect of environments and one on the provision of opportunities aspect (Rossbach, Clifford, & Harms, 1991; Whitebook, Howes, & Phillips, 1990). Further research will be needed to determine the extent to which the ECERS-R reveals the same empirical dimensions.

In summary, the field tests in the U.S. revealed quite acceptable levels of inter-rater agreement at the three levels of scoring-indicators, items, and total score. In addition, there is support for

using the scores of the sub-scales and the total score to represent meaningful aspects of the environment.

Previous studies using ECERS (before revision to ECERS-R)

Many studies all over the world have used the ECERS to describe education and care processes (Farquhar, 1989; Hagekull and Bohlin, 1995; Lera, Owen and Moss, 1996; Rossbach, Clifford and Harms, 1991) Scarr, Eisenberg, Deter-Deckard, 1994; Tietze, Cryer, Bairrão, Palacios and Wetzel, 1996; and, Whitebook, Howes and Phillips, 1990). A further group of studies have demonstrated that the 'quality' characteristics measured in ECERS are significantly related to children's developmental outcomes (Beller, Stahnke, Butz, Stahl, and Wessesls, 1996; Cost, Quality and Child Outcomes in Child Care Centre Research Team, 1995; Kwan, Sylva and Reeves, 1998; Kwan, 1997; McCartney, 1984; Peisner-Feinberg and Burchinal, 1997; Phillips, Scarr and McCartney, 1987; Phillips, McCartney and Scarr, 1987).

Appendix B.

Following are four sample items from the ECERS-Revised

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
34. **Schedule**							
Y N	1.1 Schedule is *either* too rigid, leaving no time for individual interests, OR too flexible (chaotic), lacking a dependable sequence of daily events.*	Y N	3.1 Basic daily schedule exists that is familiar to children (Ex. routines and activities occur in relatively the same sequence most days).	Y N	5.1 Schedule provides balance of structure and flexibility (Ex. regularly scheduled outdoor play period may be lengthened in good weather).	Y N	7.1 Smooth transitions between daily events (Ex. materials ready for next activity before current activity ends; most transitions handled a few children at a time rather than whole group).
		Y N	3.2 Written schedule is posted in room and relates generally to what occurs.**	Y N	5.2 A variety of play activities occur each day, some teacher directed and some child initiated.	Y N	7.2 Variations made in schedule to meet individual needs (Ex. shorter story time for child with short attention span; child working on project allowed to continue past scheduled time; slow eater may finish at own pace).
		Y N	3.3 At least one indoor and one outdoor play period (weather permitting) occurs daily.	Y N	5.3 A substantial portion of the day is used for play activities.		
		Y N	3.4 Both gross motor and less active play occur daily.	Y N	5.4 No long period of waiting during transitions between daily events.		

34. ***Notes for Clarification***

* Daily events refers to time for indoor and outdoor play activities as well as routines such as meals/snacks, nap/rest, and greeting/departing.

** The written schedule need not be followed to the minute. The intent of this indicator is that the general sequence of events is being followed.

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix X):

- A score of 1 must be given if any indicator under 1 is scored “Yes”.
- A rating of 2 is given when all indicators under 1 are scored “No” and at least half of the indicators under 3 are scored “Yes”.
- A rating of 3 is given when all indicators under 1 are scored “No” and all indicators under 3 are scored “Yes”.
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored “Yes”.
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored “Yes”.
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored “Yes”.
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored “Yes”.
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet. Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

Item	Inadequate		Minimal		Good		Excellent
	1	2	3	4	5	6	7

17. **Using language to develop reasoning skills**

Y N	1.1	Staff do not talk with children about logical relationships (Ex. ignore children's questions and curiosity about why things happen, do not call attention to sequence of daily events, differences and similarity in number, size, shape; cause and effect).	Y N	3.1	Staff sometimes talk about logical relationships or concepts (Ex. explain that outside time comes after snacks, point out differences in sizes of blocks child used).	Y N	5.1	Staff talk about logical relationships while children play with materials that stimulate reasoning (Ex. sequence cards, same-different games, size and shape toys, sorting games, number and math games).	Y N	7.1	Staff encourage children to reason throughout the day, using actual events and experiences as a basis for concept development (Ex. children learn sequence by talking about their experiences in the daily routine or recalling the sequence of a cooking project).
Y N	1.2	Concepts* are introduced inappropriately (Ex. concepts too difficult for age and abilities of children; inappropriate teaching methods used such as worksheets without any concrete experiences; teacher gives answers without helping children to figure things out).	Y N	3.2	Some concepts are introduced appropriately for ages and abilities of children in group, using words and concrete experiences (Ex. guide children with questions and words to sort big and little blocks or to figure out the cause for ice melting).	Y N	5.2	Children encouraged to talk through or explain their reasoning when solving problems (Ex. why they sorted objects into different groups; in what way are two pictures the same of different).	Y N	7.2	Concepts are introduced in response to children's interests or needs to solve problems (Ex. talk children through balancing a tall block building; help children figure out how many spoons are needed to set table).

17. ***Note for Clarification***

* Concepts, include same/different, matching, classifying, sequencing, one-to-one correspondence, spatial relationships, cause and effect.

Item	Inadequate		Minimal		Good		Excellent
	1	2	3	4	5	6	7

32. **Staff-child interactions***

Y N	1.1	Staff members are not responsive to or not involved with children (Ex. ignore children, staff seem distant or cold).	Y N	3.2	Staff usually respond to children in a warm, supportive manner (Ex. staff and children seem relaxed, voices cheerful, frequent smiling).	Y N	5.1	Staff show warmth through appropriate physical contact (Ex. pat child on the back, return child's hug).	Y N	7.1	staff seem to enjoy being with the children.
Y N	1.2	Interactions are unpleasant (Ex. voices sound strained and irritable).	Y N	3.2	Few, if any, unpleasant interactions.	Y N	5.2	Staff show respect for children (Ex. listen attentively, make eye contact, treat children fairly, do not discriminate).	Y N	7.2	Staff encourage the development of mutual respect between children and adults (Ex. staff wait until children finish asking questions before answering; encourage children in a polite way to listen when adults speak).
Y N	1.3	Physical contact used principally for control (Ex. hurrying children along) or inappropriately (Ex. unwanted hugs or tickling).				Y N	5.3	Staff respond sympathetically to help children who are upset, hurt, or angry.			

32. **Note for Clarification**

* While the indicators in this item generally hold true across a diversity of cultures and individuals, the ways in which they are expressed may differ. For example, direct eye contact in some cultures is a sign of respect; in others, a sign of disrespect. Similarly some individuals are more likely to smile and be demonstrative than others. However, the requirements of the indicators must be met, although there can be some variation in the way this is done.

Inadequate 1			2	Minimal 3		4	Good 5		6	Excellent 7	
4. **Room arrangement for play**											
Y N	1.1	No interest centers* defined.	Y N	3.1	At least two interest centers defined.	Y N	5.1	At least three interest centers defined and conveniently equipped (Ex. water provided near art area; shelving adequate for blocks and manipulatives).	Y N	7.1	At least five different interest centers provide a variety of learning experiences.
Y N	1.2	Visual supervision of play area is difficult.	Y N	3.2	Visual supervision of play area is not difficult.				Y N	7.2	Centers are organized for independent use by children (Ex. labelled open shelves; labelled containers for toys; open shelves are not over-crowded; play space near toy storage).
			Y N	3.3	Sufficient space for several activities to go on at once (Ex. floor space for blocks, table space for manipulatives, easel for art).	Y N	5.2	Quiet and active centers placed to not interfere with one another (Ex. reading or listening area separated from blocks or housekeeping).			
			Y N NA	3.4	Most spaces for play are accessible to children with disabilities enrolled in the group. *NA permitted.*	Y N	5.3	Space is arranged so most activities are not interrupted (Ex. shelves placed so children walk around, not through, activities; placement of furniture discourages rough play or running).	Y N	7.3	Additional materials available to add to or change centers.

4. **Note for Clarification**

* An interest center is an area where materials, organized by type, are stored so that they are accessible to children, and appropriately furnished play space is provided for children to participate in a particular kind of play. Examples of interest centers are art activities, blocks, dramatic play, reading, nature/science, and manipulatives/fine motor.

Question

(7.3) Are there any additional materials available that you add to the interest centers?

Following are three sample items from the ECERS-Extension

Inadequate		Minimal		Good		Excellent
1	2	3	4	5	6	7

3. Adult reading with the children

Y N	1.1	Adults rarely read to the children.	Y N	3.1	An adult reads with the children most days.	Y N	5.1	Children take an active role in group reading during which discussion of the words and / or story usually takes place.	Y N	7.1	There is discussion about print and letters as well as content.
			Y N	3.2	Children are encouraged to join in with repetitious elements of the text.	Y N	5.2	Children are encouraged to conjecture about and comment on the text.	Y N	7.2	There is support material for the children to engage with the story by themselves e.g. tapes, flannel board, displays etc.
									Y N	7.3	There is evidence of one to one reading with some children.

Inadequate		Minimal		Good		Excellent
1	2	3	4	5	6	7

1. Natural materials

Y N	1.1	There is little access inside the centre to natural materials (Ex. plants, rocks, pebbles, fir cones).	Y N	3.1	Some natural materials are available and are accessible to the children indoors.	Y N	5.1	Natural materials are used beyond decoration to illustrate specific concepts (Ex. growth - planting seeds or bulbs).	Y N	7.1	Children are encouraged to identify and explore a wide range of natural phenomena in their environment outside the centre and talk about/describe them.
			Y N	3.2	Natural materials are accessible outdoors, e.g. plants.	Y N	5.2	Through regular activities children are encouraged to explore the characteristics of natural materials (Ex. things that are smooth or rough).	Y N	7.2	Children are encouraged to bring natural objects into the centre.
						Y N	5.3	Adults show appreciation, curiosity and respect for nature when with children (Ex. curiosity and interest rather than fear or disgust about fungi, insects, worms, etc.).	Y N	7.3	Children are encouraged to make close observations of natural objects and/or draw them.

Inadequate		Minimal		Good		Excellent
1	2	3	4	5	6	7

Diversity : Planning for individual learning needs. Ask to see the records kept on individual children.

Y N	1.1	All children in the setting are offered the same range of materials and activities, rather than having activities matched to their age or aptitude.	Y N	3.1	Some additional provision is made for individuals or groups with specific needs.*	Y N	5.1	The range of activities provided enables children of all abilities and from all backgrounds to participate in a satisfying + cognitively demanding way.***	Y N	7.1	The range of activities provided, together with the organisation of social interaction, enables children of all abilities and backgrounds to participate at an appropriate level in both individual and common tasks.***
Y N	1.2	If planning occurs there is no mention of specific groups or individuals.	Y N	3.2	Some of the planning shows differentiation for particular individuals or groups Ex. simple peg puzzles to complex jigsaws, fat paint brushes to watercolour brushes.	Y N	5.2	Day to day plans are drawn up with the specific aim of developing activities that will satisfy the needs of each of the children either individually or as groups.	Y N	7.2	Planning shows attention to adult participation to individual/paired/group tasks and to the range of levels at which a task or activity may be experienced.
Y N	1.3	If records are kept, they describe activities rather than the child's response or success in that activity.+ Ex. Ticked checklists or sampling of children's work.	Y N	3.3	Children's records indicate some awareness of how individuals have coped with activities, or of the appropriateness of activities +Ex. 'need bilingual support' 'could only manage to count to 3'.	Y N	5.3	Children are observed regularly , and individual records are kept on their progress indifferent aspects of their development+.	Y N	7.3	Children are observed regularly, and their progress is recorded and used to inform planning.
			Y N	3.4	Staff show some awareness of the need to support and recognise children's' differences, by giving praise and public approval to children of all abilities	Y N	5.4	Staff regularly draw attention of individuals to differences in a positive and sensitive manner.	Y N	7.4	Staff regularly draw the attention of the whole group to difference and ability in a positive way.****

Note*= Ex. children of different ages or developmental stage, bilingual support for bilingual children, specific support for children with learning difficulties or a disability.
Note**= Ex. staff demonstrate in playing with children the different tasks which can be attempted with a construction toy, computer game.
Note***= Ex. children of different ages or aptitudes may be paired for a particular task, such as reporting on the weather, selecting stories for a group, exploring a new computer programme, or an adult may focus on working with one group or activity on a particular occasion.
Note****= Ex. show disabled individuals or those with learning difficulties in a positive light or individual capability is celebrated e.g. bilingualism is seen as an asset.

Appendix C.
Tukey H.S.D tests results comparing total ECERS-R scores

Comparison		Mean difference	Std. Error	Significance
Nursery classes	Playgroups	10.7902	1.308	.000
	Private day nurseries	6.1791	1.335	.000
	Local authority centres	2.1078	1.419	.674
	Nursery schools	-3.1324	1.490	.286
	Combined centres	-2.7432	2.258	.830
Playgroups	Nursery classes	-10.7902	1.308	.000
	Private day nurseries	-4.6111	1.233	.003
	Local authority centres	-8.6824	1.324	.000
	Nursery schools	-13.9226	1.400	.000
	Combined centres	-13.5334	2.199	.000
Private day nurseries	Nursery classes	-6.1791	1.335	.000
	Playgroups	4.6111	1.233	.003
	Local authority centres	-4.0713	1.350	.031
	Nursery schools	-9.3115	1.424	.000
	Combined centres	-8.9223	2.215	.001
Local authority centres	Nursery classes	-2.1078	1.419	.674
	Playgroups	8.6824	1.324	.000
	Private day nurseries	4.0713	1.350	.031
	Nursery schools	-5.2402	1.504	.007
	Combined centres	-4.8510	2.267	.267
Nursery schools	Nursery classes	3.1324	1.490	.286
	Playgroups	13.9226	1.400	.000
	Private day nurseries	9.3115	1.424	.000
	Local authority centres	5.2402	1.504	.007
	Combined centres	.3892	2.312	1.000
Combined centres	Nursery classes	2.7432	2.258	.830
	Playgroups	13.5334	2.199	.000
	Private day nurseries	8.9223	2.215	.001
	Local authority centres	4.8510	2.267	.267
	Nursery schools	-.3892	2.312	1.000

Appendix D.
ANOVA tests results comparing ECERS-R sub-scale scores by type of provision

Sub-scale	DF	F value	Significance
Space and furnishings	5,153	24.24	.00
Personal care practices	5,153	1.72	.14
Language and reasoning	5,153	16.93	.00
Pre-school activities	5,153	41.87	.00
Social Interaction	5,153	6.54	.00
Organisation and routines	5,153	15.75	.00
Adults working together	5,153	44.97	.00

Appendix E.
Tukey H.S.D tests results comparing total ECERS-E scores

Comparison		Mean difference	Std. Error	Significance
Nursery classes	Playgroups	6.2816	.718	.000
	Private day nurseries	3.4165	.733	.000
	Local authority centres	2.1656	.779	.061
	Nursery schools	-1.2625	.818	.636
	Combined centres	-2.6178	1.239	.281
Playgroups	Nursery classes	-6.2816	.718	.000
	Private day nurseries	-2.8651	.677	.000
	Local authority centres	-4.1160	.727	.000
	Nursery schools	-7.5441	.768	.000
	Combined centres	-8.8993	1.207	.000
Private day nurseries	Nursery classes	-3.4165	.733	.000
	Playgroups	2.8651	.677	.000
	Local authority centres	-1.2509	.741	.540
	Nursery schools	-4.6790	.782	.000
	Combined centres	-6.0342	1.216	.000
Local authority centres	Nursery classes	-2.1656	.779	.061
	Playgroups	4.1160	.727	.000
	Private day nurseries	1.2509	.741	.540
	Nursery schools	-3.4281	.825	.000
	Combined centres	-4.7833	1.244	.002
Nursery schools	Nursery classes	1.2625	.818	.636
	Playgroups	7.5441	.768	.000
	Private day nurseries	4.6790	.782	.000
	Local authority centres	3.4281	.825	.000
	Combined centres	-1.3553	1.269	.894
Combined centres	Nursery classes	2.6178	1.239	.281
	Playgroups	8.8993	1.207	.000
	Private day nurseries	6.0342	1.216	.000
	Local authority centres	4.7833	1.244	.002
	Nursery schools	1.3553	1.269	.894

Appendix F.
ANOVA tests results comparing ECERS-E sub-scale scores by type of provision

Sub-scale	DF	F value	Significance
Literacy	5,135	28.55	.00
Mathematics	5,153	12.24	.00
Diversity	5,135	15.73	.00
Kruskal-Wallis test (non-parametric)	**DF**	**Chi sq.**	**Significance**
Science and environment	5	65.22	.00

Appendix G. Bar charts to compare ECERS-R total and sub-scale scores of Grouping A and Grouping B

Figure G1. Total ECERS scores by Grouping A (top) and Grouping B (bottom)

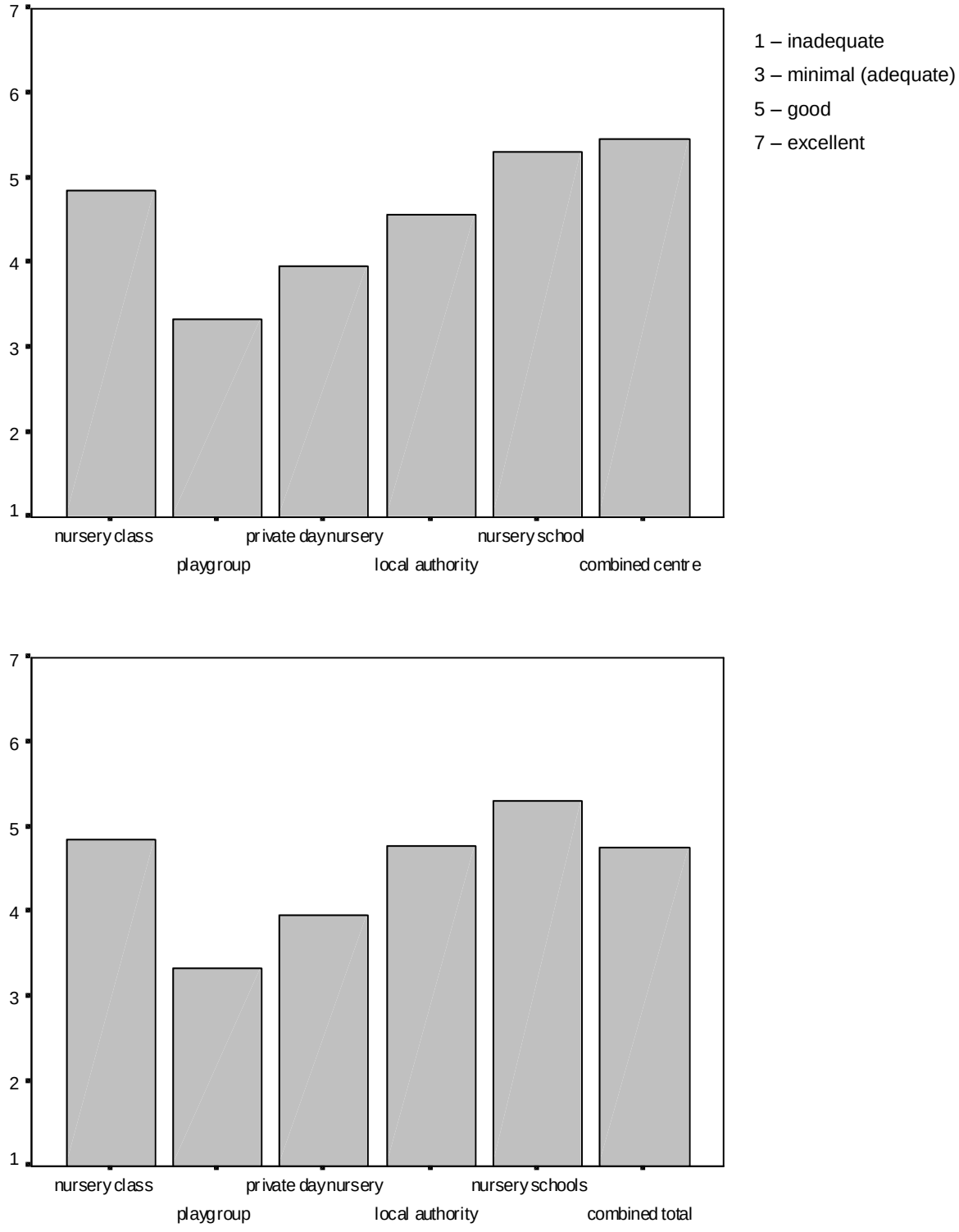
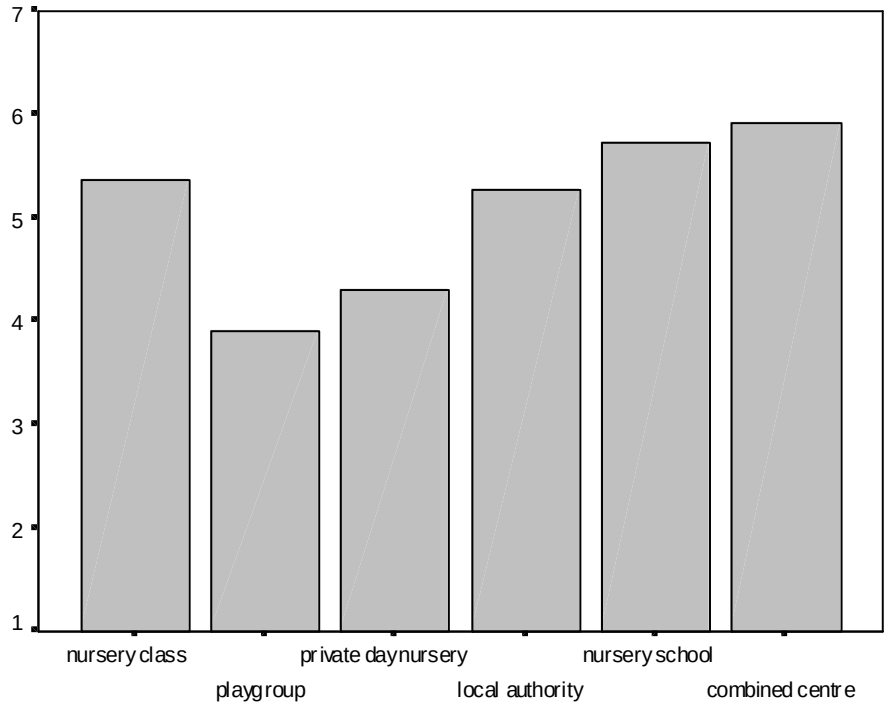


Figure G2. ECERS-R space and furnishings sub-scale by grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

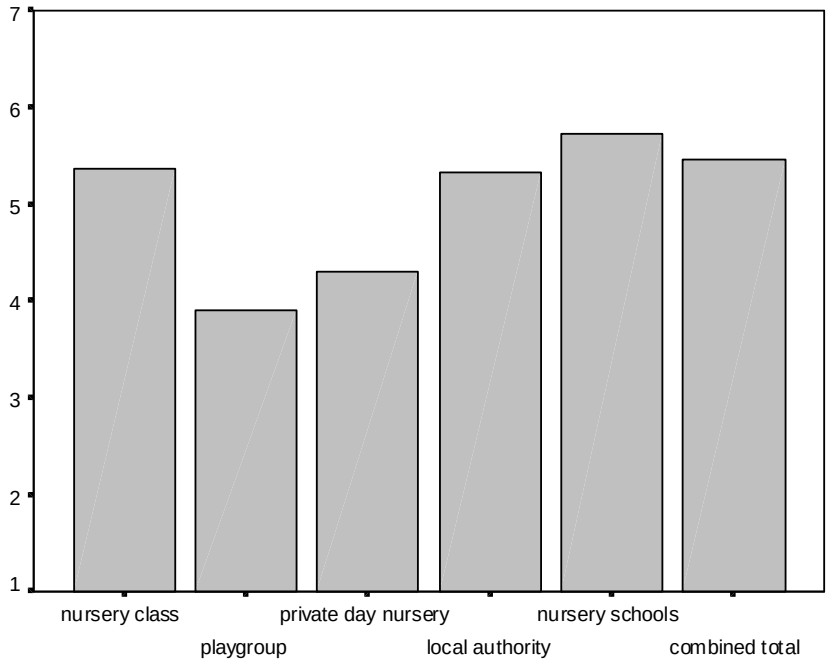
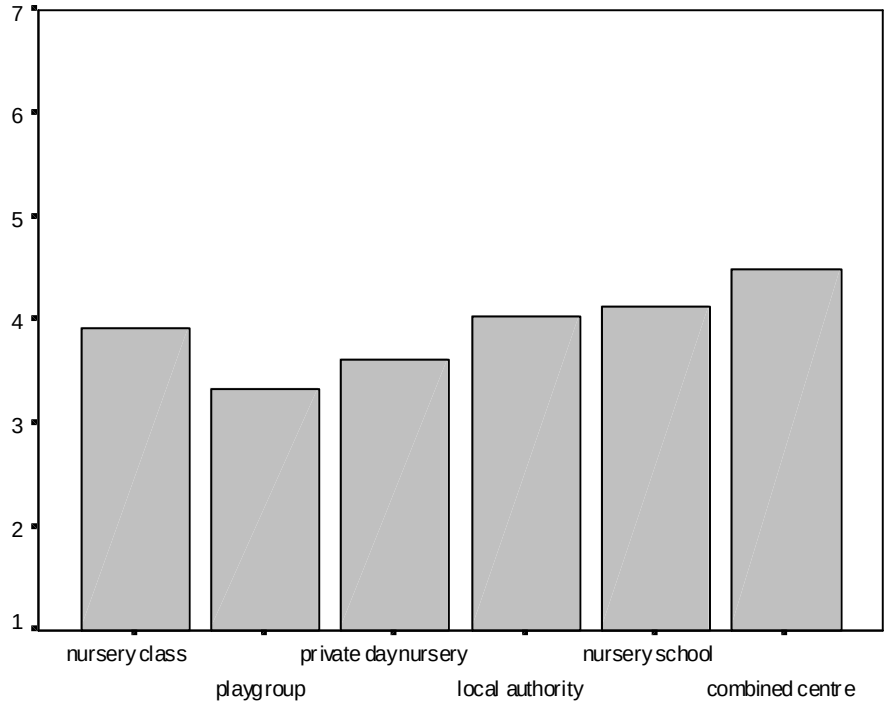


Figure G3. ECERS-R Personal care practices sub-scale by Grouping A (top) and Grouping (B)



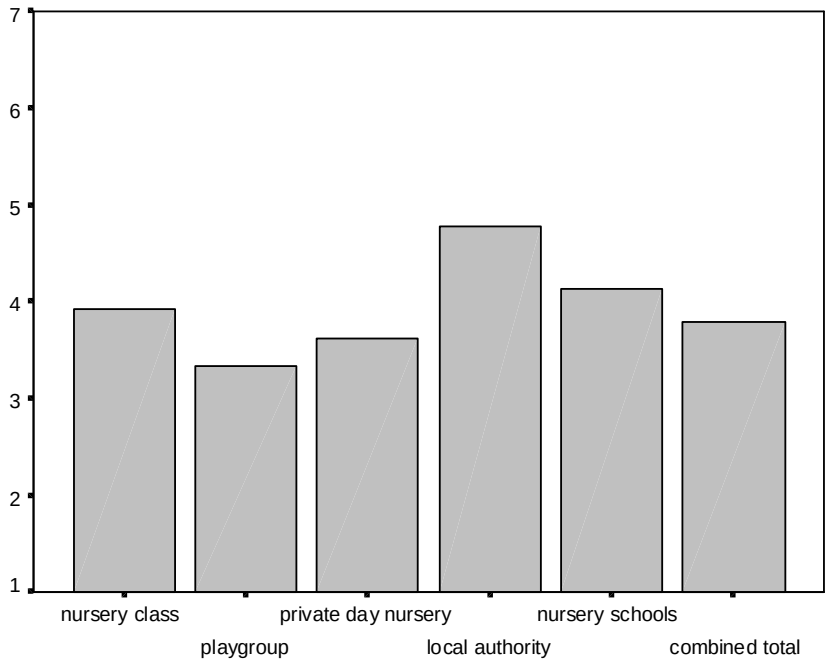
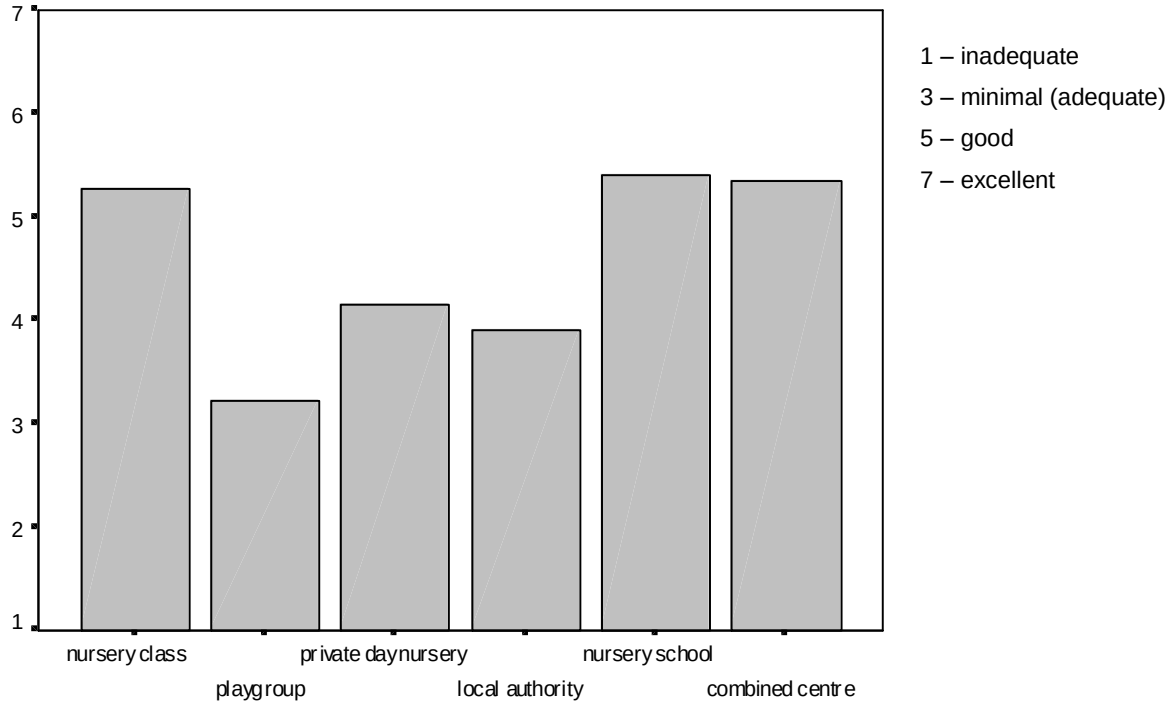


Figure G4. ECERS-R language and reasoning sub-scale by Grouping A (top) and Grouping B (bottom)



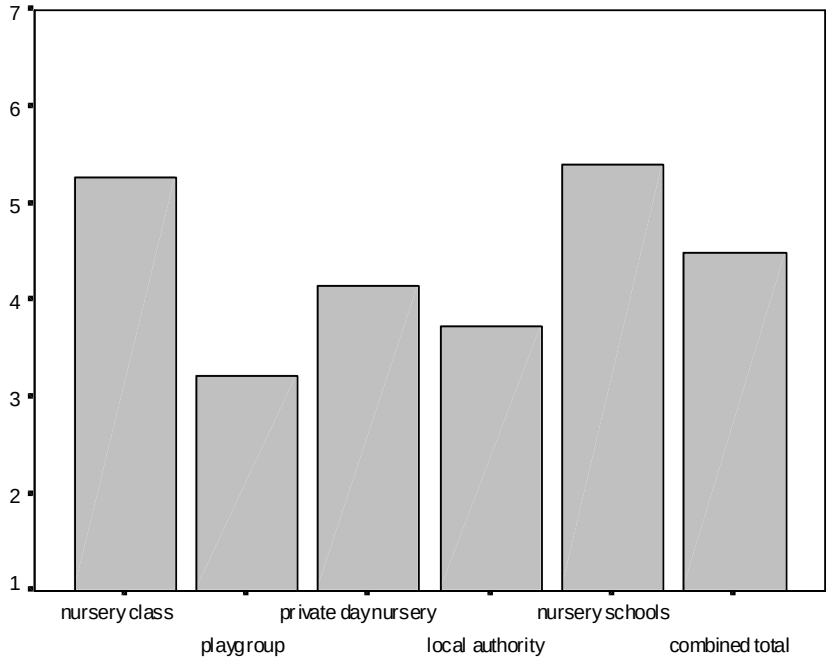
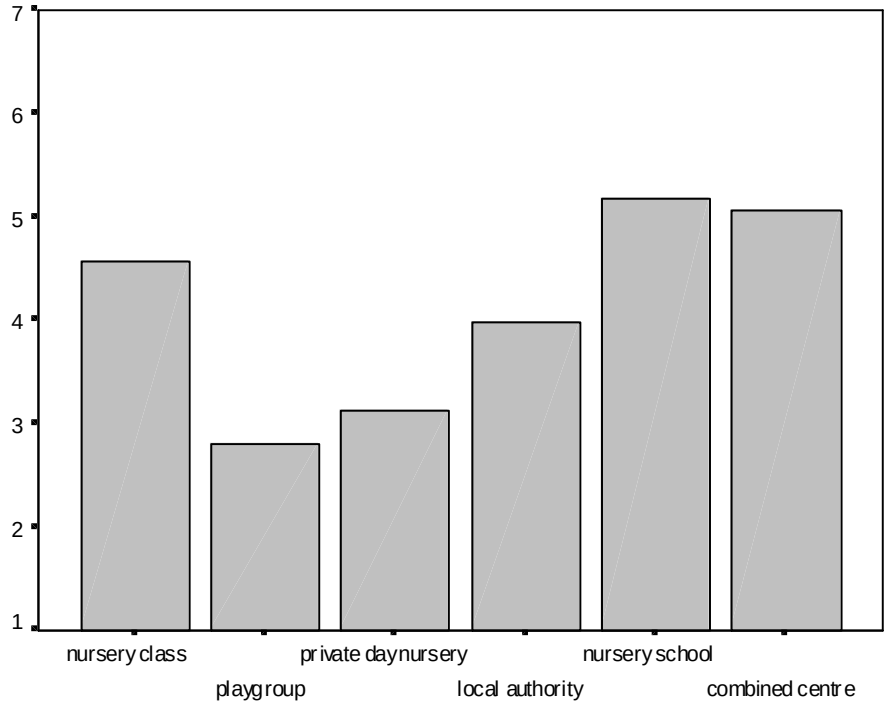


Figure G5. ECERS-R Pre-school activities sub-scale by Grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

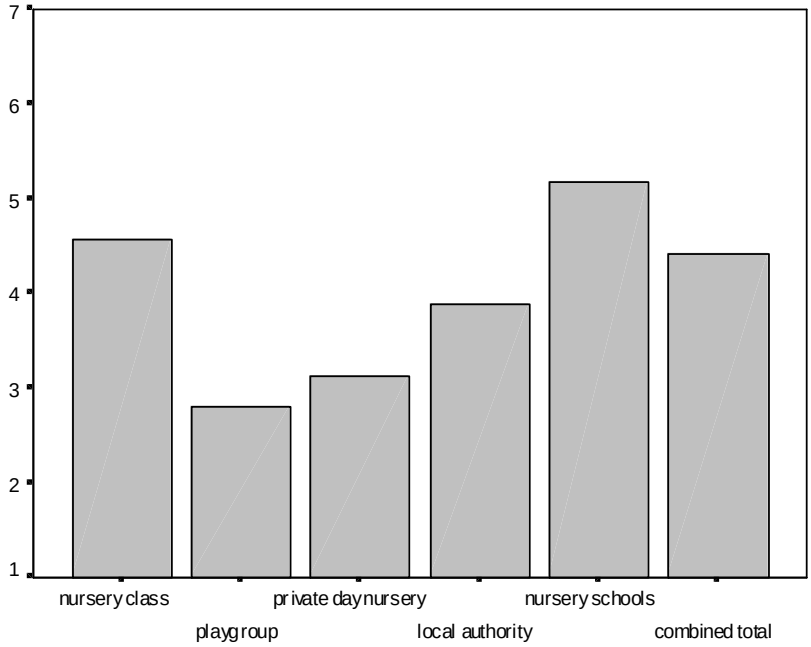
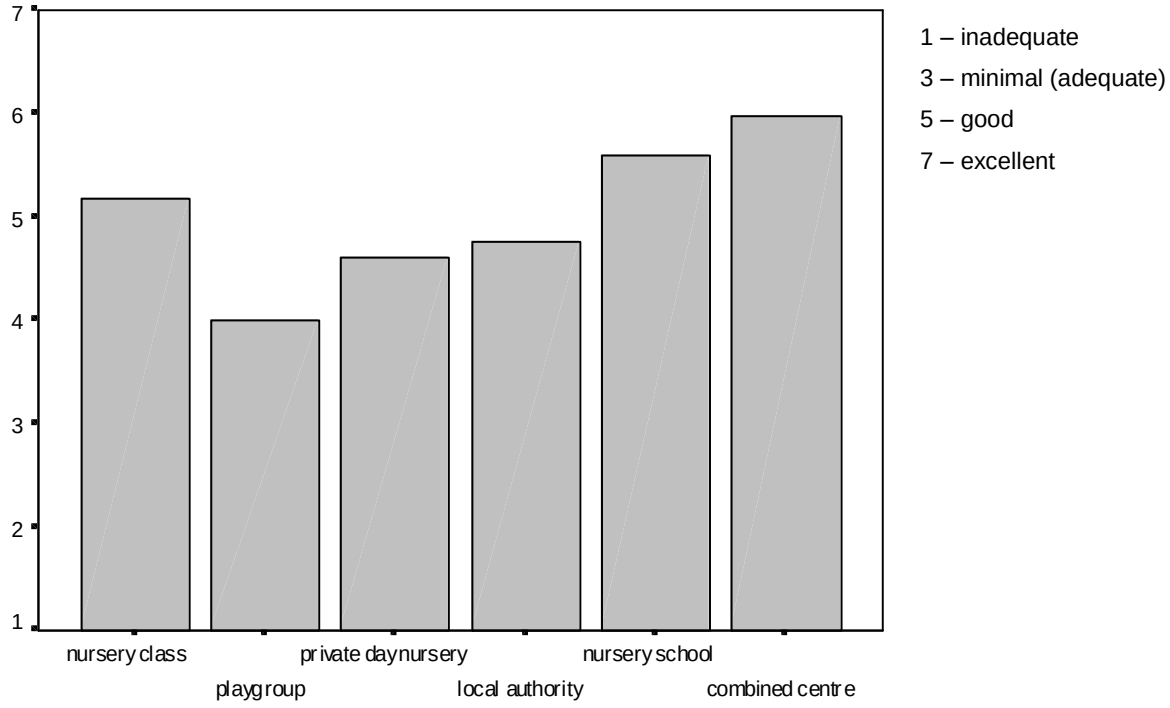


Figure G6. ECERS-R Social interaction sub-scale by Grouping A (top) and Grouping B (bottom)



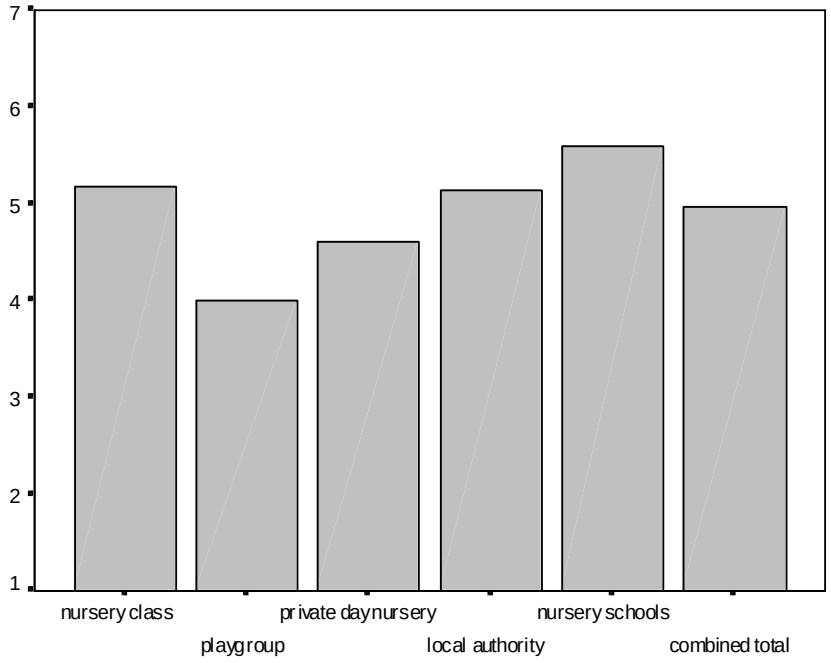
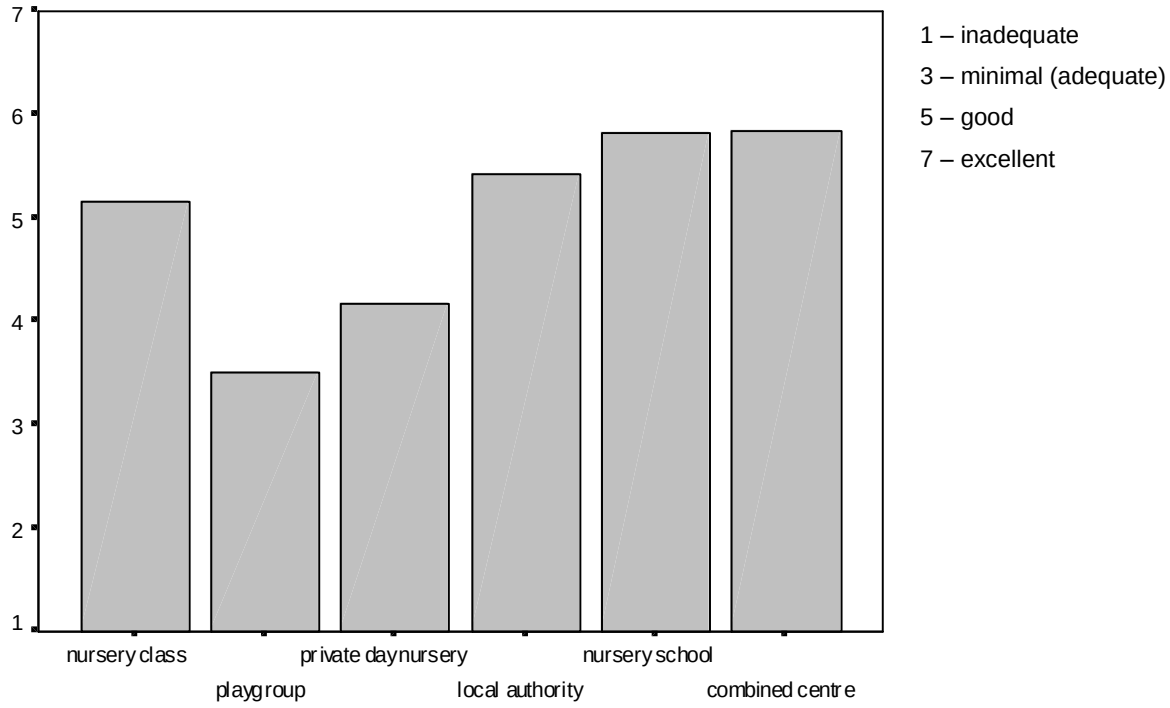


Figure G7. ECERS-R Organisation and routine sub-scale by Grouping A (top) and Grouping B (bottom)



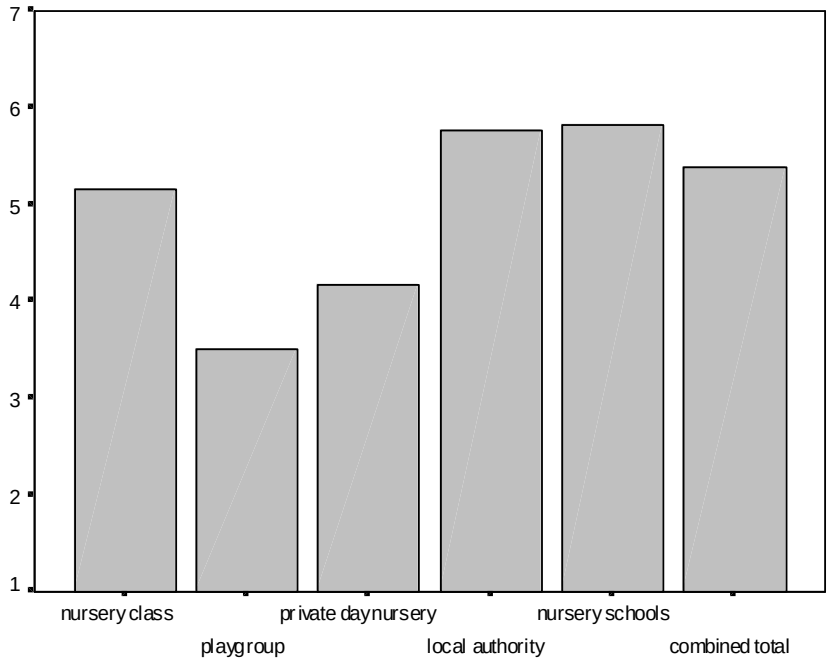
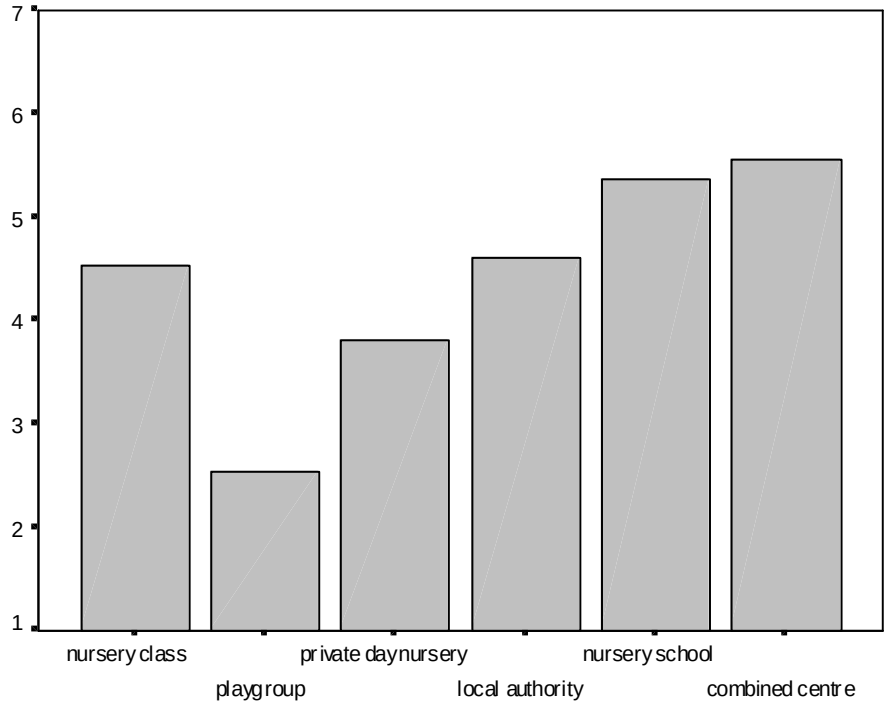
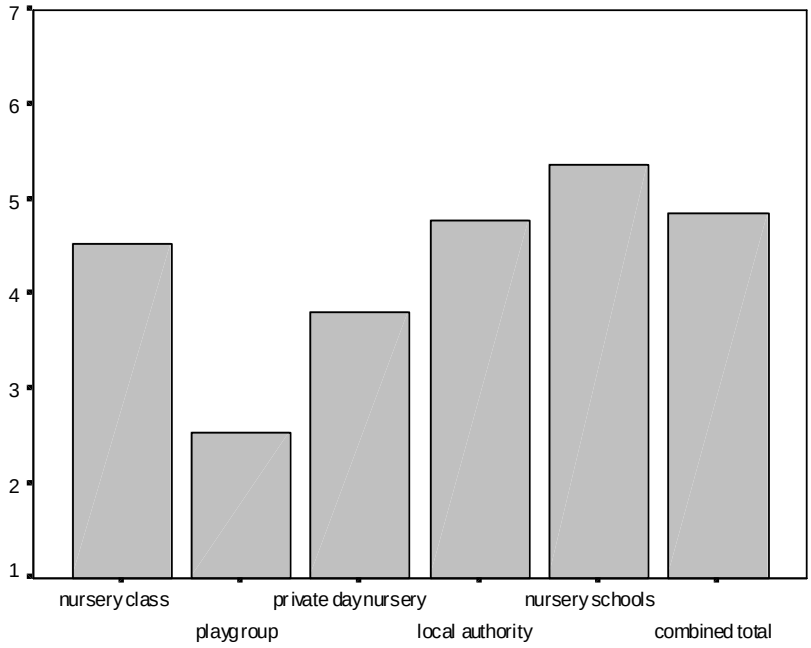


Figure G8. ECERS-R Adults working together sub-scale by Grouping A (top) and Grouping B (bottom)

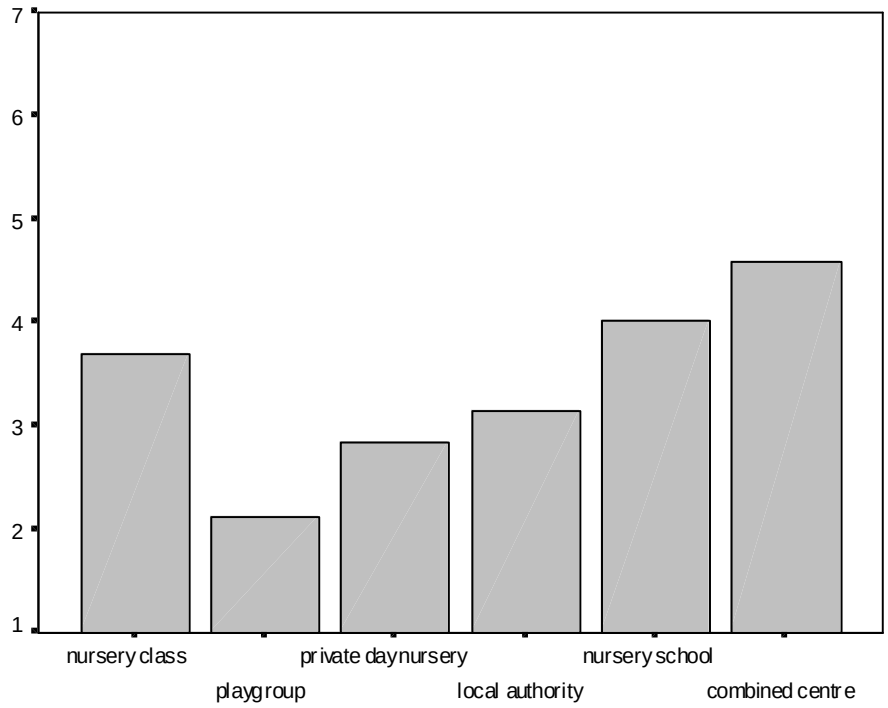


1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent



Appendix H.
Bar charts to compare ECERS-E total and sub-scale scores of Grouping A and Grouping B

Figure H1. Total ECERS-E scores by grouping A (top) and Grouping B (bottom)



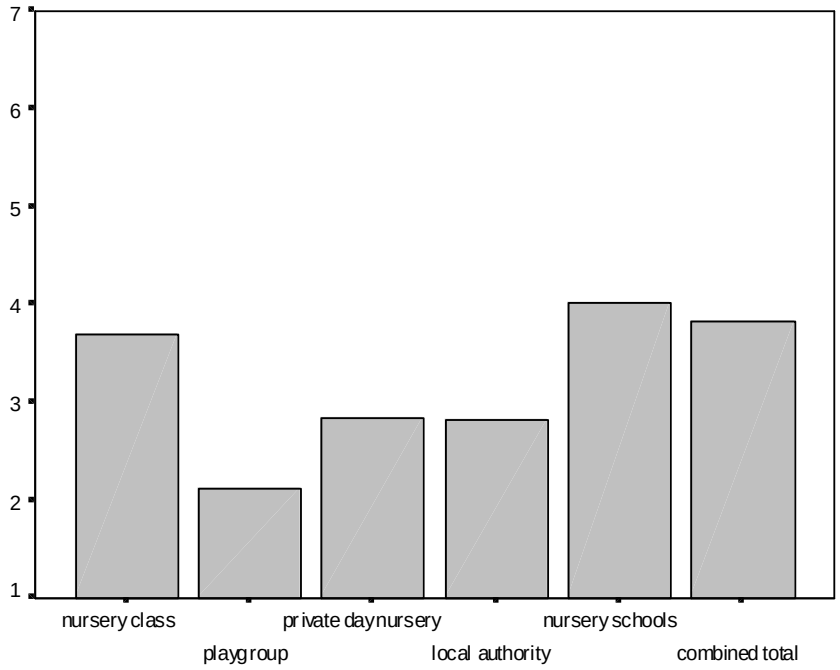
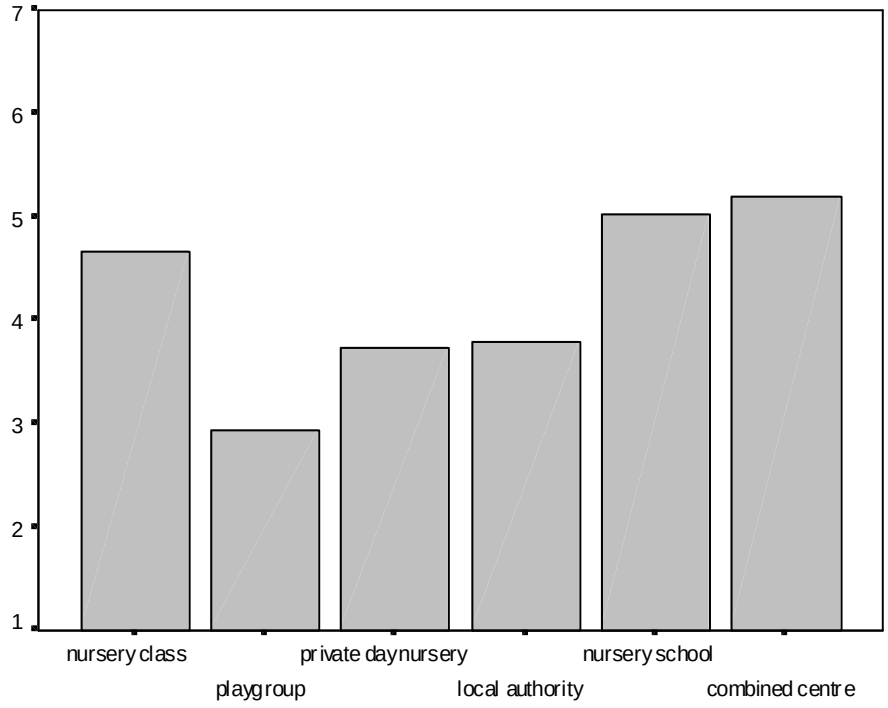


Figure H2. ECERS-E literacy sub-scale by Grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

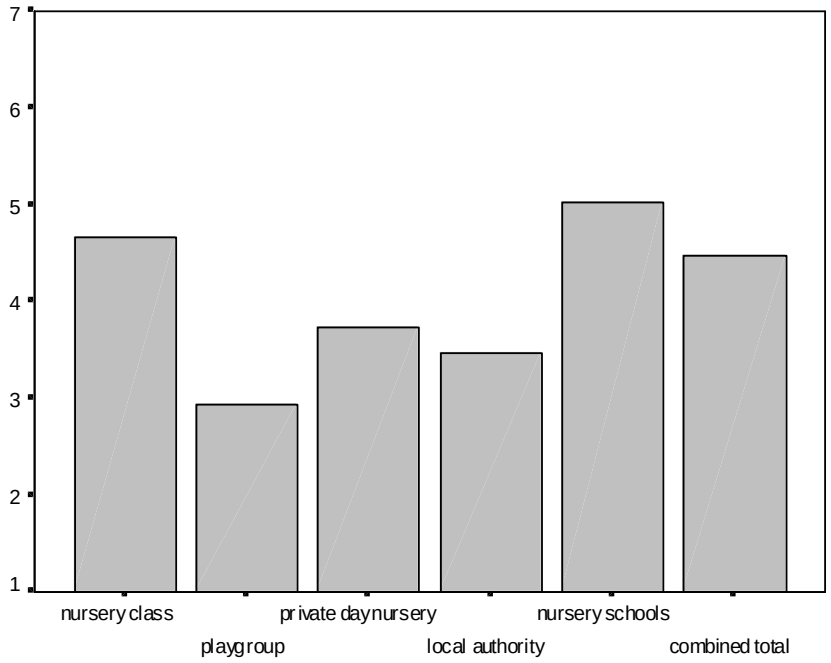
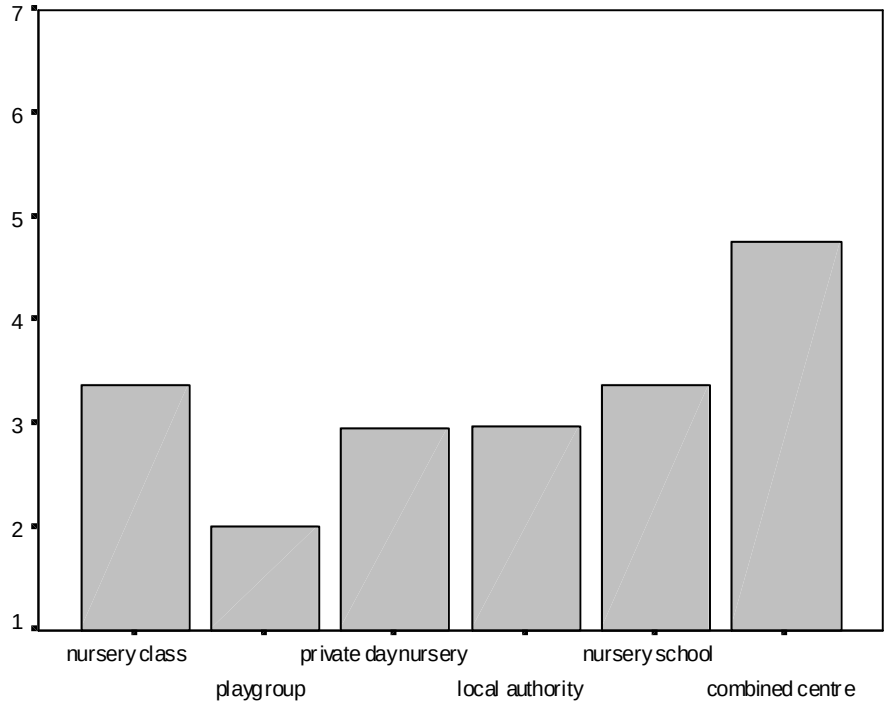


Figure H3. ECERS-E mathematics sub-scale by Grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

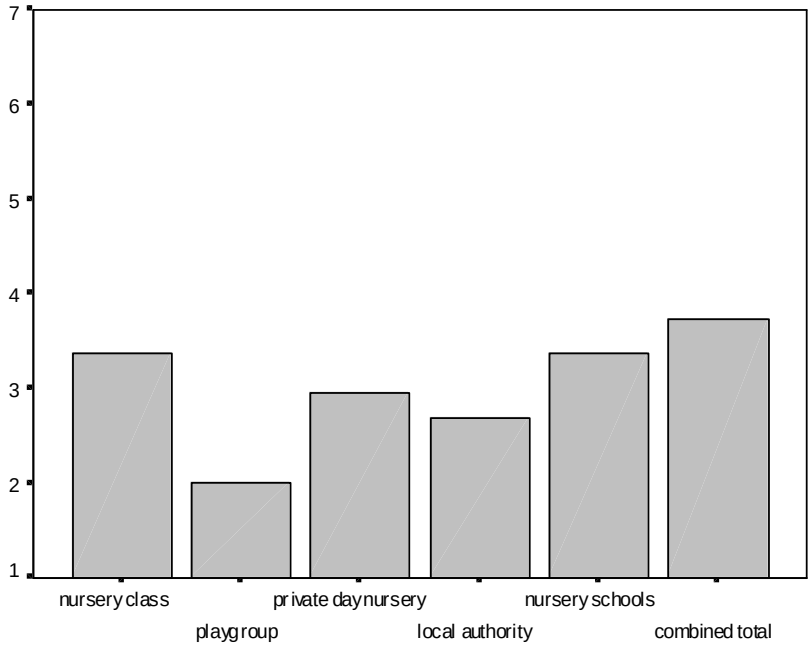
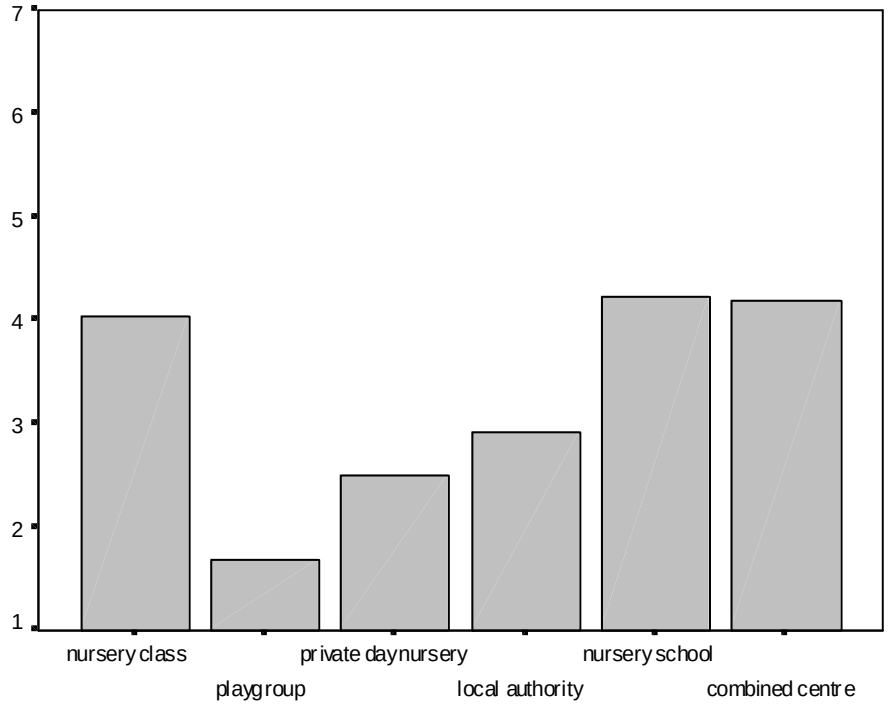


Figure H4. ECERS-E science and environment sub-scale by Grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

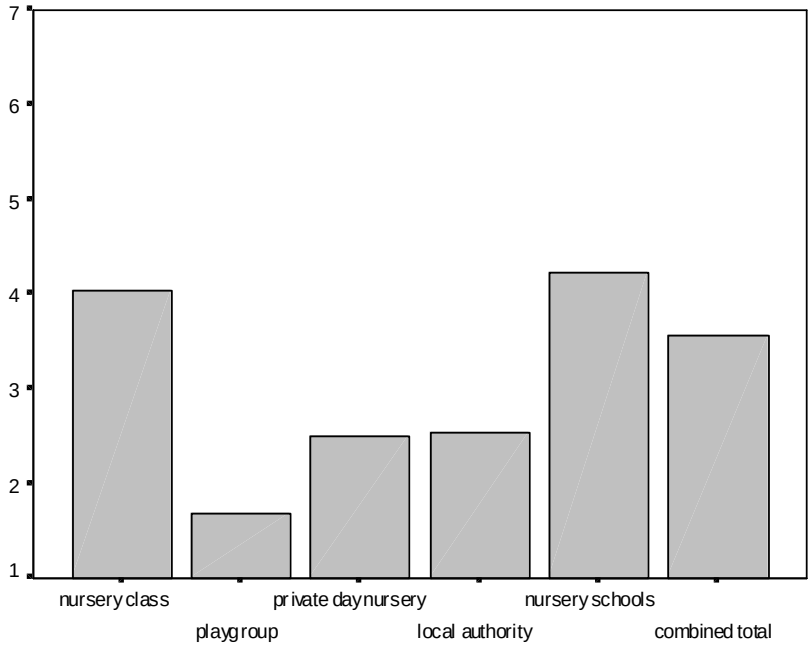
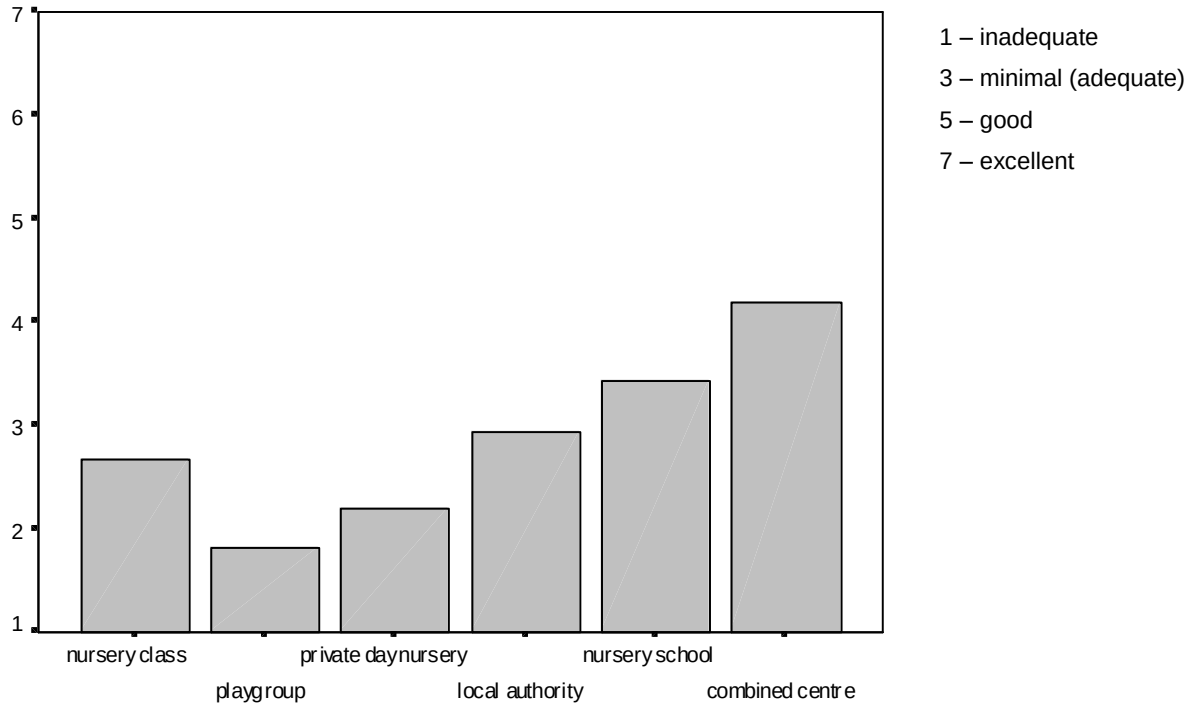
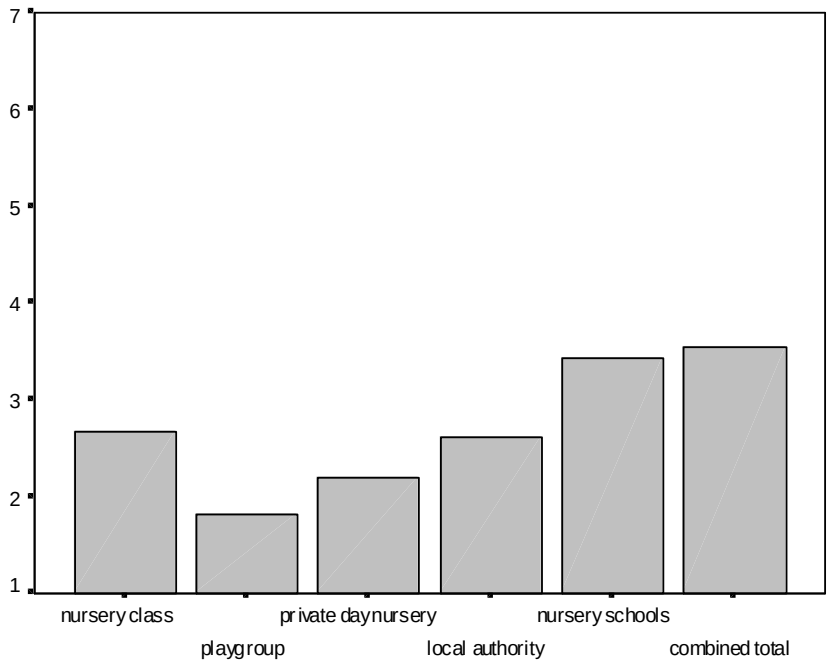


Figure H5. ECERS-E diversity sub-scale by Grouping A (top) and Grouping B (bottom)





Appendix I. ECERS-R Factor Analysis

ECERS varimax rotated component matrix

Item	Component	
	1	2
score for sand/water	.762	.109
score for opportunities for professional growth	.736	.280
score for art	.724	-5.003E-02
score for child-related display	.711	.212
score for blocks	.656	.102
score for provision for professional needs of staff	.619	.241
score for provision for personal needs of staff	.608	.117
score for nature/science	.589	.310
score for maths/number	.586	.292
score for gross motor equipment	.572	-9.090E-02
score for free play	.572	.473
score for supervision and evaluation of staff	.564	.227
score for fine motor	.555	.374
score for dramatic play	.521	.105
score for space for gross motor activity	.491	.206
score for space for privacy	.491	-3.910E-03
score for music/movement	.480	.225
score for books & pictures	.456	.328
score for schedule	.440	.261
score for group time	.436	.397
score for promoting acceptance of diversity	.429	.270
score for provisions for parents	.415	.102
score for furniture for care	.409	.193
score for indoor space	.351*	.136*
score for furnishings for relaxation	.283*	.265*
score for general supervision of children	-6.513E-03	.816
score for discipline	.193	.807
score for staff – child interactions	.243	.742
score for informal use of language	.300	.741
score for using language to develop reasoning skills	.408	.661
score for interactions among children	.368	.645
score for staff interaction and co-operation	.352	.582
score for encouraging children to communicate	.519	.565
score for health practices	6.016E-02	.505
score for safety practices	.149	.492
score for supervision of gross motor activities	.105	.455
score for room arrangement	.250	.426
score for greeting/departing	-4.595E-02	.418
score for toileting/diapering	1.677E-02	.384
score for meals/snacks	.226	.289

Appendix J. ECERS-E Factor Analysis

ECERS-E varimax rotated component matrix

Item	Component	
	1	2
Score for 'environmental print' letters and words	.684	.371
Score for natural materials	.683	.314
Score for counting	.678	.122
Score for science resourcing	.656	.246
Score for talking and listening	.649	.229
Score for sounds in words	.634	-.269
Score for adult reading with child	.585	.270
Score for emergent writing and mark making	.538	.462
Score for reading and writing simple numbers	.530	6.259E-02
Score for individual learning needs	.512	.359
Score for gender equity	3.972E-02	.763
Score for multicultural education	.127	.702
Score for book and literacy	.339	.643

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