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OBSERVATIONAL STUDIES IN NURSERY SCHOOLS

**An enquiry involving seven Nursery Schools
and using three observational techniques**

Margery Gascoigne Cooper

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ABSTRACT

Observational Studies in Nursery Schools

The studies were undertaken in seven Nursery Schools in order to give emphasis to the value of observational methods of enquiry in work with young children. Three techniques were adopted adhering to the following principles

- 1) suitability for use by practising teachers
- 2) inviolability of school settings and programmes.

The whole is prefaced by a short account of the development of observational techniques over the last century.

The First Study is a psychological ecology of the total indoor play space of each Nursery School, using recording schedules to highlight the population densities of the designated areas, their mobility patterns and qualities of elicited behaviours. The Second Study records, with the use of machines, the verbal behavioural responses of the children against the continuing background of uninterrupted play with manipulation of the variable of teacher presence. The Third Study is of teachers' descriptions of the children's

behaviours using a standardised multiple choice technique. While each study had its own particular structure, it was hypothesised that each would be complementary to the others. Conducted entirely in the schools, with teacher co-operation, the data was later processed by simple count and by computer. The quality of data from each study dictated the choice of statistical technique.

The ecology study revealed the characteristics of the play areas in respect of population density, mobility and qualities of behaviour with reference to sex and age differences. Adult presence was thought to be a most powerful determining influence on children's choice of play area, superceding area density and quality of equipment. Within the second study the manipulation of this variable showed the adult drawing children's verbal response towards herself in a didactic setting with some emphasis on the age factor. The favoured teaching method was Socratic and verbal control was through suggestion rather than request. Ratings of behaviours corresponded favourably with the hypothesised distribution, socio-economic factors playing no part in the judgment of behaviour or quality of home and school integration. Items from the three studies

revealed high correlation within each and correlation between children's ways of expressing personal feeling through speech.

The educational implications underlying the three studies pointed to the need for wider and more predictive assessment procedures, new ways to promote more intensive interaction between children and adults together with some imaginative departures from the traditional programme. The schools, though happy, positive places, did not appear to be structuring programmes likely to utilise the dynamic forces of human growth and development in the early years.

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INTRODUCTION

The second half of the twentieth century may well be marked as the period in psychology wherein scientists move quite rapidly from the temptation to explain human behaviour in terms and on the basis of animal behaviour and towards the utilisation of wide ranging studies in several species so that each can illumine the evolutionary path of development.

Unfortunately, the dramatic popular attempt to link animal ethology to the study of human behaviour was built around insufficiently substantiated extrapolations, but an improved link, the use of ethological methods to collect information on human behaviour, may now be seen as a more sophisticated descriptive/interpretative task undertaken by scientists from related disciplines - psychology, zoology, anthropology (Blurton Jones, 1972). Emphasis on simplified, observable features of behaviour as raw data, the whole being viewed against an evolutionary framework, has revived interest in naturalistic techniques.

Developmental psychology, 'the study of the change in behaviour as a function of time' (Zigler, 1964), is a subdivision of a general behaviour theory. It is concerned to show the continuous emergence and growth of adaptive abilities within the human being allowing fulfilment of increasing potential at successive stages of life. With concepts such as growth, adaptation, stage and change as hall-marks, developmental psychology can claim defining features that allow it to build theoretical constructs for verification and prediction thus assuming some of the dignities of a theory. Throughout the life span there are periods where change is accelerated, and developmentalists have tended to investigate more closely the periods of infancy, childhood, adolescence and, in recent years, old age.

Child development is concerned with the most fertile area of growth in ascendancy, from birth to maturity. Its history spans more than a century, and this is usually thought of as beginning with the application of scientific method to observation of children (Darwin, 1872) to the present day when it is characterised by such work as that of Piaget (1926), using

biological presuppositions in his formulations of intellectual development, Bowlby (1957) drawing analogies between imprinting and the human mother/child relationship, and Hutt (1970) demonstrating the return to observational study using ethological techniques. The fundamental questions it seeks to answer are those exposed in consideration of the 'muling, pewking infant in his nurse's arms' and his eventual transformation into the controlled independent, 'justice, full of wise saws, and modern instances'.

Using psychological terms, Zigler (1964) has asked:

"How does the person change from the tiny, pre-linguistic, motorically incompetent organism which we encounter in infancy to that larger, verbal, motorically skilled organism represented in adulthood? How does the dependent, a-social, and a-moral infant develop into the dependent, socialised, moralistic adult? How do the non-veridical perceptions, the ego-centric and illogical thought processes develop into the veridical perception, the reality-oriented and logical cognitive functioning encountered in maturity?"

Child development has as its content data which has been gathered by methods peculiar to itself, in answer to these questions. In

supplying its definitive characteristics, its methodology, however, has not been beyond criticism. It is possible that renewed emphasis on detailed observation, the descriptive phase of science, used to illuminate such work as the developmental studies of, for example, Thomas, Chess and Birch (1967), Sears, Rau and Alport (1965), Ainsworth (1969) and the cross cultural studies, for example, Whiting (1963) may now provide confirmation for findings that appear to be of central importance. An era which will see Child Development as one of the studies most important to Man is due to begin.

Accordingly, it was decided to investigate ways of studying young human beings in action using methods least likely to influence their accustomed behavioural responses. A necessary first step appeared to be exploration and assessment of the background against which the children were behaving in an attempt to examine some of the ecological forces affecting choice of actions and their temperamental accompaniments. A second was to look more closely, though continuing to preserve the 'natural' habitat, at the children themselves. In the event the dual aim involved the use of three observational

techniques complementary one to the others though each with a style and significance of its own. It was hoped that the availability and suitability of the techniques, the interpretation of results and their implications for education, would appeal to teachers who might then be persuaded to evolve a programme of observation likely to benefit themselves as well as the children.

"There are neither good nor bad methods, but only methods that are more or less effective under particular circumstances in reaching objectives on the way to a distant goal."

Homans, G.C.,
Strategy of Industrial Sociology.
Amer. Jnl. Socio. 50, p. 330.
1949.

"Research in education will have to venture forth from the safe and sterile surroundings of the traditional laboratory and address itself to that most threatening of settings for the educational researcher, the classroom or its carefully created equivalent."

Shulman, L.S.,
Reconstruction of Educational
Research.
Rev. Ed. Res. 40. 3.
1970.

A CHRONOLOGICAL SURVEY OF CHILD STUDY

FROM DIARY TO ETHNOGRAM

Dennis (1949), in reviewing forty-two publications which appeared before 1882, is at pains to establish the historical sources of the early studies now regarded as landmarks in the development of child psychology. Herocard, a physician in the French Court, kept a diarist account of the health and development of the young prince born in 1601, and Pestalozzi (1774) more than a century later, made records of his son's behaviour. Neither was published, however, until the 19th century. It is possible that their publication reflected a growing interest through the activities of Preyer (Die Seche des Kindes, 1882), Hall (The Contents of Children's Minds, 1883) and Darwin (Biographical Sketch of an Infant, 1887) - the three studies which stand out against a background of publication in Europe, (Tiedemann, D., 1787; Taine, 1876; Bartholomai, 1870; Strumpell, 1880), England, (Champneys, 1881; Sully, J., 1881) and America, (Willard, 1835; Alcott, 1836; Talbot, 1882). The 1870s alone saw seventeen publications of studies on child behaviour but it is because

Preyer, Hall and Darwin were more able to control their methods of investigation that their contributions are outstanding.

Preyer, a physiologist, carried out detailed observations of the first four years of his son's life to which were added comparative data including behavioural data from observations of animals. His main interest was in physical power but he recorded also the early stages of speech, sense of space, memory and voluntary action. While acknowledging previous records, Preyer improved on their mode of presentation and attention to detail. Hall, a psychologist, using and paying tribute to the work of Bartholomai, began his study of Boston children in 1880. In controlling the quality and uniformity of procedures of questioning (he personally employed and trained his team) and selecting the list of topics on which the children were to be interrogated, he under-pinned the investigation and gave it a more rigorous design. The careful compilation of data, the results of the questionnaire (154 topics) made a marked contribution to methodology at a time

when biographies were popular. The improvement in concentration on a defined area, and the large sample questioned provided data which could be related to a number of variables, age, sex, I.Q. and socio-economic class. The method, with modifications, exists and is used today usually as part of a design, providing the quality of information which needs to be spread over a wide population and which must be assembled relatively quickly. There is, however, much criticism of Hall's lack of control of material supplied. A quotation illustrates this:

"More than half the children questioned conceived the sun as never more than 40 degrees from the zenith, and naturally enough, city children knew little of the horizon. So the moon comes around when it is a bright night and people want to walk, or forget to light some lamps; it follows us about and has nose and eyes, while it calls the stars into, under, or behind it at night, and they may be made of bits of it. Sometimes the moon is round a month or two, then it is a rim, or a piece is cut off, or it is half stuck or half buttoned into the sky. The stars may be sparks from fire-engines or houses, or, with higher intelligence, they are silver, or God lights them with matches and blows them out or opens the doors and calls them in in the morning.

Only in a single case were any of the heavenly bodies conceived as openings in the sky to let light or glory through, or as eyes of supernatural beings - a fancy so often ascribed to children and so often found in juvenile literature."

(quoted in Johnson and Medinnus, pp. 22/3).

The work of Darwin, a biologist, in the biography of an individual child, his son, is also important since the scientist brought to his observations and phenomena under study, something of scientific method. Even so the separation of fact and interpretation was not always successful. The projection onto the child of adult feelings, motives and emotions was difficult to avoid and biographies, usually undertaken by parents, were generally found to be faulty in this respect. Such singular children, too, could not be regarded as truly representative of all children of age and sex, thus limiting the application of findings.

"It was difficult to decide at how early an age anger was felt; on his eighth day he frowned and wrinkled the skin round his eyes before a crying fit, but this may have been due to pain or distress, and not to anger. When about ten weeks old, he was given some rather cold milk and he kept a slight frown on his forehead all the time that he was sucking, so that he looked like a grown-up person made cross from being compelled to do something which he did not like. When nearly four

months old, and perhaps much earlier, there could be no doubt, from the manner in which the blood gushed into his whole face and scalp, that he easily got into a violent passion. A small cause sufficed; thus, when a little over seven months old, he screamed with rage because a lemon slipped away and he could not seize it with his hands."

(quoted as before, p. 12).

Dennis (1949) pays tribute to Francis Galton in his scientific study of the Psychological Development of Twins (1875), the first enquiry into the nature/nurture issue. Further publications, 'Psychometric Experiments' (1879), brought attention to the importance of childhood in the formation of associations between ideas while 'Statistics of Mental Imagery' formed the basis of rating scales for several aspects of imagery. Dennis feels that Galton should be rated along with Preyer, Hall and Darwin as one of the founders of the movement in child psychology.

Fortunately, 'the growth stages of a single growing child', the essence of baby biography, continued to be recorded at the turn of the century. The work of Shinn (1900) stresses the continuity of behaviour and the value of longitudinal study in a record of the

development of her niece in the first year of life.

"The biographical method of child study has the inestimable advantage of showing the process of evolution going on, the actual unfolding of one stage after another, and the steps by which the changes come about. No amount of comparative statistics could give this. If I should find out that a thousand babies learned to stand at an average age of 46 weeks and 2 days, I should not know as much that is important about standing, as a stage in human progress, as I should after watching a single baby carefully through the whole process."

(quoted from Millicent W. Shinn, 1900. p. 11).

It was unusual to find both parents involved in child observation but the work of the Sterns, William and Clara, on their three children are the most notable exceptions to this. William, the psychologist, used the diaries kept by his wife, illustrations of children in psychological literature as well as 'the careful records of their son by G. and E. Supin', for his classic text in Child Psychology (1910). Such records continued to be of children of the upper class to which Stern draws attention but adds,

"It is, of course, probable that the main features of the child's psychic development share the same general character, but in details such as the relative time of development or the influence of certain conditions of environment, it is but reasonable to suppose that amongst the lower classes variations will be found which, so far, are but little known and which offer a wide and important field for future enquiry."

(Preface. Breslan, 1914).

The trained mind of Stern goes on to lay down practice most likely to help those who wish to 'draw near ... to the tender, incomprehensible life of the child soul.'

- "1. In each observation made of a little child mark a clear distinction between the outward action really observed, i.e. the action or expression seen, the utterance heard, etc., and the conclusions deduced from it.
2. The conclusions should be as much as possible in accordance with child nature: try to keep it as far as may be from the complications of your own psychic life and give full weight to the simplicity of the child soul.
3. No general psychological assertions, conclusions, explanations, should be made which cannot be simply justified by actual observations."

"All may approach the study of childhood 'with a warm heart and an open mind': yet only those should feel themselves called to scientific work - though that may be but the collection of material for the service of science - who possess the necessary psychological training and the power to struggle on to the by-no-means easy task of the record of facts and the conclusions therefrom. The value of investigation does not lie in the quantity of material gathered, but in its reliability and freedom from prejudice."

(p. 39).

Such Germanic thoroughness must have done good service to child psychology. The text is a period piece, full of charm in its illustrative material and drawing heavily on the psychology of the day (Bühler; Koffken; Kohler: 'We must be content with occasional reference to the parallels between lower animal and child', p. 63). Nevertheless, chapter and paragraph headings bear a close similarity to a modern text in child development.

Sully (1895), a professor of Philosophy of Mind and Logic, had previously drawn together studies written because of 'a special interest' and dealing with 'certain aspects of a child's mind'. To these he added the results of 'sets of observations drawn up with admirable care' producing a book of great charm and erudition.

From the inter-play of fact and fiction, of reality and literature emanates a warmth of feeling for childhood easily caught by the reader. Reflecting his epoch, Sully writes of 'the unfolding of an infant's mind connected with something which has gone before, the mental history of the race' (p. 8). He asserts the impossibility of any 'scientific' investigation of the child's mind and notes that women, 'who are most likely to be in the position of recording are least likely to possess scientific training' but comments that some such 'phenomena' are now at work in America. The co-operation of the mother, Sully suggests, is 'quite indispensable' - 'the knowledge of the teacher never quite equals that of the mother' in the writing of a record. The book is a classic in the study of childhood, and at the beginning of the century, formed with Stern, teaching text for the slowly enlarging numbers of teachers in training.

A discernible trend towards normative behaviour traits can be distinguished by the beginning of the 20th century. Preyer's 'conspectus', a summary which looks very much like modern developmental psychology, and the

conclusions drawn by the biographers, hint at the search for universal norms and general laws. A normative study by Dennis and Dennis (1937) of baby biographies from various countries finalises the tendency leaving its reader very much aware of the movement towards quantification and scaling in behaviour study. Hutt (1972) declares, 'The hey-day of observational studies of behaviour was the 1920s and early 1930s'. Not only psychologists but zoologists concerned themselves with the 'systematic recording in objective terms of behaviour in the process of occurring in a manner that (would) yield quantitative individual scores' (Jersild and Meigs, 1939). Normative studies based on observation now employing technological innovations such as the one-way screen, tape recorder and cinematograph reached a climax in the work of Gesell. To 'describe, measure and relate' appears to have had positive eminence in child psychology, any 'explanation' still being affected to a degree by the subjective predilections of the observer. In an attempt to overcome such recognised methodological deficiencies as subjective interpretation, random sampling, inadequate reference material, and to uphold a

rational approach to the problems of child psychology, Arnold Gesell (1939) undertook a monumental programme of objectively emphasised observation and description. His series of normative studies, psychological portraits in long descriptive passages of behaviour trends and graduations for advancing ages, were deliberately planned to 'escape the errors of psychometric methods'. The study of growth, his key concept for the interpretation of individual differences, provided a maturational thesis which time has eventually proved has only a part to play in understanding child behaviour. Nevertheless, Gesell demonstrated that descriptive work, in its minute exploration and recording has distinctive features making a unique contribution to the overall 'explanation' albeit its own slight explanatory emphasis.

The work of Bott (1928) with children of Nursery school age, observing and recording their free play is of particular interest, as it represents in a single study, the utilisation of a number of techniques particularly applicable to the nature of the investigation.

Methods and techniques of direct observation of a number of children were developing to include time-sampling (Olsen, 1929) and selection of categories, both of which are well illustrated in Bott. A method for recording and analysing play behaviour in (9) children aged 2-5 years, was based on diary-type observations. Recorded incidents were timed with a stop-watch and from these categories of behaviour appeared to be directed to:

- 1) Materials,
- 2) Adults in charge,
- 3) Peers.

In each category activities were selected for investigation, e.g. category 3) Peers, i.e. relations with other children, the five (5) activities chosen were talking (T), watching (W), interference (Int.), limitation (lm.), co-operation (Co-.) Using abbreviations, the frequency with which each of the five response categories was shown by each to every other child, was put on a contingency table which could then be read to show the totals of frequencies of response for each child towards all other children, and the frequencies with which behaviour was directed to each child.

The matrix thus revealed the most common response, and its development with age as with other responses. The behaviour patterns of each individual child and the behaviour directed towards him revealed sociological hierarchies. The recording, done by trained observers sitting unobtrusively in the play-room, was done by hand in periods of one hour. While the selection of categories made recording easier, the loss of detailed description from written observation brought limitation to the quality of behaviour recorded. The author herself had reservations on the necessity to categorise and select:

"The selection of categories for the classification of behaviour is, of course, a fundamental part in method ... In making our choice we tried to avoid pre-determined categories, and to derive our types pragmatically out of preliminary unprejudiced observations ... As far as possible the element of judgement on the part of the observer was minimised by making an overt act the ground of discrimination. Thus, when a child interferes he does some specific thing which can be recorded in the column for descriptive entries. The variety of such acts may (and indeed, already does) indicate the need for a further study of types of interferences in order to define the meaning of this category, but such a refinement of definition presupposes the collection of

material on some rough and ready basis as we have used ... The fact that a method will provide for the analysis to be pursued to any level of refinement that may be desired is, we feel, an advantage and a mark of strength, for then circumstances alone need delimit the number of new problems that may be formulated for special study. It is desirable, however, that at whatever level analysis is to be pursued in a given study the terms employed to characterise the observable phenomena should be as unambiguous as possible. The fact that our observers had comparatively little difficulty in recognising and classifying the behaviour of these children according to the criteria laid down is perhaps evidence that the concepts used were to a degree adequate, but comparability of the records was only attained through close conference and criticism concerning the use of these descriptive terms."

(quoted from Genetic Psychology Monograph, Vol. IV, 1928, pp. 51-3).

This attempt to record systematically, to categorise and select behaviours, the manner of presentation and analysis of results, was a major contribution to the development of techniques. Examination of the tables makes the reader aware that this was a unique study, well ahead of its time and pointing the way to future operations within the field of interaction analysis.

That Bett was indeed a true student of child psychology is perhaps best revealed in her comment,

"From this genetic point of view the plasticity in many types of response during these early stages raises the question of whether categories with fixed connotation supplemented by statistical computation of recorded instances are necessarily the best means of portraying what is perhaps the most essential point, viz. the development process in the particular child."

(p. 67).

Forty years later, Escalona makes the point that the descriptive studies of the '20s and '30s did not hold because they were not effectively linked to developmental theory: *The Roots of Individuality* (Aldine Publishing Company, Chicago 1968, p. 3).

Cockrell (1935) described the play of six pre-school children in six different play settings with limited play material.

The investigation was planned to show

- 1) whether or not a play environment influenced the reactions of the children studied,
- 2) what differences there were to the various materials presented,

- 3) the extent to which the children could/should be left to their own devices,
- 4) individual differences in play reactions among the six children observed.

A one-way vision screen 'disclosed a drama more original, swifter and more amusing than any ever caught upon the silver screen'. This was the first practical use of the device in the Clinic of Child Development at Yale University.

Each child was viewed alone and in the company of one other in six different play settings within a small room.

- 1) The bare room with a table and two chairs;
- 2) House play material: two baby dolls, carriages, blankets, one small chest containing an extra blanket and dolls' clothes;
- 3) Blocks - three different types;
- 4) Book and Pictures;
- 5) Two clay boards: two irregular lumps of clay: two boxes of

crayons: two piles of paper;

- 6) All the materials combined.

The method of recording grew from diary records, and was later organised into time graphs and activity charts.

Recording the time of approach, nature and time of shift of activity with the materials was direct enough. More difficulty was experienced in categorising the nature of attention to the companion and to the self. Six criteria for companion were adopted, any one of which was sufficient basis for recording:

- 1) Actual physical contact with companion;
- 2) Exchange of objects with companion;
- 3) Simultaneous use of an object with companion;
- 4) Response to companion (either verbally or by change of activity);
- 5) Attempt to change companion's activity;
- 6) Watching companion.

Self play was that which concerned neither the companion or the material, e.g. 'trotting around the room empty-handed, running and sliding, sitting on the floor and chanting'.

Play situations were ranked for 'best play' and 'holding power'. The nature of social interaction confirmed the term 'parallel play' as 74%. Self play, a definite part of the children's reaction, was small, 8.6%, and companion play 17%. The average interest span was 81 seconds and the children showed an ability to play alone for a period of over half an hour. The average time to elapse, however, before they needed or wanted adult guidance was 14 mins. 12 secs. The outstanding characteristics of the play were swiftness, repetition, and variety of use.

The careful design, methods of observation and careful recording are of interest in this, one of the first ecology-type studies of children in play situations.

Writing a preface to Griffiths (1935), Professor Flugel of the University of London, says,

"Quite recently an attempt has been made to study the very young child by a new method that is itself neither strictly experimental nor strictly psychoanalytic but which is, as it were, inspired by both these lines of work. It is a method in which observation of the free behaviour of children plays the principle role, but in which

experimental technique is represented by a somewhat rigorous control of conditions, by a discreet use of question and answer and by an emphasis on the necessity for accurate and full report, while psychoanalysis, at the same time, contributes a depth of insight, a realisation of the importance of affective factors and an alertness for the significance of detail."

Bridges (1934) in America and Isaacs (1930, 1933), as well as Griffiths in England both illustrate such a development in methodology. Bridges studied the emotional life of infants in their natural surroundings. Descriptive records were made over ten 1-hour periods of the nature, duration and frequency of emotional reactions as well as the situations which provoked them. Timing was done by use of a stop-watch and responses were recorded in two columns, distress/delight. Frequency and duration were calculated separately for each child and compared with group medians. A distinction between direct and indirectly expressed emotion further illustrates the brave attempt at categorisation, the validity of which gave trouble to both author and reader. Nevertheless the patterns of individual response, their frequency and duration, could be traced through the systematic recordings and

the work made a valuable contribution to a relatively unexplored field.

Isaacs, in her two texts (1930, 1933) based upon records of work carried out at the Malting House School, Cambridge, from 1924-27, stressed the necessity for systematic scrutiny of the actual events in the behaviour of the children from a psychological point of view. In not making available the full concrete records of all the manifold activities of the children as a background and corrective for more narrowly defined investigation, Isaacs was very aware of the dangers of selection of material. However, she believed that as the selections were not offered to promote theorising but rather to illumine broad general topics closely related to genetic psychology, they would stand as correction to much premature quantitative treatment, and in the face of 'a growing tendency to summarise development in a series of rating scales'.

"The work of science proper may only begin when we can begin measuring: but to be fruitful, measurement must rest upon close preliminary scrutiny of the material to be measured. The vast bulk of barren experiment which has clogged the growth of psychology took origin in the confusion which treated

measurement as sufficient unto itself."

(quoted from Intellectual Development, p. 6).

In an educational climate probably never since equalled for its degree of freedom, coupled with expert guidance, thirty children of high intelligence filled their days with learning experiences. Observations were made by the educational staff in notebooks (constantly carried about) at propitious moments when the children were busily engaged in their own activities. A further record from the notes was made at the end of each day. The staff were trained to take as much verbatim of what was said and to be as carefully objective as possible over what was done. Only later, through the employment of stenographers who could devote all their time to observation, were complete records possible.

Using the illustrative material, Isaacs (1930) subdivided and examined logically the development of children's Reasoning and Thought. After a theoretical analysis in which she criticised current theories and methods, particularly the clinical approach of Piaget, lists of behaviour samples were made under

appropriate headings. A second theme, Biological Interests, was treated in the same way. Finally a diary of Four Sample Weeks was supplied.

The method, the skilled interpretation (Isaacs was both a psychologist and psychiatrist), the wealth of detail, the quality of discussion made the text a classic. A later interpretation (1933) of the social development of the children, heavily dependent on Freudian analysis, has become more of a period piece.

Griffiths (1935) also made some advance in technique through an application of current methods into a close face-to-face situation. Exploring the imaginative world of childhood, she brought children into a loosely structured play/interview situation and guided them into a series of projective lists - drawing, interpretation of inkblots and verbal description of imagined pictures. The work had a slight ecological flavour as two centres, London and Brisbane, were used to highlight environmental effect and produce comparative data.

Piaget's use of children (1926) in the clinical method, was the supreme example of refined observation which placed the subjects in certain experimental situations, while close watch and account was made of their reactions. A conceptual rubric directed the questioning and provided the framework of illustrative material upon which to theorise. The naturalistic school was critical. Isaacs quotes "Two Parents" in their paper on 'The Scientific Interests of a Boy in Pre-School Years'.

"Problems arising during conversations, even of this free character, are not ... so likely to demand causal explanation as those which arise during activities which bring the child into direct and intimate contact with material things. Our diary extracts show very clearly that activities are much more effective than conversations in provoking problems."

Isaacs believed sincerely that the clinical method, no matter how skilful the user, provided only a limited and stereotyped situation which almost inevitably put the child at an intellectual disadvantage. 'One cannot give the right answer to the wrong question.'

The difference in the two approaches - Isaacs searching for an explanation of intellectual growth through the painstaking recording of a full range of children's use of language in natural surroundings over a sustained period of time, and Piaget using an equally detailed method within the confines of a logical framework, brought issues into a sharpened focus which tragically faded, with the death of Isaacs. Naturalistic observation, so demanding of time, open to the criticism of lack of rigour and scientific measure, of bias and observer error, began to fall away before the pressure of experimental investigation. Developmental psychology in this country lost a forceful advocate in Isaacs.

"Intellectual growth certainly shows a psychological coherence: but this coherence has the elasticity and vital movement of a living process, not the rigid formality of a logical system. It is most fully expressed in the continuity of development in noetic synthesis, and in the way in which the later and more highly integrated forms draw their life from the simpler and earlier."

(p. 97).

Nevertheless, Piaget's modus operandi was one of observation of the reactions of the selected children which had its roots in a

method closely allied to baby biography. Because he became a student of the development of thinking more than a student of children (Kessen, 1964), the clinical method was highlighted and led to a considerable amount of experimental investigation in contrived situations in order to establish verification. Only slowly has Piagetian theory developed its canons of logical coherence, repeatability and empirical validity.

The formation of the National Research Council in America (1920-1935) undoubtedly had increased the number of studies undertaken in order to further observational research. Exceptional conditions existed in the Nursery schools affiliated to American University Departments for such research and the institution of Child Development in 1930 formed a perfect vehicle for publication. Need was seen for more reliable and more comparable measures of behaviour frequency and a gradual change to the use of time as a common denominator and systematic rotation of observations, reducing the effect of uncontrolled variables, took place. Systematic distribution of observations over a period of time gave a more representative sample

of behaviour and controls, using prepared lists of a limited number of categories together with precise definitions of behaviour, made for greater reliability between observers. Greater uniformity of approach to details of procedure can be traced over this period of time, of which the following studies are representative.

Olsen (1929), usually regarded as one of the originators of the time sampling technique, chose readily observable and precisely defined behaviour acts by children in class. On a form representing the seating arrangement of the classroom, observers charted a manifestation of the behaviour under investigation on a series of five minute observations taken consecutively on the same day. The frequency was the total of five minutes intervals in which the individual displayed the behaviour. A distinction was not drawn between time and event sampling though clearly Olsen's work is more representative of the latter.

Parten (1932) classified children's behaviour into broad categories of social participation and leadership. Her time sample was one minute with only one child observed at a time, observations being distributed over a

period of months. Observations of the group were systematically rotated to ensure a representative sampling of each child's behaviour.

Goodenough (1930) used smaller intervals of time in studying six selected aspects of behaviour in 3-5 year old children. She subdivided the minute into fifteen-second intervals while differentiating the degrees of manifestation of each behaviour trait.

Arrington (1932) utilised a five minute observation session with entries on check lists covering amount of time spent during free play (9.00-11.00 a.m.), covering three categories: use of materials (M), physical activity (P) and no overt activity (No). Information checked every five seconds included talking (T), physical contact (P.C.), laughing (L) and crying (C). Children observed covered an age range from Nursery school to first grade, 120 in all. The study is regarded as a model in its attention to detail and procedural bias, its methods of analysis and contribution to the development of time sampling in observational studies.

The fact that the subjects were unrepresentative of childhood at large appeared to be, in the main, overlooked.

In a review, "Time Sampling in Studies of Social Behaviour: A Critical Review of Techniques and Results with Research Suggestions", Arrington (1943) gave her aims:

- 1) To appraise the contribution of the technique known as "Time Sampling" to the advancement of scientific knowledge in the field of social development;
- 2) To show through a critical analysis of research undertaken, how scientific observation in life situations or in those more experimentally contrived can add to the understanding of social behaviour.

Arrington's Definition of Time Sampling is given:

"Time sampling, as here discussed, is a method of observing the behaviour of individuals or groups under the ordinary conditions of everyday life in which observations are made in a series of short time periods so distributed as to afford

a representative sampling of the behaviour under observation. It is, in other words, a method of sampling, the validity of which is primarily a function of the amount and distribution of the time spent in observation or of the number, length and distribution of the separate observations or time samples. As contrasted with the experimental method, it is a form of controlled observation in which the behaviour, the method of recording, and the manner of selecting the behaviour to be observed are subject to control rather than the situation in which observations are made. Finally, it is a method whose essential function is accurate measurement of the incidence of specific behaviour acts or patterns under specified conditions."

(p. 82).

The research analysed, covered a wide area on social behaviour: viz. frequency and type of social contact, social adjustment, intensive analysis of social patterns, language frequency and methodology.

The second enquiry into the findings covered such headings as:

- 1) the feasibility of systematic observations of social behaviour under life conditions,
- 2) the reliability of observations of human behaviour made under ordinary conditions of everyday life,

- 3) the validity of behaviour indices derived by time sampling techniques,
- 4) factors affecting the determination of sampling procedure,
- 5) the role of time sampling in the scientific study of social development.

A third section covered research suggestions in order that light could be shed on factors associated with differences in social development overcoming the limitations of all previous studies. From a statement of the facts tentatively established viz.

- 1) that frequency of social participation or social involvement, defined in terms of the number of observable overtures and responses of individuals to other individuals or groups or in terms of amount of time spent in social conditions favouring free social interaction, normally increases with age during the first five years of life,
- 2) that individuals, irrespective of age and sex, tend to differ considerably in the extent to which

they normally become involved
in social activity when observed
in a familiar environment affording
abundant opportunity for social
interaction,

Arrington proceeded to outline how time sampling
procedures could refine enquiry into areas
opened up by previous research studies that
fail to give the clear evidence needed to
substantiate results. The whole review was
admirable and acted both as a summary of
achievement in observational procedures and a
guide to further developments in methodology.

Reviewing the technique later (1972),
Smith and Connelly say:

"The great advantage of time
sampling technique is that it
allows a comparison of measures
of behaviour frequency, objectivity
defined, for different individuals
and in different settings. Age
and sex differences and correlational
analysis flow naturally from this."

(quoted from Ethological Studies of Child
Behaviour. Blurton Jones, N. C.U.P.,
1972, p. 70).

The satisfaction with the technique and the 'spirit of substantial optimism' which can be detected both in the papers and in Arrington's excellent summary of observational methodology may be related to the considerable advance in objectivity and comparability which time sampling offers over diary records and rating methods.

However, the difficulties concerning chosen categories, together with those of sampling - discontinuous, sequential, the breaking down of units of time durations from 1 second to 5 minute periods - prevented comparative study. The need for technology - allowing permanent recordings (video-tape) over fractions of a second (recorder) was evident.

Anderson (1954) in the 2nd Edition of "The Manual of Child Psychology", reviewed methods used in Child Psychology. Regarding the situation at that time, he said:

"Direct observations of behaviour in play and social situations increase in value for scientific purposes with systematic and planned recording. Problems of analysing and symbolising the masses of material which can be gathered together from technological sources

presents difficulties as do interpretations. Overt behaviour may not always indicate what is happening within the person. Casual observations may be accurate but cannot help scientific generalisation. Careful observation of phenomena as they occur and accurate recording of these observations are necessary for tabulation and analysis. Good scientific work involves not only skill in observation and recording but also insight into what is important to observe and record."

(p. 19).

Reviewing from the earliest biographies, Anderson included Habitat Studies (Barker and Wright, 1949, 1951). Teams of trained observers observed children for periods of thirty minutes within a design to follow through all activities from early morning to late at night. Each observer was interviewed in order to elicit detail not already recorded and the records were eventually documented and arranged in a time sequence. 'Episodes' of behaviour formed the basis of classification (episodes close with a fresh stimulation) providing the basic coded data for analysis. This ecological approach received great impetus from the publication in 1951, from the Midwest Psychological Field Station, University of Kansas, "Midwest and its People" (Barker and Wright). The aims of the team were,

"to describe the life situations of individuals in order

- 1) to study behaviours not easily reproduced in the laboratory,
- 2) to show the sequential dependencies amongst different items of behaviour,
- 3) to corroborate laboratory findings by direct observation of particular critical incidents."

Wright (1967) stated a revival of interest in the natural situation. Psychological ecology had set itself the task of discovering how the properties of a person and the properties of the ecological environment were related 'in situ'. The distinction between MOLAR and MOLECULAR events - MOLAR actions being goal directed and occurring within the cognitive field and MOLECULAR actions the accompanying gestures, postures not organised by cognitive processes, was unique to the system. The actions were episodes controlled by the ends or goals the actor wished to achieve, and the psychological habitat of the actor was constantly under review. This use of descriptive labels made inference an important part of the observer's task. 'In the 'how' of the child's behaviour, there is its constructiveness, its intensity, its social maturity level, the effect that

accompanies it'. Accorded equal weight with behavioural action, the objective level of observation was felt by many to be grossly distorted.

Intermediary between the return to natural situation (the ecological approach) and the prevalence of time sampling (a technique likely only to work well with frequently occurring behaviour), Anderson included situational sampling where the situations were likely to recur as in situational sampling with play material as the medium of expression. Interest in projective technique pioneered by Isaacs and Griffiths was shown in Sears (1951) and Axline (1951), where play therapy was outlined. Anderson concluded the review with the notion that movement towards experimentation was inevitable where experimental design would include a variety of measurements within the structure of systematic observation.

The publication in Harvard Educational Review (1955) of an article on "Systematic Observation - A Method in Child Study" may be taken as some indication of generalised interest being upheld in observational technique. In attempting to provide a foundation for evaluating

observational studies, Gellert supplied 'a distillate of practices and standards with a critical slant'. Commenting on the decline of observational studies after the '30s probably because of the time factor and heavy masses of data, Gellert pinpointed the advantages of the method which were likely to carry it forward on the wave of new interest in social interaction. Criticising tendencies which had prevailed in attempts to establish scientific rigour viz. undue attention to systematising, establishing reliability among observers, limiting and confusing categories of observation and selecting 'economic and convenient' situations for study, Gellert outlined reform:

"The design of a research study should be determined by its ends. The convenience of a particular method, or the ready accessibility of certain population groups should not be a major influence in selecting a problem area for study. This is a case where the end should justify the means, for it is only with reference to his goal that the investigator can decide validity about matters such as "Should the conditions for observation be held constant, or should subjects' behaviour be recorded amongst a variety of settings? What should be the age range covered, and in what respects should the sample be homogeneous? How large a sample of each individual's behaviour will be

adequate? At what intervals should behaviour be sampled and how long should each individual observation go on? What kind of recording system is most appropriate? and finally, what constitutes a representative sampling of the population with respect to the particular variables in question?" A good observational study must be designed to take these points into account."

(p. 193).

Where investigators believed that 'seeing is believing', systematic observation could continue to be among the most important methods for the study of human behaviour, taking into account the 'hazards and limitations' outlined by Gellert.

An important review (Wright, 1960) of Observational Child Study appeared in Handbook of Research Methods in Child Development, Ed. Mussen. Claiming to be the only book designed to give broad coverage of research methodology in Child Development, observational methods have one chapter out of the twenty-two. The review is comprehensive from baby biographies to experimental design. Useful tables, e.g. Young Children as Subjects 3.3, Nursery Schools as setting 3.4, Illustrative Time Sampling Studies 3.5, are compiled and the treatment of

the different methods, ecological, normative, idiographic and systematic, within the observational approach is full. Ecological research is seen as the 'least roundabout way' to collect information on the natural surroundings and behaviour of the child.

Normative descriptions can illustrate and exemplify norms obtained from psychological tests and laboratory measures providing a background of environmental conditions.

Ideographic study, often tied into a clinical setting, can be further validated by reference to observational studies related to the setting or by comparison of the clinical techniques with everyday behaviours of comparable children. Systematic study, planned to cover gaps in knowledge of child behaviour and developed from the notion of complex variables, is a recognised product of observational techniques. Problems of inter-dependence will not lessen but are likely to multiply and an 'over-view' technique is essential. Wright concluded:

"It is impossible now to make experimental arrangements that allow for the full size and complexity of many events ... new leads and important complications of laws (of behaviour) may be gained by substituting selection for manipulation of variables. This has been done in observational child study, and it can be done better, with continuing improvement in comparative designs and in techniques of observing, recording and analysis."

(p. 130).

In 1963, Hutt, Hutt and Ounsted published "A Method for the Study of Children's Behaviour". Observational study particularly suited to groups of children unable to respond to psychometric techniques was outlined as a method par excellence for the study of brain damaged children and of interest, therefore, to doctors and biologists. The behaviour syndromes of such children, though of great interest themselves, could, when studied, systematically yield information about developmental mechanisms in general. The method outlined, descriptive recording on tape, with its pitfalls of loss of expressive detail and inference, is nevertheless upheld through the establishment of reliability (two observers recording on a twin channel recorder) and selectivity ('attention span')

visual fixations) within the behavioural programme. Experimental design was built through the use of a sequence of habitats and control groups. The method described was seen to be closely related to that used by ethologists who had advised and commented on procedures.

The applicability of observational techniques to the field of medicine and its links with ethology marked an important development in methodology. The interest of scientists from disciplines other than psychology could lead to increased status and improved techniques. The full force of technology, the use of machines to record bodily change and to record permanently in photographic form, could improve the range and depth of observation.

"Towards an Explicit Rationale for Naturalistic Research Methods", Willems (1967) is an entertaining yet tellingly clear case for the importance of observational techniques in research on human behaviour. Using a novel 'two dimensional descriptive space',

- 1) the degree of investigator influence upon, or manipulation of, the antecedent conditions of the behaviour studied,

2) the degree to which units are imposed by the investigator upon the behaviour studied, and with variation from high to low on each, Willems claimed that laboratory experimentation falls in the high/high sector and naturalistic in the low/low. Everyday behavioural achievement should be seen as a 'back cloth' of achievement in the experimental situation. Quoting many studies to prove that the actual distribution of psychological phenomena should not be overlooked (ecological psychology has shown the infrequent occurrence of favourite topics of studies, e.g. aggression, frustration, regression, in the everyday lives of children), Willems made a case for the inclusion of an observational sector in every research design, 'the interplay of controlled experimentation with naturalistic methods'.

Two of the most difficult issues of observational research, replicability and the establishment of control groups, it is argued are a matter of ingenuity and understanding. The concept of the 'implicit' comparison group where the investigator uses previous findings or stable generalisations is illustrated and a

strong case made for the use of naturalistic findings in the ultimate problem of generalisation from the experimental situation to the world outside the laboratory. Willems' "Rationale", a most useful document, linking different aspects and techniques of research, makes an excellent case for observational methods which alone can stand up to 'the acid test of reality'.

In "The Roots of Individuality" (Escalona, 1968), research design and constituent technique suited to the methodology of enquiry into developmental trends of the neonate within environmental conditions and behaviour characteristics, are analysed. Historic development is shown, not through a survey of literature but rather through comment on issues and problems relevant to the early phases of human development. The purely descriptive approach, the investigatory, the psychoanalytic are seen as inadequate in the need to 'record and process observations of environmental input and behaviour output over prolonged periods of time'. Technological development it is felt can supply the aids to illumine the impact of variables, extrinsic and intrinsic in behaviour and development so that 'new' descriptive techniques are seen as an important source of

information.

"Nursery life as inferred from constrained conditions of investigation (the experiment, the interview, or the list) and nursery life as derived from abstract theory (psychoanalysis, learning theory) are totally unlike nursery life as observed directly."

(p. 19).

Descriptive research means to Escalona the formulation of hypotheses dependent upon extensive and specific information about overt behaviour, their systematic application to a comprehensive and encompassing programme, the structure of which is readily identifiable. Thus systematic observation is seen as a necessary and contributory research activity on child development, an analysis of the process of change, unlike change itself, demanding a medium of naturalistic behaviour.

The original research method (128 infants) was direct observation of mother and child over a period of a week, covering an age span of 4-32 weeks, by trained observers. The record and type of information included descriptions of interviews through running, narrative and filmed records. Home visits were made and

described, pediatric examinations and physical growth measurements were recorded, together with respiratory and cardiac rates, kymograph tracings and counter readings of activity levels. Two developmental tests (Cattell Infant Intelligence Scale; Gesell Developmental Schedules) were interpreted and finally each mother completed a questionnaire designed to reveal maternal attitudes.

The wealth of information was subjected to systematic analysis to establish relationships among the phenomena of behaviour. Later a smaller sample (32) was selected for intensive study on certain dimensions of infant behaviour.

An important text, "Direct Observation and Measurement of Behaviour" (Hutt and Hutt, 1970), can be seen as a milestone in the development of observational techniques for the study of human behaviour. The whole is a restatement of the case for using observational techniques as an essential part of human behavioural studies developing the rationale of Willems and emphasising that experiment should only be based on a knowledge of established behaviour.

"It is often forgotten that an animal in an experimental procedure already has a well established behavioural repertoire and that knowledge of this repertoire may be essential to understanding the results of an experiment."

(p. 4).

The book is important because the inter-related disciplines, psychology, psychological medicine, medicine, zoology, ethology are shown to have common fundamental concern with behaviour, and the basic methods characteristic of ethology seen to be pertinent to research within the group of disciplines.

"The ethologist learns to work with the behavioural data the animal provides in his natural habitat. While fundamentally more complex, the behaviour of Homo Sapiens can in principle be treated in the same way as that of any other animal studied in his natural habitat."

(p. 10).

The approach to observational study developed in the text is ethnologically based. The discussion of the special features of ethological method follows the definition:

"The first aim of the study of the behaviour of a particular animal is to record it in all its detail, correlating it with the stimuli which evoke the different sections of it. Such a complete catalogue of behaviour is called an ethogram. It is vitally important that such an ethogram should be recorded quite impartially. That is, the observer must not be influenced by his own evaluation of what is going on but must seek to record everything no matter how unimportant it may seem at the time. Even details of weather conditions may later prove necessary in analysing the causation of the behaviour. At least in the first place when confronted with the behaviour of an animal with which the observer is not familiar, no anthropomorphism must be allowed to creep in (although it is often a useful form of shorthand!). The report must not be in terms of human thoughts and desires but must be plain recording. Later putting one's self into the position of the animal may give insight into the problems which the behaviour throws up and suggest hypotheses which can form the basis of experiment and analysis. But this should always be done with the greatest care and the approach quickly discarded after it has given the indication necessary to organise future research."

(p. 15).

Thus the ethnogram, it is felt, can provide the basic knowledge upon which judgement for modification and experimentation should depend. Experimental psychology can be shown to have concerned itself too much with methodology 'dictated by theoretical tenets or the

requirements of statistical propriety'. Ecology is criticised for its lack of objectivity through the vague behavioural categories selected and the 'novelese quality of much of their reporting'. The biological approach, characterised by the interlocking problems of causation, function, evolution and ontogeny is seen to overlap particularly with developmental psychology since ontogeny must be a primary concern of developmentalists. A careful appraisal of human studies from the 1930s onwards shows the refinement of techniques and the gradual movement, incorporating technological innovations for recording purposes, towards greater concern for the study of man as a biological animal. Such study, it is admitted, has no history: it awaits to be made. Where there are beginnings, as in the attempt to extrapolate findings and theoretical notions from studies of animals and apply them to man (Morris, 1967; Lorenz, 1966) caution must be the keynote. It would seem a legitimate step to select MAN as the subject under investigation - to develop detailed and systematic observational studies, using all technical aids, for the construction of a human ethnogram.

1972 has seen two publications supporting Hutt (1970). The first, "Ethological Studies of Child Behaviour", Ed. Blurton-Jones (1972), is a collection of ethological studies of children. Factual information gathered by using ethological methods in a descriptive/interpretative task in order to give a wider scope and more purpose to child studies is characteristic of all the publications. Areas of behaviour investigated are within the child/child, child/mother interaction field and there are a few comparative studies. The authors, all ethologists, represent in first disciplines, psychological, psycho-pathological and anthropological training. The use of large numbers of small observable items of behaviour (e.g. within "Human Non Verbal Behaviour", 136 separate units are listed and defined), minutely observed with full use of technological aids, it is felt is likely to provide not only a wider range of organisations of behaviour but might also, in confirming findings that have so far proved important in child psychology, give deeper insight into development.

McGrew's "An Ethological Study of Children's Behaviour" (1972) is an account of research on the social behaviour of Nursery School children using ethological methods. An attempt is made to produce an ethnogram for young children. The behavioural elements are categorised and presented in terms of the body parts involved: Facial (16), Head (23), Gestures (29), Leg (3), Gross (16), Posture (9), Locomotion (14), and these are examined for frequency and periodicity. Subsidiary problems, e.g. introduction into the group, and social organisations, are also investigated.

The research appears to demonstrate the usefulness of working with discrete elements of the behaviour even of human, though relatively immature, children. How far it will be possible to select, define and organise discrete elements of behaviour of the more mature human being, where the tie between thought and action is so much more complex, is a matter for the future.

Summary

The earliest, most personalised baby biographies can be seen to have contained the fundamental concept of Child Study, close detailed observation. They lacked, however, reliability and any form of application to larger, more representative samples of children. The need for established norms, of methods yielding comparative data in order to measure and assess rates of development gave an impetus to studies of children where they were grouped together in nurseries and schools. Problems inherent in dealing with larger samples brought major developments in techniques of observation. American studies of pre-school children attending University day nurseries and schools rose to a peak in the 1930s when time and event sampling, selection of behaviour categories and the gradual introduction of technological aids brought observation studies to unprecedented heights. Dissatisfaction, however, with the over-abundance of data and the unrepresentative nature of the samples allowed a decline when psychometrics and more rigorous research design came into favour. Research became structured through assumption

and hypothesis with refined statistical analysis. Only increasing awareness of the dangers of artificiality, of divorce from the essential human nature of the material brought observational type study, the ecological issues, once more into the field. Pure ecology left its legacy when the need for inclusion of environmental effect on human behaviour was recognised and upheld. The emergence of animal behavioural studies in natural habitat also revealed the potency of genetic issues and the shared interest in observational type study of biologists, doctors and psychologists gave rise to ethological studies on people and places. Technology, the fast moving cameras, radio microphones, video-tapes, increased the possibility of objective levels of observation and ethnograms on young children, covering in minute detail their total behaviour, are now possible. Since the psychical behaviour of young children is closely tied to their total response, the studies are of value in documenting behavioural reaction to a variety of situations.

Difficulties, however, remain, particularly in using such detailed behavioural observation study in educational settings, as findings may appear too detached from educational issues. The link between previous research findings and educational practice has ever been a tenuous one. Rather than reinforce it has tended to arouse antipathy and suspicion on the part of the educators. Research worker and teacher have failed to come together to examine findings, to experiment with change or even to share their declared interest in developmental issues. However, the present pressure to justify economic outlay, to demonstrate predictive values and to justify methods is considerable. New methods of research into early childhood education are needed. It may be that methods incorporating the essence of observation, the fundamentals of ecology but taking into account personal feelings and attitudes of the educators, will help. Such 'participatory' research may provide some of the clues likely to help promote fuller understanding not only of how children behave but also the ways in which their education can best be undertaken.

The following description of three investigational procedures, the results obtained and the implications of these for educational practice, is one attempt to throw ahead a beam of light, however feeble and only darkly illuming, into the future of research with our children in Nursery School.

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The Scope of the Enquiry

Three Observational Techniques have been chosen in an attempt to establish how some objective measures may be taken of children in Nursery schools without interrupting the free flow and children's choice of activity.

First A psychological ecology study of the background of children in seven Nursery Schools.

The purpose of this study was to establish means and criteria by which it might be possible to measure environmental effect on behaviour.

Second An Observational study of the children themselves, using an established technique, A.P.P.R.O.A.C.H.

The purpose of this was to highlight behaviours accompanied by verbalisation when the children were familiar with the observers and ready to tolerate use of tape-recorders.

Third A third Observational study undertaken concurrently with the ecology viz. The Stamp Behaviour Study Technique.

This was a subjective assessment of child behaviours carried out by the teachers of the children who themselves had been co-operators in both previous enquiries.

The purpose of this study was to emphasise the participatory effect of the whole enterprise. It was hoped that the teachers would recognise the viability of all the observational techniques used in their schools and would feel able to build an enquiry particularly adapted for their own use as a result of their participation.

The total period of observation was from October 1971 to March 1972. The emphasis throughout the enquiry was one of absorption of the observers into normal school routine, in order to demonstrate how teachers might refine and make more detailed their observations of children.

Statistical Techniques

Non parametric techniques particularly suited to behavioural study were chosen in order to familiarise and standardise procedures likely to help in the drawing of conclusions.

These included:

1. The Chi-Square Test χ^2 .
 2. Spearman Rank Correlation
Coefficient : Pearson -
Product Moment Correlation
Coefficient.
 3. Significance of the Mean :
t test for uncorrelated
means.
 4. Analysis of Variance.
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THE FIRST STUDY

"Students of infancy have given vastly more attention to definition of the response - measures of the infant - than they have to definition of the stimulus - the nature of the environment."

(Kessen, W. et al.,
Human Infancy: a Bibliography and Guide,
in Carmichael, Manual of Child Psychology,
Ed. Mussen, P.H. p. 288)

ECOLOGICAL RESEARCH

A Review of Literature

'The way of studying child behaviour while leaving it alone' (Barker) would be likely to appeal as a method of research to child psychologists and educationists who are sensitive towards, and respect, the child's world. Their work reveals a discernible trend away from Behaviour Modification techniques, the pre- and post-test approach, towards the use of observational techniques designed to eliminate impediments and experiment. Indeed White (1967) has argued that Child Development research has made the mistake of moving towards highly specific experimentation without first collecting broad observations of the milieu of the child, thus supporting Flavel (1963), who had suggested that the necessary strategy for finding out about development in childhood should involve direct observation of the child's day to day encounters with his environment: the model being the work of Barker and Wright (1951, 1955).

Such an ecological investigation 'has to be defined by its objective, by the purpose of revealing the naturally given habitat and behaviour of the individual'. The conceptual and methodological problems are bound into the task of discovering how the properties of a person and the properties of the ecological environment are related. (Barker, 1968). Such problems outlined by Barker lie within

- 1) the accuracy of description
of the structure of environment,
a description which will reveal
the natural units operating
within the dynamics of the whole,
- 2) the identification of behaviours
of persons as 'individual
entities' and their description,
- 3) the elicitation of different
behaviours within different
environments against the common
attributes of persons within
identical ecological units.

The essential nature of the units (Barker, 1968) with which ecology deals, whether they be physical, social, biological or behavioural are:

- 1) that they occur without interference or feedback from an investigator, i.e. they are self-generated,
- 2) each unit has a time-space locus,
- 3) each unit has an internal pattern within a differing external pattern.

The first psychological ecology of a Nursery school was undertaken by Shure (1963). Investigation was to reveal the influence of some of the situational factors on the spontaneous behaviour of pre-school children as it occurred within certain Areas of an indoor American Nursery School setting. Areas chosen were Art, Book, Doll, Games and Block, and measurements were taken with regard to Population Density, Mobility and Quality of Behaviours - 'its constructiveness, its intensity, its social maturity level, the affect that accompanies it'. Sex differences were noted. The subjects were 7 boys and 7 girls aged 4 years and observational sampling procedures took place during the free play period (9.15 a.m. - 10.30 a.m.) between November 1960 and March 1961. Each of the

five Areas was observed in pre-arranged order for five minutes, divided into one minute periods. After the last Area was observed the process was repeated so that each was observed for ten minutes. Systematic rotation of Areas was employed for each new day of recording.

"Interest was specifically centred upon the number of appearances, their mobility, whether activity was relevant to an Area, the children's effort and the constructiveness of the behaviour and the complexity of social participation."

(p. 191).

Results showed

Population Density: the Block Area was easily the most popular especially for boys and the Art was second, most popular for girls. The Book was least popular ($p < .01$).

Mobility: the Games Area was most mobile, with Book and Block least.

Qualities of Behaviour: all Areas elicited more Relevant than Irrelevant, or lack of, activity ($p < .01$).

Positive affect was slightly more evident in the Doll. Boys emitted more expression of content than girls in the Games and Block.

Neutral affect was most marked in all Areas.

Constructive use of materials occurred most frequently in all Areas. Social Participation was seen at its most complex in Doll, the boys engaging in most associative activity and girls in co-operative.

Individual play was most frequent in Block and Games. Block elicited a high proportion of complex social interaction.

Parallel play was greatest in Art and Book.

Questions arising from the study implied causal factors in relation to situational factors. Would the re-arrangement of Areas alter frequency and mobility? How far would the addition of sex related stimuli affect relevant behaviour levels? Does the size of an Area affect complexity of constructiveness and social interaction? To these there might be added, Is play stimulated by the presence of an adult? What are the differences between child stimulated and adult stimulated behaviour sequences? Does a Nursery cater equally well for all ages?

As a preliminary to a research design applicable to English Nursery Schools, the literature was reviewed under the four headings:

1. Population Density
2. Mobility
3. Qualities of Behaviour
4. Adult Presence.

Population Density

Group density studies among young children in ongoing play/work situations are few. This appears a notable lack since the concern of teachers to ensure that children have adequate space for their activities has always been emphasised. Swift (1964) refers to some early studies on the effect of amount of space but only on the incidence of aggressive behaviour in the nursery.

"In general, these studies have shown that conflicts between children are more numerous where play space is more restricted."

More recent studies have been concerned to examine space as a variable affecting the overall play behaviour of children. The Shure study (1963) revealed that more children occupied the Block Area, that they remained there for the greatest length of time and that the Block Area was the largest in physical size. Possibly the children could occupy that more comfortably. The Book Area, with the smallest population density was also the smallest in physical size. Shure made the suggestion that population density might be related to physical size.

McGrew, W.C. (1972) has pointed out that an experimenter may examine social density by observing different numbers in the same size space - or he may examine spatial density by observing the same size groups in spaces of different size. He found more running and laughing when a group of children had more space to play in, and also when, maintaining the same space size, the group number was decreased from twenty to ten. (1972a).

Hutt and Vaisey (1966) carried out density behaviour studies of normal, brain-damaged and autistic children in a playroom in a hospital. The behaviour of the normal children, in that they spent significantly more time in aggressive-destructive behaviour and less time in non-aggressive social interaction at higher densities, would confirm McGrew.

The only study of children's spacing behaviour in free play situations (McGrew, P.L., 1970) also reveals useful information. Children spent less time alone, i.e. in solitary play, and more time within 3 feet of each other in high spatial densities and avoided physical contact with other children, when social density was increased. Results suggested that social

factors predominated in density effect on spacing behaviour: an optimum distance between individuals was maintained in a constant area regardless of numbers present. The twenty (20) subjects, children in a Nursery school, showed ability to adjust their spacing in different spatial and social conditions. In a later experimental situation in the same Nursery, assessing the degree of agonistic behaviour (McGrew, W.C., 1972), different sized areas were manipulated according to weather conditions for High (mean density 33 sq. ft. per child), Medium (52 sq. ft. per child) and Low (150 sq. ft. per child) Density. One aggressive pattern (hit) and two fearful patterns (automanipulate and digit suck) as well as contact occurred more frequently in the more crowded condition. Running also occurred less frequently in higher spatial density. In social density conditions the children's behaviour strengthened the earlier study. It appeared as if the children controlled their social behaviour so that frequency of encounters did not exceed a certain level.

Mobility and Stability

The concept of mobility/stability in the Shure study was derived from the count of number of movements a child made in and out of an Area during each minute of the 5 minute observation. A movement (mobility) was defined as an entrance into or exit from an Area by a child from minute to minute and a stability where the child remained from one minute to the next. The concept is an interesting one since a count can throw light not only on the 'holding power' of an Area but also on a time quantity within a child's reaction to play opportunity. Shure (1963) created a mobility index wherein low index figures meant there were fewer movements: .00 meant no movements occurred, 1.00 meant 100% mobility. Her median index for all Areas, boys and girls combined, was .25, the range being Book .00 to .50 for Games. Sex differences were not significant but the boys (.10) were less mobile than the girls (.33) in the Block Area and the girls (.46) less mobile than the boys (.50) in the Doll. McGrew (1972b) found children more mobile in a strange setting: frequency of running increased from a low base-line level when a child was introduced to a new nursery group.

Earlier work is illustrated by Cockrell (1935) concerned to show whether or not a change in play environment influenced the reactions of the six pre-school children as well as the differences in reactions to varying materials. Length of time the children were involved in a particular activity was one observed variable. Results showed that the area providing 'combined material' produced the greater number of activities, the highest number of activities per minute and the children spent the longest time in this area. Van Alstyne (1932) had noted a rise of approximately 2 minutes in attention span between age levels but Gutteridge (1935), in a study devoted entirely to the attending power of young children, showed marked discrepancies with previous work. Using observational techniques Gutteridge gave evidence of children concentrating on their play materials when conditions were favourable and showing how even very young children were not easily distracted when interest was aroused. A much later study, Lunzer (1955), concerned to highlight the significance of play in the intellectual development of children, observed concentration - idle, average, engrossed - on

a 5 point scale for each, in an endeavour to take account of fluctuations in attention. Results, however, were inconsistent: there was no even rise with age which previous work (Alstyne) had suggested. Lunzer concluded that the considerable fluctuations were due in part to individual differences and the strength of interfering stimuli.

"It would follow that duration of attention, unless recorded over a very considerable number of sessions, is an unreliable guide to the maturity of play behaviour."

(p. 213).

Qualities of Behaviour

Participation

Shure (1963) had found a high degree of relevant behaviour in all Areas. The Art Area elicited 84% and Block 65%. By the same token the relative proportion of irrelevant and absent behaviour was almost twice as great in Block than Art. Absent behaviour was lowest in the Book, 4%. An imaginative quality of participation was considered for the present study and the literature researched, since Sully (1896) had suggested that children's imaginative behaviour contained a 'true germ of thought'.

Having acted as co-author with Jersild (1933) in an investigation into "Children's Fears, Dreams, Wishes, Daydreams, Likes, Dislikes, Pleasant and Unpleasant Memories", Markey (1935) published a study of the imaginative behaviour of pre-school children during free play and in experimental situations. Using observational techniques in three Nursery schools, fifty-four children were recorded in play sequences involving imaginative behaviour. Findings showed an increase in total amount with age, with a more significant relationship between imaginative behaviour and mental age than chronological age. Chronological age, however, influenced the patterns and types of behaviour; older children, with greater understanding or comprehension, responding in more complex patterns with increased reality content. This led to the author's belief that

"the most socially acceptable and possibly the most satisfying expressions of imagination are based on adequate knowledge. Adult guidance of the child's learning activities and imaginative play contributes to the building of a background of concepts and generalisations, whereas the undirected imaginative activity of the child is often likely to be fanciful and imaginative merely because it is incorrect and irrational."

Jones (1966) also pleads for the nurturance of imagination

"that aspect of the human learning process which is uniquely human and which most often goes uninstructed in our schools ... with imagination, we all have it, some of us are more free to use it than others and all of us find it more accessible under some conditions than others."

Griffiths (1935) used projective techniques, conversation, picture-making and ink-blot patterns to study imagination, as a mental phenomenon, in thirty children of five to five and a half years of age. Though there was only a range of six months in chronological age, mental age spread from 3 years 4 months to 6 years 9 months. A comparative group was set up in Brisbane, Australia. Findings added weight to the psychoanalytic school of values: phantasy as an outlet for emotion, phantasy for compensatory use. However, there was evidence also of imaginative thinking, contributing to intellectual development.

"Imagination is, in fact, a child's method, not so much of avoiding the problems presented by environment, but of overcoming these difficulties in a piecemeal and indirect fashion, returning again and again in imagination to the problem and gradually developing a socialised attitude which finally finds expression at the level of overt action and adapted behaviour."

(p. 354).

The contributions of Piaget (1951) to understanding the significance of imaginative behaviour is an important one. While his methodology, observational of only a small group of children together with uni-dimensional interrogation, has been criticised, nevertheless his emphasis on imaginative play as a vehicle of intellectual growth during the early years is a major part of his theory. For Piaget, play is pure assimilation - the child's behaviour being tailored by him to fit the processes, intellectual, social and emotional, that are going on within him. Symbolic behaviour emerges when the child is beginning to master words and images and he proceeds to use these to regulate behaviour. The ability to distinguish between signifiers and significates, symbols to represent objects and events not immediately present, enables the child to make the act of reference - called by Piaget the symbolic function. Identifying an object or a person with something or somebody else leads to combinations of actions and complex thought. Imaginative sequences become a part of behaviour though their basis is one of reality - actions seen or performed in some other context. Such mental activity

leads to cognitive competence as the gross distortions of reality are gradually overcome. Piaget distinguishes between games of simple combinations, compensatory combinations, and liquidatory combinations. Imaginary play sequences, shopping, nursing, driving the ambulance, are examples of simple combinations which may have a compensatory element, according to the emotional connotation. A distortion of reality, when life is difficult can restore equilibrium while behaviour which liquidates events in order to overcome a problem uses symbolism to transpose the feared act or experience. Acting out, in play, allows the association to be broken down and gradually assimilated in other forms and into other behaviours. Thus the child comes to terms with reality. Compensatory combinations allow compensation for deficiencies and unpleasantness in the real world, liquidatory brings a gradual acceptance of that which was originally abhorrent. Symbolic play thus declines when the child has increased powers of adaptation to reality and the social scene: though imaginative behaviour continues with increasing reality content. The link with creativity is clear: it is the unusual

combinations of the real and known that constitutes creative thought.

The work of Singer (1961) is of especial interest since it further emphasises, from a neo-Freudian point of view, phantasy play, imaginative behaviour, as a useful cognitive skill. Using projective techniques, Singer selected High/Low phantasy groups and invited the children (6-9 years) to play a 'waiting game'. It was hypothesised that High Phantasy children would change the situation into a phantasy game and remain seated longer, i.e. they would control the situation through use of phantasy. All the children liked the game but only the High Phantasy group employed skills to help overcome the waiting element - to defer gratification. Two environmental factors were extracted for promotion of phantasy skills, the presence of a benign adult figure to act as a model in immediate and deferred situations and opportunity to be alone in order to practise use of phantasy. A balance between adult presence and solitary play was seen to be essential. The children showing High Phantasy also reported more interaction with parents that would be likely to involve phantasy such

as story-telling and games. They tended also to be children with few siblings so that incidence of interaction with the parent was the greater. There were no differences between the High/Low phantasy groups in intelligence.

Elkonin (1971) suggests that of the child's two forms of symbolisation, the substitution of one object for another and the child's assumption of the role of another person, the second has not been studied adequately. Piaget's belief that when identification and clear reproduction of associated activities are played out a regression of symbolics begins, is also questioned. The gradual generalisation of activity with substitute objects, when resemblances of the substitutional object to the original may be minimal, takes place in the earliest years, and is an important stage in development. Imitative activity, a decisive step connecting the activity with the person who produced it, is the next stage. This is the first step, Elkonin claims, towards seeing behind each activity the person to whom it belongs - the beginnings of role play. At this point children imitate the activities of specific

adults but Elkonin stresses the help a child needs in making this reorientation. In order to identify their activities with those of the adult the child needs the adult to suggest, point out or comment on what he is doing. Then the child can 'hold' the two - himself and the other person: the actions of himself and the other person - 'role in action'. Experiments with younger and older children showed the younger children's inability to step outside of "themselves" - older children could do this but regarded this ability not as 'play' but as 'serious', likewise younger children, unable to single out characteristics of 'friends' did not assume such roles whereas older did. Younger children assumed only the roles with outstanding characteristics. Only gradually with greater experience does imaginative play pass from reproduction of more subtle characteristics such as that of relationships. Speech, Elkonin believes, is a crucial factor throughout (Piaget is again criticised for the exclusion of the function of speech), and the naming of objects, the suggestion of how objects might be used and even renaming of objects is seen as a function of the adult in promoting

imaginative behaviour. Spontaneous development of symbolisation is thought dubious: the adult has an important part to play. The overall importance of symbolisation is closely recognised; its function is not only to simulate human activities but also human relationships. Imaginative play thus emerges as a 'powerful means of the child's penetration into reality'.

Affect

Shure (1963) did not find a marked difference in affect from Area to Area. The proportion of positive affect in the Doll was slightly greater than in Art, Book and Games. The proportion of neutral affect was least in Doll and slightly greater in Block. The amount of negative affect was negligible in all Areas.

Constructiveness

Shure (1963) found more constructive use of materials than neutral or absent while destructive behaviour was negligible in all Areas. Constructive use of materials was greatest in Art and Book and lowest in Block. The relative frequency of children occupying

Games and Block without use of materials was twice as great as such behaviour in Art and Book.

It is of interest that there has been more research into destructive behaviour 'aggression' than constructive. Yet observational techniques repeatedly reveal a low incidence.

"It seems difficult to justify the important place 'aggression' holds in some theories of child development."

(Willems, 1967).

McGrew (1972) prefers the term 'agonistic behaviour' and gives a comprehensive survey of the literature as well as outlining difficulties of definition.

Social Participation

The importance of this area of development in the pre-school years is marked by the wide range of studies, which can usefully be grouped

1. Studies isolating variables relating to social interaction;
2. Studies related to degrees of social acceptance.

For the purpose of this study only the former will be reviewed.

One of the earliest studies (Parten, 1932) on the social participation of pre-school children laid a foundation of enquiry which persists to this day. Parten's six categories: unoccupied behaviour, solitary play, onlooker behaviour, parallel play, associative and co-operative play, are now classic. Data was gathered by the time sampling method of observation when the thirty-four children (pre-school) were observed daily for one minute each during free play for 60 or more behavioural samples. The data revealed an increase in all forms of social interaction with age and a developmental trend towards the more complex forms of social behaviour, both positive (co-operative) and negative (aggressive). The data was further examined for degree of leadership under five headings: following independent pursuit, following some and directing others, sharing leadership with another and directing alone. The play activity was also noted, and toys and games ranked for 'social participation scores'. Two types of leadership were identified, "the diplomat" - by artful and indirect suggestions, and "the bully" - force and direction by one who has chosen his followers. Sex differences in

leadership were negligible and leaders tended to be more intelligent and to come from higher socio-economic background. The size of group increased with age but preference was groups of two and these were single sex. Children played with their friends (same sex) and friendships were influenced more by age and home environment than by intelligence. Siblings showed a marked preference for each other's company. Findings on play activities showed house play to be the most social type of play, constructive material play characteristically parallel play. Younger children played differently from older children and play equipment was seen to have different social values for older and younger children.

Parten's work was outstanding and has been subjected to verification for forty years. Individual studies have corroborated her findings. Arrington (1943) in her review of time-sampling studies on social interaction showed how consistent reports on social development studies have been. The three outstanding findings are,

- 1) increase in all forms of social interaction,
- 2) children who are highly rated in one area of social activity are likely to be similarly rated in all areas, e.g. the most sympathetic child is likely to be the most aggressive,
- 3) the wide range of individual differences.

These basic findings have been tested for consistency. An attempt to elucidate questions of consistency and change in the social behaviour of children is reported by Stott and Ball (1957). Using the records of 60 Nursery school children, the ascendance-submission variable in social interaction was analysed for quantitative and qualitative change in a 10 year period of development. Of interest to this study was their finding of increasing interactive behaviour during Nursery school years with a drop of frequency at age 5. The increase was largely a change in degree of ascendance with a marked decrease in isolate behaviour. The authors concluded,

"... that readiness of the organism is the first requisite to social interaction in children but even when thus ready they still must learn to be socially responsive and interactive. The amount as well as the quality of social behaviour they develop, whether in terms of positive leadership, domineering exploitiveness, dependent submissiveness, or conformity and compliance with the wishes of others, would seem to depend largely upon environment. In a Nursery school situation, with abundant opportunity for social experience, patterns and varieties of interactive behaviour develop rapidly."

(p. 272).

The ecological study (Shure, 1963) showed those Areas where the different categories of social behaviour were exhibited. Play involving a single child was more often in Block and Games. Parallel play, simple awareness of others, constituted about half the total in Art and Book. The most complex social interaction occurred in Doll while Block elicited a high proportion of associative play.

Emmerick (1964), in a developmental analysis of thirty-eight middle class Nursery school children, investigated both continuity and stability in early social development. His findings pointed to the persistence of individualistic traits within the developmental

transformations which included change in quality, quantity and content of social behaviour.

Research into the effect of Nursery school attendance on social development is of interest. Walsh (1931), using paired groups, found that the group that had attended Nursery school were more spontaneous, less inhibited and generally more social after six months in an Infant school than those children who had not been to Nursery school.

Mallay (1935) gave evidence of development in social techniques during a six month stay in a Nursery school which compared favourably with the differences in an ordinary six month period. Hattwick (1936) matched two groups of children and compared them after one group had been in the Infant school six weeks and the other nine months. He found that the impetus nursery education had given some children was measurably over and above maturation influences. Children who had experienced nursery education for some time showed improvement in their attitude to strangers, their overall play with children and their independent attitude towards adults.

Such evidence provided the foundation for belief in the social weighing of the Nursery school programme. Susan Isaacs (1948) summed up the findings of the studies,

"So far, all such studies have shown that children in the Nursery school learn more easily, play more actively, and thrive better in every way than similar children who have not had this advantage, even if they live in good homes."

More recent studies have had difficulty in providing objective evidence of such value-laden statements. O'Sullivan (1957) matched eighteen children for home background, intelligence and physical development and asked a series of questions highly relevant to the Nursery school situation, e.g. Are Nursery school children more ingenious in their approach to problems and use of materials? Are they more sociable? Have they learnt to share? Do they listen more attentively to stories and commands? Evidence was lacking to prove that the Nursery children showed any advantage in the Infant school over the children who had come straight into school from home. Objective evidence could not support subjective assessment: O'Sullivan had hoped to provide an empirical basis for the strong feeling 'that there must be an advantage'.

Bonney and Nicholson (1958) report findings on three studies in America which also fail to prove that children 'who have had pre-school socialising experience (can) be shown to have measurable advantage in subsequent years in classroom social adjustments as compared with children in the same class who have had no nursery school or kindergarten training'. Procedures in each study were on a 'matching' basis, peer rating and teacher ratings were analysed and the overall picture was one of 'no significant differences between the pre-school and non-pre-school pupils in social adjustments in the sixth grades'. Discussion takes up the point of differences in 'quality' of nursery experience and suggests that if carry-over values are important then a particularly high quality level in inter-personal rapport becomes essential.

"It seems likely that many educators and child psychologists have had too much naive faith in the adjustment or curative values of group socialisation without sufficient attention being paid to whether or not the activities engaged in are actually helping those who need some assistance as opposed to simply perpetuating an established social hierarchy."

(p. 132).

The work of Thompson (1944) is apposite. She showed that Nursery school pupils whose teachers showed towards them a large amount of warm, friendly and helpful relationships, made more progress in various aspects of personal-social behaviour than a group whose teachers were detached, though considerate, giving help only when it was requested. Thus an essential characteristic of pre-school education is a large amount of personal-social interaction not only between the pupils but also between the pupils and their teachers.

Brown and Hunt (1961), stressing the need to evaluate the part nursery school education can play in the socialisation process, designed a study on the 'paired replicates model'. A total of eighty-four children were rated on scales for 'adjustment' and 'brightness' and the control children received higher mean ratings for 'adjustment'. The difference between the experimental and control children was not significant for 'brightness'. The teachers' perceptions of 'brightness' and 'adjustment' were further analysed and found to be independent dimensions. The discussion following this rejection of the original

hypothesis is of interest. The idea of a gestalt of 'adjustment', a collection of separate traits, supposedly positive, within an individual, may not constitute 'good adjustment' for that individual. Furthermore the teachers' perception of behaviour patterns springs from a different value-system - nursery schools may promote individual initiative whereas later education is concerned with conformity. Children may themselves react badly to the change of ethos and require time to appreciate the demands. Alternatively they could be bored through lack of challenge. Finally, the children from Nursery school may represent the factors which earned them a selective place in pre-school education. Until all children have this experience it may not be possible to clarify the factors which are part of evaluative research.

However, Harrold and Temple (1959), using projective techniques with children in four Infant schools, compared those who had had nursery education with those who had not. Results were encouraging. Children from Nursery schools were better, both at the beginning and end of the first term in adjustment to new

circumstances, their attitude to strangers, their response to other children, their ability to look after themselves and in their degree of independence.

"During the term improvement was shown by all the children and the 'direct admission' ones made the greatest strides. Yet at the end of term the gap had not been closed only lessened ...".

Douglas and Ross (1964) also found that the positive effect of nursery education could still be measured at eight years of age. By the age of eleven, however, the advantage had been lost and by fifteen, the nursery school children were behind. Such a long term longitudinal study is likely, however, to reveal the overall influence of socio-economic factors. The initial 'boost' of the Nursery school for children chosen for attendance because of their poor home background was but a flower in the wilderness of negative environmental influence. Smith and Connelly (1972) found a higher correlation with nursery experience than with age on a composite measure of social participation, a good indication that the nursery environment is conducive to an improvement in the ability to interact and play with other children.

Adult Presence

This was not a feature in the Shure study. The literature on adult effect shows it to have been an ecological factor of some importance however.

An early study using observational techniques is "Teacher-Child Contacts in Nursery Schools", Landreth et alia, 1943. Six teachers, in two types of nursery situation with children aged 2-3 years, made 638 contacts covering observation periods in 24 days (the first contact in a 10 minute period during the 3 hour morning programme was counted and the total analysed). The teacher's major method goal was helping to adjust to routine and intellectual stimulation, but she was also concerned, in a much smaller degree, with social, emotional, aesthetic, mental and motor development and with physical comfort and well being. The five methods most often used were in the following order of diminishing frequency: giving information, offering suggestions, giving physical assistance, giving encouragement and approval and asking questions. The type of contact was related to the particular teaching situation and there was adaptation to

younger and older children. In the younger group,

"there were almost twice as many physical and visual contacts: there were more suggestions, more commands, more social phrases, more examples and demonstrations and more physical assistance and guidance. The older were given slightly more information and questions."

There were differences in quality of contact between the two types of school - University Nursery School and Public Administration Nursery School - the children of the former belonging to professional classes and the latter to families of lower socio-economic groups. The climate of the two schools differed with 'more physical handling, more commands, more physical compulsion and disapproval, less information given and questions asked, less encouragement offered and less physical assistance and guidance given', to the children in the Public Administration School.

In 1964 Swift published a useful review of Teacher/Child studies which summarised the position to date.

In 1965 Gardner and Cass published an account which included observed contacts between eighteen teachers and children in Nursery schools

in a 75 minute period, on each of four days during the play period.

"The play period, e.g. often less easily recognised as a time when the role of the teacher is of the utmost importance and when all her skill is needed in guiding, enriching and providing for the all round growth, needs and experiences of the children in her care."

(p. 30).

Methods used prevented a complete survey of all contacts (free movement of teacher and children inhibited a comprehensive count made by seated observers) but in diminishing frequency were contacts concerned with intellectual stimulus or the imparting of information, promoting social attitudes, personal friendly advances, discipline and control, physical care, protection and comfort.

A comparison with Landreth is not possible because of difference in categories but it is of interest that both studies show the teacher's first concern to be intellectual stimulation. The aim of promoting intellectual development is upheld:

"The work of the best Nursery school teacher from Susan Isaacs onwards, has shown how, by interacting with the children at the right moment, by stimulating them to games for which they are ready but which they would not find out for themselves, by conversation which skilfully

enlarges their experience, by arrangement of the environment, and in many other ways, the development of children can be accelerated."

(Wall, "Child of our Time", quoted Gardner, p. 167).

A study to remind us that all is not sweetness and light, "Varieties of Constraint in a Nursery School", Jackson, 1968, analyses and categorises the abrasive qualities of Nursery life. The dominant form of constraint in quantitative terms seemed to be that of 'having one's activities interfered with by someone else' ... 'slightly more than one half of all the constraining episodes involved some kind of direct confrontation between the child and one of his classmates and his teacher'. Figures went on to show that almost once every half-hour the child was trying to do something he was unable to do and almost as frequently calling for adult help or attention without receiving it. The author's comment on

"'the skinned psyches' - scratches which may leave no scars but make the young child's life what it is."

"A Comparison of Teacher Response to the Pre-academic and Problem Behaviour of Boys and Girls", Serbin et alia (1973) looks at variety of teacher response in two types of situation in fifteen pre-school classes, and notes sex differences. Methods were by observational techniques within a specially devised code, recording every 20 second interval within 6 minutes in twenty sample observations. Teachers were found to respond more to boys than girls in aggressive situations using more loud reprimands. They used more direction and instruction in contact with boys who were more likely to receive nurturant help than girls. The teachers gave more attention to the dependent behaviour of girls when they were in close proximity. The authors suggest that differences from the teacher may result not only from differences in the children's behaviour already manifesting sex-type conditioning in child rearing patterns, but also from teacher's belief in necessary differences in quality of training, e.g. 'a belief that boys require more training in problem solving and manipulative skills than girls to fulfil their prescribed sex role'.

ECOLOGICAL RESEARCH AND ENGLISH NURSERY SCHOOLS

A Research Design

Systematic investigation of locations within an educational setting can thus reveal psychical-environmental influences on the behaviours of individuals and groups (Shure). The English Nursery School, as the American, with its emphasis on all round development would be likely to provide an environment wherein all aspects of growth are nurtured, and would be open to investigation. Its descriptively established locations - areas for play; block, book, home, sand, water - could be investigated systematically to reveal answers to the question 'How far do play locations influence the quality and quantity of behaviour of individuals who move within them?'

However, early childhood education in this country takes place within a particularly complicated system consisting as it does of overlapping sub-systems concerning the child, his family, his environment, peer groups, teachers and school. Ecological research strategies are, therefore, likely to be concerned with multiple measures and methods of

analysis which would be sensitive to a wide variety of interacting influences. Measures to be included would be those not only likely to highlight learning environment but also the characteristics of the children. Furthermore, the interpretation of such measures might appear to be fraught with difficulty since, in observing young children, it becomes apparent that any piece of behaviour has a more than usual complicated basis - e.g. a comment by a child may be an act of assertion or inquiry, an indication of dependency or independency, mere echoalia or an act of cognitive coping. Similar pieces of performances are likely to have different meanings for different children or for the same child at different times. Thus the meaning of the behaviour can only be seen against a background of understanding of the situational contexts. It further seems likely, therefore, that the best qualified workers would be those familiar not only with young children, but also with their educational medium.

And yet, research into early childhood education located within the Nursery School has certain advantages since it is probably one of the few educational situations where

naturalistic enquiry may be conducted without disturbing or distorting the course of action within the school. The fluidity of the situation, the free movement which is an integral part of its educational procedure, the high ratio of adult to child, all contribute to the ease which an experienced teacher/research worker may enjoy. Intrusion would appear to be minimal and acceptance, since such a research worker has facility in communicating, is assured. Such research would not be undertaken in order to test hypotheses, but rather to uncover hitherto unknown relationships, or if these were suspected, at least to confirm them.

Secondly, such research may help to redress an imbalance in the way teachers and educators have come to regard, in a somewhat subjective way, children's behaviour. The issue of what conditions give rise to what behaviour and why, is the basis of psychological inquiry and in attempting to reveal where more recent developmental theories can link with practice a third objective of research into early childhood education might be attained.

Fourthly, since theoretical concepts within the field of early childhood are as yet but thinly clad, research which is conducted in a naturalistic situation, might aid clarification of these concepts, producing evidence of their stability as well as an index of durability. Against this background of complexity of investigation and availability of unobtrusive opportunity, a design was established.

The seven Nursery schools chosen were all within travelling distance of the University and were selected only by reason of their proximity and the Headteachers' willingness to be involved in the study. It was explained that two students of the University, well experienced in the field of education of young children, would attach themselves to the school for the duration of an academic year. They would visit, become additional members of staff co-operating with the running of the school and at a selected date would begin an enquiry based on observation which would have minimal effect on the daily programme. The subjects (normal children) of the enquiry would be unaware of having been chosen but would need to be selected from those who would be likely to remain in the Nursery school for

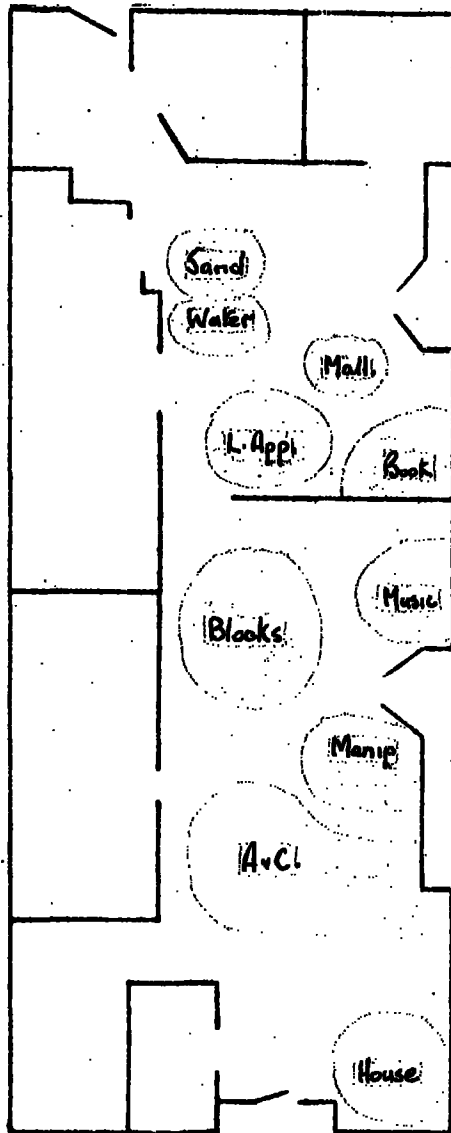
the academic year. It was planned that the two students should observe 16 children, 8 boys and 8 girls, to cover as wide an age spread as possible. It is of interest that this spread was so limited. Within the seven schools, the widest spread was 36-50 months and the Headteachers could not be certain that the oldest children would remain. The policy of admitting 4 year old children into statutory provision was affecting the Nursery schools. Many parents, while not denying the advantage of nursery education, preferred their children to enter the 'proper' school at the earliest opportunity, despite the possibility that inadequate arrangements existed within the Infant schools to receive children of this age.

The seven schools were of varying design: six had open facilities within a single play room, one had a dividing wall between the areas. Schools were assigned a letter (e.g. 'A') and children numbers (e.g. 7) to establish anonymity.

SCHOOL A

SIZE OF AREAS m²

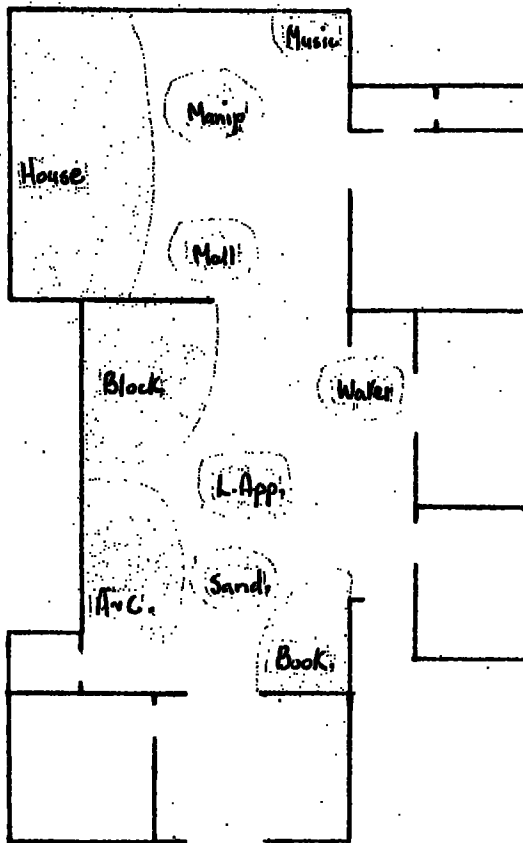
Manipulative	5.19
Book	4.53
Malleable	1.86
Art and Creative	20.98
Blocks	9.30
Large Apparatus	5.50
Music	4.53
House	7.12
Sand	2.59
Water	2.59



SCHOOL B

SIZE OF AREAS m²

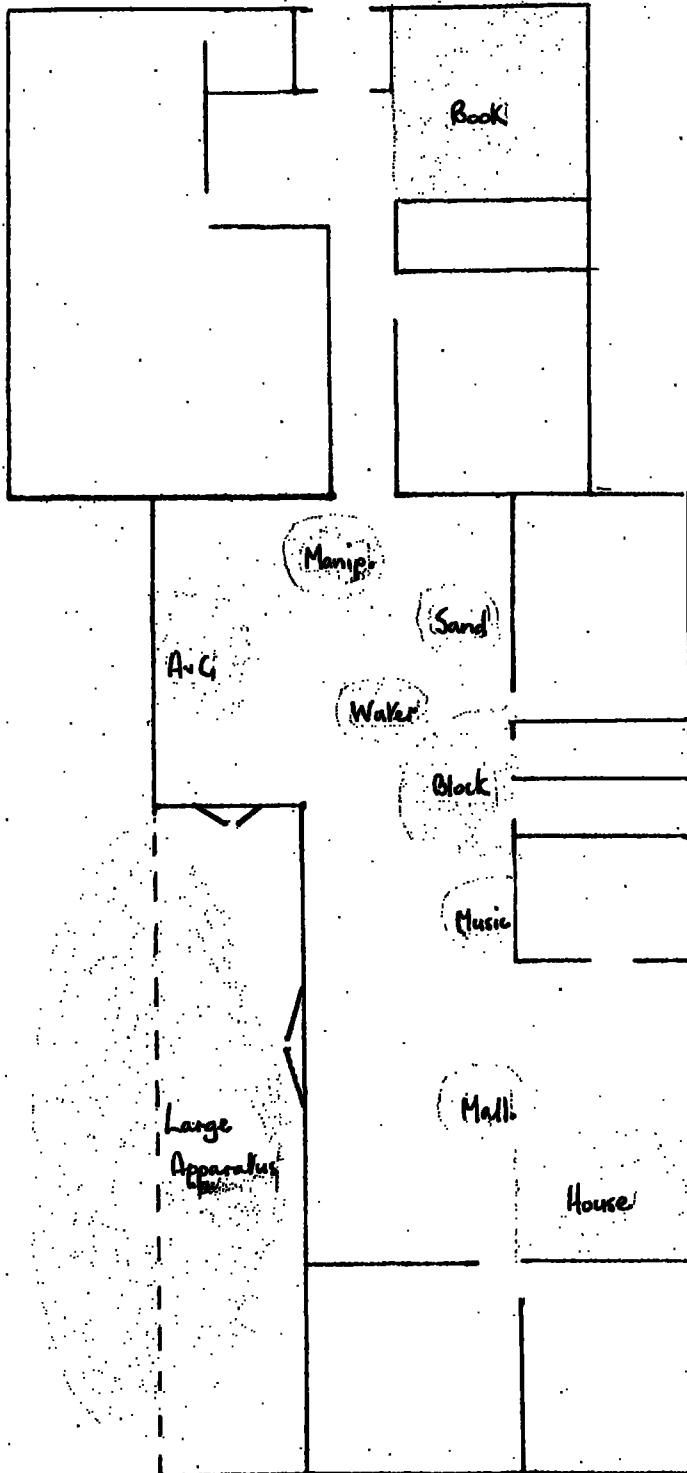
Manipulative	2.52
Book	5.58
Malleable	1.80
Art and Creative	9.62
Blocks	9.62
Large Apparatus	1.92
Music	.81
House	18.70
Sand	1.80
Water	1.80



SCHOOL C

SIZE OF AREAS m²

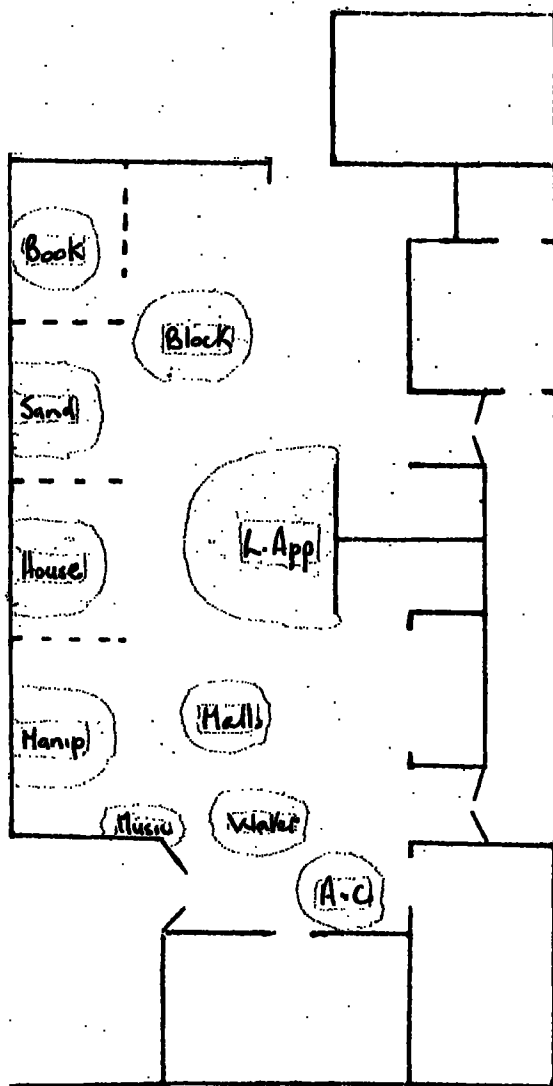
Manipulative	4.20
Book	18.40
Malleable	3.20
Art and Creative	6.70
Blocks	10.80
Large Apparatus	190.90
Music	2.20
House	12.10
Sand	1.50
Water	1.50



SCHOOL D

SIZE OF AREAS m²

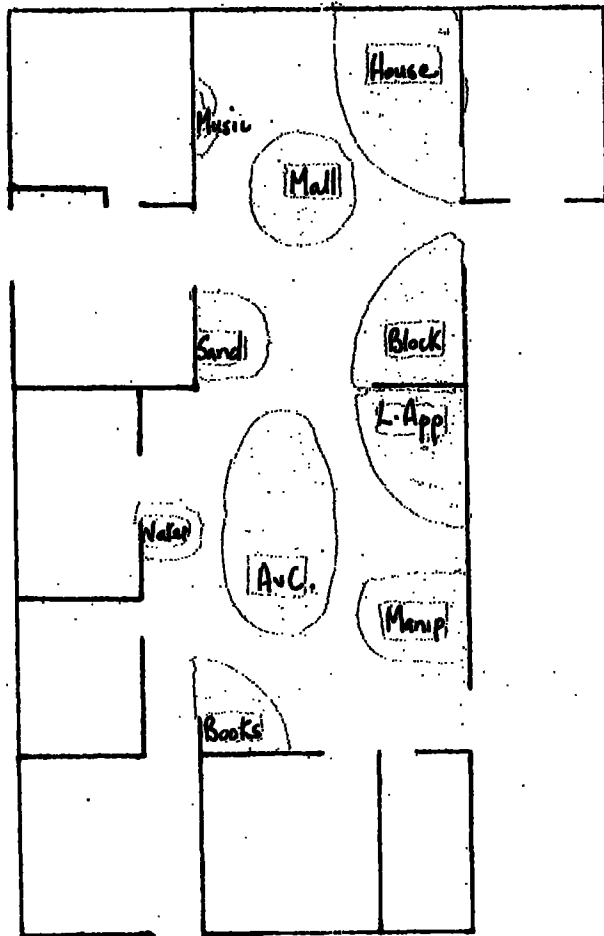
Manipulative	4.90
Book	3.40
Malleable	2.90
Art and Creative	2.90
Blocks	4.90
Large Apparatus	14.40
Music	.70
House	5.70
Sand	4.80
Water	2.10



SCHOOL E

SIZE OF AREAS m²

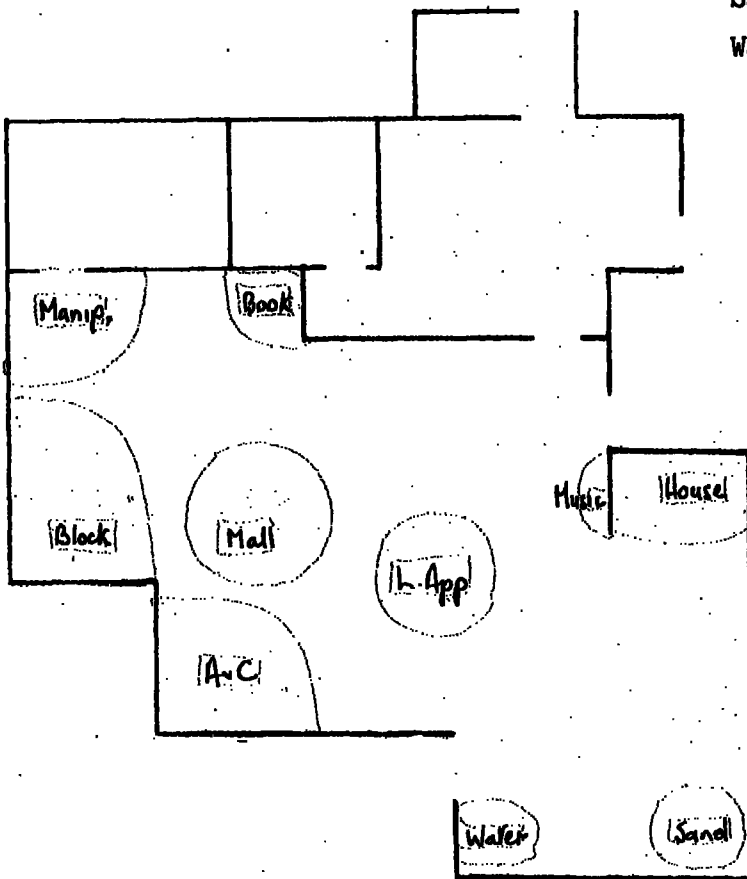
Manipulative	5.40
Book	5.09
Malleable	3.24
Art and Creative	10.66
Blocks	6.83
Large Apparatus	3.42
Music	.29
House	9.27
Sand	2.52
Water	1.14



SCHOOL F

SIZE OF AREAS m²

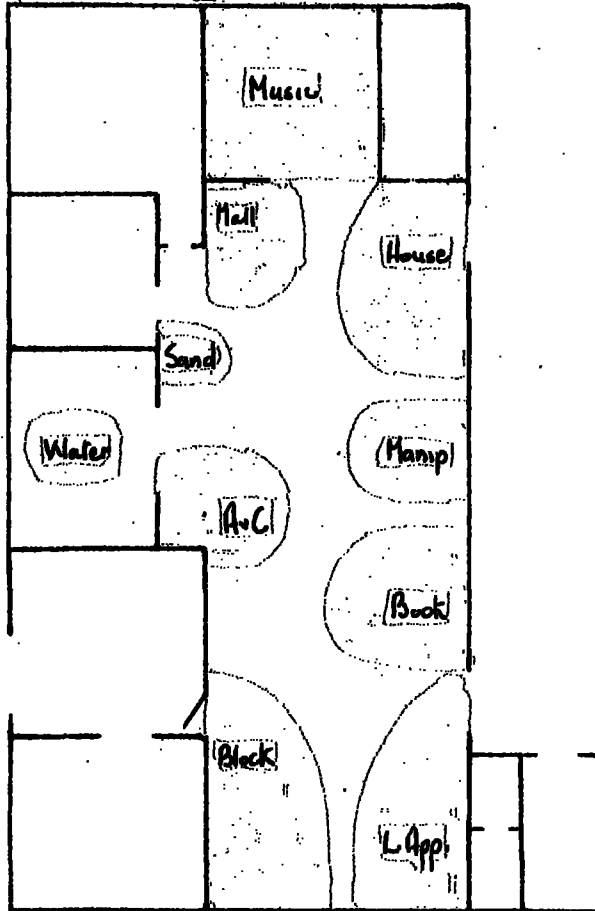
Manipulative	5.80
Book	2.40
Malleable	5.25
Art and Creative	5.25
Blocks	9.00
Large Apparatus	4.90
Music	1.40
House	4.90
Sand	3.90
Water	2.20



SCHOOL G

SIZE OF AREAS m²

Manipulative	8.00
Book	10.00
Malleable	6.00
Art and Creative	6.00
Blocks	11.00
Large Apparatus	11.00
Music	13.00
House	12.00
Sand	2.00
Water	3.00



Features common to all schools

The schools were all '40 children unit' but were catering for increased numbers through part-time attendance. Each school, however, had a nucleus of full-time attenders.

Full and Part Time Attendance
of 16 children observed

	A	B	C	D	E	F	G
Full Time	6	9	11	8	7	12	7
Part Time	10	7	5	8	9	4	9

Staffing was uniform, consisting of a Headteacher, a qualified teacher, two qualified Nursery Assistants (N.N.E.B.) and three N.N.E.B. students, each spending three days in the Nursery. The adult/child ratio thus fell in the region of 1:5. None of the schools invited parental involvement in the daily programme though all offered freedom of access on bringing and collecting children, and all Headteachers regarded parental consultation as an important aspect of their work.

A general statement of policy as it affects the daily routine and therefore the behaviour of the children in regard to all schools would cover the following points:

- 1) No age segregation is carried out within the programme of activities.
- 2) While group activities are planned and prepared for there is no strict adherence to time. The rhythm of the day is gentle and yielding to external influences while maintaining a protective foil for individual reaction.
- 3) The staff do not operate on a schedule of time or action, there is flexible interaction and co-operation.
- 4) The whole of the school premises are open to investigation by the children. All adults including the kitchen personnel, gardening staff co-operate with child intervention and questioning. A standard of mutual respect for property and privacy is recognised. Any individual can be politely asked to leave an area, or to desist in a behaviour, on receipt of explanation.
- 5) Thus, all doors are open.
- 6) Other adults, including, for the main part, parents/guardians, are welcomed.

Schools were open with staff spending from between 8.30 a.m.-4.00 p.m. Meticulous attention was paid to the safety of the children. No child would be allowed to leave the schools unaccompanied.

The subtler relationships between provision and expectancy of behaviour, of control and freedom, of live or material effect interweave to produce an almost inexplicable atmosphere and background which is peculiar to English Nursery Schools. Discipline and control springs not only from judgement and wisdom of adults in themselves interacting with the children but also from the quality of materials provided, arranged, grouped within a design calculated to provide growth opportunities, intellectual, spiritual, physical, social and emotional.

Viewing such opportunities many schools establish 'bases' or 'areas' where children learn to expect certain kinds of expressive material and can respond, seeing these either as a refuge within the familiar or a challenge in recognition of subtle re-arrangement or introduction of new possibilities. Many such areas are well established and over the seven schools only a minimum of re-arrangement allowed

the following ten (10) 'areas' to be made common. These were:

- 1) Manipulative Play
- 2) The Book Corner
- 3) Malleable Play
- 4) Art and Creative Opportunity
- 5) Blocks
- 6) Large Apparatus for muscular play
- 7) Music
- 8) House and Social Play
- 9) Sand
- 10) Water

The list was exhaustive, covering every play area and absorbing every opportunity in each Nursery. Observation was carried out on two days of each week (Tuesday, Friday) between 9.30 a.m. and 10.45 a.m. During this period (1 $\frac{1}{4}$ hours) for five schools indoor play only was allowed. School B, however, pursued its 'in/out' programme though counting was done only on the inside arrangement. School C had the advantage of an extended verandah - a large area for Physical Apparatus available in all weathers.

Procedure common to all schools

Sampling was to proceed during the months of October and November with as little alteration of normal nursery routine as possible. All areas were available and it was agreed that no completely novel apparatus would be introduced. The aim was to present a stabilised play-room containing a full range of play opportunities for a limited period, during which counting would take place. Preliminary visiting was necessary to allow operators to acquaint themselves with the children. Each of the two operators recorded each of the five areas in pre-arranged order, noting the behaviour of any of the sixteen children in activities over a 5 minute period divided into minute segments, and an asterisk was placed appropriately to mark adult presence in an area when recording was taking place. In one Nursery (C) not only the presence but also the participation of the adult was noted.

The behaviour of the first child observed in each minute was recorded across the categories before observation of subsequent children commenced. After the last area was observed the process was repeated; each area being

observed for 10 minutes during a recording session. Data collection continued for 10 days giving a total of twenty samples and a sampling time of 1,000 minutes. Systematic rotation of areas was employed for each new day of recording. Further controls were exercised to retain a representative picture of the Nursery, e.g. the staff were always present in the Nursery, and attendance within the group of children was at least 90%. Fortunately, there were no epidemics and the children were normally present.

Reliability

Training in observation, using the schedule with children recorded in a vertical row and categories of behaviour horizontally, was begun (see schedule sheet). After the children were known and operators satisfied with their ability to observe all emitted behaviours within the 60 second period reliability was established using the formula:

$$\frac{2(\text{Number of Agreements})}{\text{Number of judgements of Observer}_1 + \text{Number of judgements of Observer}_2}$$

where an agreement signifies identical classification of an individual response by both observers.

An agreement of at least 95% was quickly established. The almost perfect agreement soon reached may well have been affected by the fact that all the operators were experienced teachers of young children.

It was decided to asterisk * the presence of an adult in an area (it was hoped that adults would ignore the presence of the operator as easily as did the children) and to note the degree of mobility of the children within an area. A movement (mobility) was defined as an entrance or exit from an area by an individual child from minute to minute. A stability was defined as a child's remaining in the area from one minute to the next.

Example of Plotting Mobility and Stability

Minute	Child	Play Observation	Mobility	Stability
1	A	A is playing when the observation begins. (Not a mobility)		
2	A	A is still playing = 1 stability B enters = 1 mobility	1	1
3	A	A is still playing. During this minute A leaves = 1 mobility + 1 stability	1	1
	B	B is still playing but leaves with A = 1 mobility + 1 stability	1	1
4	B	B returns = 1 mobility	1	
5	A	A returns and remains during minute 5 = 1 mobility	1	
	B	B is still playing and remains = 1 stability		1
TOTAL			5	4

A mobility is only shown in Minute 1, when the child enters during the minute. The maximum number of stabilities possible for one child throughout a five minute observation period is 4.

A mobility index for an area can be created:

$$\frac{\text{Number of movements}}{\text{Number of stabilities} + \text{Number of movements}}$$

Low index figures mean that there was not a large number of movements in the area and the area was relatively stable. High index figures mean that there was a considerable number of movements in and out of the area and the area was constantly subjected to this movement. An index of 1.00 means that there was 100% mobility. A median mobility figure can give a comparative basis. It was hypothesised that an area with high mobility lacked 'holding power'.

DESCRIPTION OF AREAS

Interest is now centred on the areas and the following descriptions cover essential similarities among the seven Nursery Schools. It must be emphasised, however, that there were individual differences in size and siting of an area within each Nursery as well as the quantity of play material provided. Quality and nature of the material was reasonably constant.

1. Manipulative Play

Material here was of a recognisable, set nature, the prime purpose of the apparatus being the development of hand-eye co-ordination, fine muscle control - deft fingers and hand movement allied to exploration and perception of relationships. In this area are nesting and grading toys - nesting pyramids, beakers and dolls: shape making toys such as geometrical inset boards, mosaic toys, ply-wood shapes in fractions of a square, circle to be fitted in form boards: fitting and sorting toys such as the posting-box, geometrical sorting boards; peg boards dealing with height and number of pegs and a supply of round, square, rectangular beads for sorting and threading. A variety of jig-saws covering a range of difficulty - two and three dimensions are essential - the whole being complemented by commercial constructional equipment, e.g. Lego, Bildit, Multibuilder, Makimore, Playsticks, Piccabrix, Sticklebricks, Makador. Constructional material can be manipulated to any desired end, representing almost anything and involving ideas and imagery. The child in need of quiet relaxation will seek this area, another who feels insecure might work with material that is similar to home based pursuits, and lively boisterous children turn to this kind of play after more physically tiring play.

2. Book Corner

This area is permanent in every nursery. It is made attractive with soft floor covering, a reclining chair, cushions, as well as books arranged to catch the eye. The shelves are grouped to afford privacy and a sense of quiet so that the children can withdraw and browse under good conditions for quiet thought. The quality of books is of prime importance, recognisable favourites must be there as well as a number of new ones. A small table to enable the handling of particularly large picture books is useful. Here children learn to handle books, how to read pictures, how to tell stories and to listen to stories told by the adult using the books on display. The quality of arrangement and the care with which the books are handled induce the children to respect the area and to regard it as offering a rewarding experience.



3. Malleable Area

Here are elemental materials particularly valuable for the young child, for they not only offer opportunities for sensori-motor play but provide a link with the actual substance of the world in which children live. Furthermore, they offer outlet for primitive feelings of destruction and aggression, yielding to emotional accompaniment of action. All materials can be gently moulded, violently pummelled and pounded, banged, fashioned by a wide variety of tools. A thing of beauty may be produced over which a child lingers or release of emotion, violent and disruptive, can be accomplished without breakage or damage. A great deal of thought, imagination, phantasy, perseverance is called for by a variety of malleable media - clay, kept moist, dough, coloured by the addition of vegetable dye - provide consistencies soft enough to be worked even by small children.



4. Art and Creative Area

The wide spectrum of experiences provided by his life lead a child to seek release of impressions through representation. Exploring the relationship between experience and expressive work, the child produces rich imagery full of symbolic representations. Moving gradually away from the sensori-motor exploration of material, the child seeks colour, texture, pattern. A wide variety of paint, with different textures and colours, with opportunities to create what is satisfying and new, needs to be provided alongside differing qualities of paper, brushes, tools and collage materials. Selection by the adult is deliberate, choice and manipulation is left to the child. The role of the teacher is delicate since a child of pre-school age often cannot examine his representations directly and resists a too obvious question. His synthetic incapacity (Piaget) leads only gradually towards realism and the realisation of relationships within the imaginative field. Development is seen towards the stage of intellectual realism - the child painting what he knows. Pictures can then be discussed and language development, conceptual grasp, strengthened. The Art and Creative area in a nursery is extremely important: its siting near to sources of water, its space for easels, its broad surfaces for action must be carefully planned.



5. The Block Area

Blocks, also, are elemental media. They are usually wooden and should be pleasant to handle covering a wide range of shape, length and depth. Building in relation to his own size provides a worthwhile experience for a young child and he will construct in order to hide, protect, secrete. A 'permanent' structure may take a very long time to develop: co-operation often is invited and exchange of ideas takes place. Handling the blocks develops concepts of size, length, depth and number. Language can be extended. Weight, balance, the necessity for a sound foundation is learnt through experience. Building design can interest a child in the stage of intellectual realism while pattern, mosaic, extends a sense of dimension. Building offers the young child much of what he appears to need to express his powers of manipulation in a 'real' world at the same time working through desire for power, aggression, excitement and destruction. The 'collapse' of an edifice is a time of intensity of feeling and personal involvement.



6. Large Apparatus

This area, for the purpose of the study is described as that which is confined to indoor opportunity, being made up of more portable pieces of equipment, e.g. building units in polythene and/or wood (3' x 1' x 1'), slide, rocker, climbing frame, see-saw. The more adventurous equipment is of necessity permanently stabilised and provision is usually out of doors. (Nursery C had been well designed, with a south-facing, well-sheltered and covered outdoor extension so that the distinction between in and out of door play was blurred. The use of large apparatus in this Nursery was considerable. Nursery B, where the in/out play was available during the counting time did not have a similar facility and children needed to dress and undress for the change in climate, interrupting their flow of movement and ideas).

The young child's recourse to body movement for expression and outlet is met in this area. The desire for adventure, risk, bodily satisfaction is reached in a socially desirable way while balance and muscular prowess enhance physical development. A child may be completely engrossed in this bodily extension of self, acquiring deep satisfaction as he experiments with space, time, height, depth, the vertical and horizontal, upwards and downwards. Adventurous or timid, a child responds to the challenge of use of the body - the vehicle of expression which he knows best.



7. Music

Environmental opportunity will have determined the range and musicality of the sounds children hear. This area has a dual function of being the location where real music is heard, usually through the help of the adult and where pleasing sounds can be made through experimentation with carefully chosen instruments. Songs, records, instruments combine to produce vibrations of sound which can be felt by the child. The musical giftedness of the adult will shape and strengthen the experiences and ultimately give confidence to the young music-maker. Provision in this area is likely to reflect adult ability in music making, but should take into account individual differences among the children. Many are gifted and wish to explore the musical aspect of the world in which they live. All the orthodox percussion instruments and home-made apparatus with a pleasing quality of tone allow a child to explore pulse and rhythm. The more melodic chime bars and xylophones induce rhythmic pattern making, and a young child will sing in accompaniment. Each child's focus is on himself - usually the presence of the adult is needed to produce more harmonious sound.



8. House Area

The house, or home area, is specifically designed to enable children to re-enact aspects of everyday life. It can quickly be extended to include specific experiences, e.g. hospital, dental surgery, restaurant, by the addition of characteristic equipment but it is the furnishing and specific articles which are likely to stimulate imaginative play. The area is usually carefully delineated. Basic equipment would include articles of furniture particularly of kitchen and bedroom. There would be a complete family of dolls and the appurtenances of daily life, e.g. tea sets, cooking utensils, telephone, ironing board. Dressing up clothes, mirrors to be used by both girls and boys, are essential if imitative play is to be stimulated, reassuring the children of the purpose and meaning of the adult world. The role enactment producing deeper appreciation of both self and other people, the acquisition of skills, both promote a quality of dramatic play which brings reassurance. A touch of reality, the introduction of real vegetables to be prepared and cooked, items of simple cookery perhaps needing to be 'finished' in the kitchen provide highlights of action and lend distinction and purpose to the 'real-life' situation. Birthday 'cookies' can be prepared and later enjoyed by all the Nursery.



9. Sand Area

Though falling into the 'malleable' class of play opportunity, the sand area is usually found on its own. Inside play is more limited in size and opportunity than outdoor where the sand pit is usually large enough to contain many children. Indoors it is invariably a moveable trolley but conditions and qualities of the sand can be more completely controlled and finer measures and modelling tools can be introduced. The child explores the properties of the material, quick running, slow running, yielding, unyielding to pressure and shape.



10. Water Area

Like sand, the properties of this medium can be thoroughly explored. Protective clothing is essential and hangs near the water trolley. More complex play is introduced through experimental situations, e.g. floating, filling through tubes and concepts of volume, level, are subtly imbued. The skill of the adult lies in the combinations of equipment, presented so that the child with a play 'problem' can find to hand the means of solution.



The demarcation of these areas as previously suggested posed no problems for the Nurseries, though some had previously combined experimental opportunity, e.g. Block and Large Apparatus. Where children moved equipment or apparatus in order to further their play during the counting this was accepted. In normal nursery life, activity flows freely around all areas and it is often the most imaginative and intelligent children who use equipment in a way no adult had intended. Nevertheless it can be seen that within the ten areas fullest opportunity for growth is provided, the child operating not only with equipment but responding to social situations alone, with his peers or in the company of an adult.



BEHAVIOURAL CATEGORIES

"The plasticity in many types of response during these early stages raises the question of whether categories with fixed connotation supplemented by statistical computation of recorded instances are necessarily the best means of portraying what is perhaps the most essential point viz. the developmental process in the particular child."

(Bott, 1928)

Nevertheless, behaviour, if it is to be recorded, must be broken down into recognisable units. In the 1930s perhaps too much emphasis was placed on complex categories, showing bias through selection, not only of items of behaviour, but of over-controlled situations (Cockrell). Difficulties can be overcome by use of technological equipment together with more careful definitions. This study makes use of the framework designed by Shure since it appears to be the most comprehensive that can be used without technology. It appeared essential to be able to catch the free flow of action of the children if a true ecological description of the Nursery was to be built up. Apparatus in the forms of cameras and taping equipment was seen as an unnecessary intrusion for the purposes of this part of the study.

Definitions and Illustrations
of Behaviour Categories

PARTICIPATION

Relevant

Criteria within this category lie in the appropriate nature of the behaviour or use of equipment to the area. The introduction of equipment from another area is still counted relevant if the use is related to its essential qualities.

In the Manipulative Area a child was playing with small blocks, sorting according to colour and size. A second child brought a book to the table and began to try to show his twin the pictures in the book. A boy left the Block Area to seek a small car and returned with it to put it in the 'garage' he had made with the blocks.

Behaviour may also be relevant without the use of equipment as in acting the role of mother or father in the Home Corner.

Irrelevant

Criteria lie within the inappropriate use of an area for a behaviour which could more usefully be carried out in another part of the nursery.

A child took her doll into the Book Area and sat there happily brushing the doll's hair. Two children used the mattress underneath the large apparatus as a garage. A group of boys played chase within the Home Corner, using dressing up material to frighten away any children who wanted to play with the equipment.

Imaginative

Criteria are

- (i) the use of materials in an extended fashion,
- (ii) the behaviour to be accompanied by gesture or speech which indicates transcendence beyond the merely appropriate or relevant.

Two children were 'reading' in the Book Area. They were wearing 'dressing up clothes' and began to act the story from the pictures in the book. One said, "You have to keep looking at the book and turning the pages over so you know what to do next." A child was making a cake in the Malleable Area, putting plastic decorations on it and eventually cutting it up for 'eating'. Two children used the slide in the Large Apparatus Area to 'fall into the water and swim around to the steps again'. A child put a band of feathers on his head and climbed up onto the rocking horse.

Absent

Criteria are concerned with negative response. A child is not involved with equipment or responding to the opportunities within the locale.

A small girl went to the middle of the Large Apparatus Area and stood looking vacantly, oblivious that those who were playing there found her an impediment. A child can stand near or within an area but seem not to be 'aware' either of the locale, the material or the children already playing there. This was observed in the Water, Sand and Book Area.

AFFECT

Positive

Criteria here lie on a positive aspect of temperament and mood. There should be some indication, vocal, facial expression of confidence, contentment, cheerfulness, or happiness. This could happen even if the child is not directly engaged in an activity.

In the Book Area a girl was reading to her teddy-bear, talking to him, imitating his reply and laughing a lot about it all. The children were working at collage with complete absorption and a contented look on their faces. There was no vocalising.

Neutral

Criteria here lie in lack of concern and indifference to the activity.

The children were just sitting not doing anything in particular, until an adult approached then the affect became positive. A child, with his hand on the post was apparently waiting his turn on the slide but there was no look or movement of anticipation. A child walked into the Block Area, idly picked up a brick and put it down again. He walked away.

Negative

Criteria lie in an active though negative response accompanied by an unpleasant mood. Overt signs of displeasure, pouting, whimpering, crying, striking, with some vocalisations - "You can't come here." "I don't like you."

A child cried loudly after being pushed by another. The children actually fought over choice of instruments in the Music Area. An adult approached. A girl cried and was very upset when a boy 'spoiled' her play. One boy, deliberately and with intent, splashed another who was passing through the Water Area.

CONSTRUCTIVENESS

Constructive

Criteria lie in the positive use of material.

The children made ramps and bridges out of blocks of wood. Other children solemnly built a castle. Twin boys shared a xylophone and made 'music'. A child spent a great deal of time balancing a spade on the edge of a bucket in the Sand Area.

Neutral

Criteria here lie in the inability to summon the impetus for constructive behaviour.

A child touches or fingers material or an object but seems incapable of taking the next step. A child just sat fingering a ball of coloured dough in the Malleable Area. A boy solemnly gathered all the equipment on the table towards himself and then just stared at it. A boy in the Book Area sat quite still holding a book. He made no effort to look at it or to open it.

Destructive

Criteria here lie within the intent to destroy, disrupt, frighten or throw away others' possessions.

In the Book Area two small boys were taking the books from the shelf, throwing them onto the carpet and 'pinging' the stretched wires that normally held the books in place. A boy knocked a 'pie' (Malleable Area) onto the floor and ground it with his heel. The Art and Creative Area was the scene of some spoiling of paintings by daubing or throwing water. In the Music Area, one child insisted on shrieking when others were trying to sing.

Absent

Criteria lie within complete inability to make contact with material.

A boy just stood and watched the sand trolley. Children just sat watching the adult prepare material in the Art and Creative Area. In the Block Area a child just stood, unable, as it were, to involve herself with the material. There was no facial expression suggesting she was longing to do so.

SOCIAL PARTICIPATION

Unoccupied

Criteria here lie within the inability to make social contact. A child may just sit, follow, stand around but is not involved in any ongoing activity or sensing the company of any one person.

In the Large Apparatus Area a child was lying down with his back to the apparatus. In the Music Room a girl faced away from the group. She was not watching anything. Children were sitting in the Art and Creative Area, while the two adults made a snowman. They were not even looking at the adults or the snowman by this time.

Onlooker

Criteria here lie within the watchfulness of the child as he places himself so that he can hear all that is being said and see clearly all that is going on. He is absorbed in the activity of other people.

A child in the Art and Creative Area opted out of the collage but continued to watch intently. In the Block Area, two children watched closely the completion of a tower block. In the Music Area a small child put her head round the door-arch and listened for three minutes.

Solitary

Criteria here lie in the isolation of the child, both through space, lack of social interaction and choice of equipment. Interest is entirely on his own behaviour which is pursued without reference to other children. There is no interaction. He is engrossed in his thinking and action. If a child is with an adult and behaving in this way it is scored solitary.

A girl in the House Area, sat quite stolidly and dressed a doll despite a large piece of highly irrelevant play being carried out by boys in the Area. In the Sand Area, a child was absorbed with a piece of wood 'discovered' in the corner of the tray. In the Water Area, a child was completely alone, happily emptying one vessel into another. In the Block Area, a boy 'built' for three minutes without reference to other 'buildings' that were going on.

Parallel

Criteria here lie in the child's choice of activity which brings him into the company of other children. Play equipment is similar but each child manipulates it as he sees fit and without reference to nearby children. There is an element of awareness of proximity but no interference or willingness to participate in joint behaviour. There is a minimum of verbal interaction.

In the Malleable Area children sit in quite close proximity but are entirely absorbed in their own activity. They look up and are aware of others. In the Manipulative Area two children solemnly sorted the poleidoblocs. One took the cones and pyramids, the other the cubes and flats and proceeded to play, each without reference to the other. In the Large Apparatus Area children played on the slide as if together waiting turns, but there was no conversation or interaction.

Associative

Criteria here lie with interaction usually verbal, the exchange of ideas or conversation. There is no organisation of activity and the individual role is still apparent.

In the House Area two girls put their dolls in respective beds, talking and laughing about the bedclothes. In the Sand Area a child, excited by his 'result', calls to the others to "Watch." In the Manipulative Area two boys played with Mexican men for four minutes, chatting. They then decided to change the two hats over and went on playing.

Co-operative

Criteria here lie within the sphere of interaction - verbal and behavioural. The play is organised; there is a goal towards which all are working and there is a sense of dependence and group feeling. Exchange of ideas, support, help and real physical contact are characteristic.

In the Art and Creative Area the group were working on a large collage. The leader was an adult. In the Block Area, a girl was very vocal about her building. The others were working with her but she was failing to communicate to her satisfaction and group cohesion was eventually spoiled by a three-year-old who withdrew. In the Music Area, a group of three boys 'played' piano, drums and cymbals. They took turns in singing and counted each other in. This was an imitation of a previous session led by an adult.

Scoring the children across the categories

The ease of scoring and high percentage of agreement gave some evidence of the suitability of the categories. A behaviour sequence could be quickly built up. Within a minute a child could be scored:

PARTICIPATION	AFFECT	CONSTRUCTIVE	SOCIAL
absent	positive	absent	associative

i.e. the child was happy, not constructive in his behaviour, merely having a 'chat'. Absent behaviour appeared too often to be determined by an adult when over-direction was taking place, the children not understanding always what was required. Qualities of interaction could be seen to be determined by equipment, e.g. it was unusual to find solitary play in the Malleable Area. If one child settled another appeared quickly to sit alongside, and play in these circumstances was seldom more than parallel. On the other hand, the House Area appeared to promote co-operation through group role play.

Each study of the seven Nurseries was complete in itself. However, it was necessary to select from each, data likely to highlight the most important and interesting aspects of the ecological survey. These were:

- 1) Population Density of Areas
- 2) Mobility and Stability within the Areas
- 3) The Qualities of Behaviour within the Areas
- 4) The Effect of Adult Participation within the Areas.

RESULTS

Population Density

The two tables for each Nursery show the total number of appearances in each Area and the number of children responsible for those appearances.

Table 1

<u>NURSERY A</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	187	114	142	126	140	135	83	138	64	90
Boys	53	55	60	20	111	120	26	51	48	69
Girls	134	59	82	106	29	15	57	87	16	21
$\chi^2 = 302.68$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	33	38	46	23	27	49	21	28	24	29
Boys	12	19	23	8	20	40	7	12	15	21
Girls	21	19	23	15	7	9	14	16	9	8
$\chi^2 = 41.75$ d.f. 9 $p < .01$										

In analysing the number of appearances by different children, one entry is recorded for a child's appearances during the 5 minute sampling of each area, e.g. 33 children were responsible for the 187 appearances in the Manipulative Areas, 38 children were responsible for the 114 appearances in the Book Area.

<u>NURSERY B</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	104	85	70	86	102	48	44	233	73	30
Boys	74	28	12	27	73	35	33	76	16	8
Girls	30	57	58	59	29	13	11	177	57	22
$\chi^2 = 164.94$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	31	33	24	30	37	22	20	78	25	9
Boys	20	10	5	9	28	16	11	26	6	3
Girls	11	23	19	21	9	6	9	52	19	6
$\chi^2 = 71.03$ d.f. 9 $p < .01$										

<u>HERBERT C.</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	96	92	143	28	168	367	28	119	35	23
Boys	59	20	22	7	150	252	8	23	21	6
Girls	37	72	121	21	18	115	20	97	14	17
$\chi^2 = 306.21$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	31	26	28	11	36	58	9	31	12	8
Boys	18	8	6	2	32	45	6	6	8	2
Girls	13	18	22	9	4	13	3	25	4	6
$\chi^2 = 69.28$ d.f. 9 $p < .01$										

<u>HERBERT D.</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	111	43	224	157	147	178	73	96	127	83
Boys	72	28	90	62	94	79	55	54	90	48
Girls	39	15	134	95	53	99	18	42	37	35
$\chi^2 = 83.62$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	39	21	60	48	68	67	26	33	52	28
Boys	26	12	29	20	42	34	19	19	34	17
Girls	13	9	31	28	26	33	7	14	18	11
$\chi^2 = 13.83$ d.f. 9 $p < .01$										

<u>HERBERT E.</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	157	76	148	150	135	125	22	244	93	27
Boys	62	44	23	43	103	105	18	83	51	1
Girls	95	32	125	107	32	20	4	161	42	26
$\chi^2 = 251.2$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	45	26	37	30	44	37	6	62	30	7
Boys	20	14	9	10	33	31	4	28	18	1
Girls	25	12	28	20	11	6	2	34	12	6
$\chi^2 = 47.34$ d.f. 9 $p < .01$										

<u>HERBERT F.</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	171	180	54	98	91	95	28	132	94	8
Boys	85	62	10	44	91	54	11	42	53	4
Girls	86	118	44	54	0	41	17	92	41	4
$\chi^2 = 156.78$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	48	39	14	27	31	41	14	42	29	2
Boys	27	17	2	13	31	26	6	18	17	1
Girls	21	22	12	14	0	15	8	24	12	1
$\chi^2 = 44.99$ d.f. 9 $p < .01$										

<u>HERBERT G.</u>	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water
<u>Population Density by Area and by Sex</u>										
Total Group	137	105	68	147	243	325	196	179	100	22
Boys	81	27	36	69	200	258	63	47	44	7
Girls	56	78	32	78	43	67	133	132	56	15
$\chi^2 = 323.68$ d.f. 9 $p < .01$										
<u>Number of Appearances by different children</u>										
Total Group	43	38	26	40	79	94	61	50	30	7
Boys	29	15	12	19	58	72	21	12	12	3
Girls	14	23	14	21	21	22	40	38	18	4
$\chi^2 = 54.65$ d.f. 9 $p < .01$										

Table 1 reveals the differences within each Nursery of the number of appearances in each Area and the number of different children appearing in the various Areas. A chi-squared test on overall differences among Areas and differences by sex within the different Areas is significant, $p < .01$.

Summing the number of appearances in Areas over the seven Nursery schools gives a stronger picture of population density and Area preference and sex preference by all children. Ranking the Areas in order of APPEARANCES over all seven schools, we have the following table:

Table 2

BOYS		GIRLS		CHILDREN	
1. Large Apparatus	903	House	784	Large Apparatus	1271
2. Block	816	Malleable	596	House	1162
3. Manipulative	485	Art & Creative	520	Block	1026
4. House	378	Manipulative	478	Manipulative	963
5. Sand	335	Book	429	Malleable	849
6. Art & Creative	272	Large Apparatus	368	Art & Creative	792
7. Book	266	Music	260	Book	695
8. Malleable	253	Sand	251	Sand	586
9. Music	214	Block	210	Music	474
10. Water	143	Water	140	Water	283

A child's need to use and develop bodily skills is reflected in the position of Large Apparatus and Manipulative Areas: the application of those skills to the world in which he is living in the position of House and Block.

Table 2 also reveals that boys preferred the Large Apparatus and Block Areas while girls chose House, Malleable, Art and Creative. Both sexes were attracted to the Manipulative Area. The order is not comparable with previous studies which were mostly undertaken in the '30s in American University Nursery classes when play equipment was not as varied as today.

However, the results support the conclusion of Clark et alia (1969), who reported:

"Girls spent more time in activities involving sitting at a table and fine motor manipulation, while boys preferred activities that required grosser motor movements."

(p. 216).

Hutt (1972) also comments on boys' preferences for physical activity:

"Woodwork, running and chasing or playing with push/pull toys."

Brindley (1972) also found that nursery children manifested preferences characteristic of their sex:

"Girls generally engaged in sedentary activities or literary pursuits, like reading or phantasy play. Boys more often took part in physical activities."

Goldberg and Lewis (1967) observed thirty-two boys and thirty-two girls aged thirteen months with their mothers in a standardised free play situation. They found that

"Boys were independent, showed more exploratory behaviour, played with toys requiring gross motor activities, were more vigorous and tended to run and bang in their play."

They continue:

"Obviously, these behaviour differences approximate those usually found between the sexes of later ages."

Moss (1967) also found behavioural sex differences as early as three weeks believing that parents can be active promulgators of sex role behaviour through reinforcement of sex-role-appropriate responses within the first year of life. Sex role conditioning may be one factor determining choice of activity. Shure (1963) reporting Brown:

"Girls may play with toys typically associated with male activities but the boys are discouraged from playing with toys associated with female activities. He found that boys of all ages showed a strong preference for the masculine role between the ages of 3½-5½."

Erik Erikson (1955) would seem to claim in respect of older children, that boys and girls indulge in different kinds of activity which are deeply rooted in their respective natures and which can be traced back to differences in biological inheritance of the chromosomes which determine sex. These differences have for the benefit of the human race been expanded and elaborated by man himself. The acceptance of biological differences (Hutt, 1972), however, does not necessarily condone the elaborations which can appear to affect individual development. Prejudices should be overcome and the modifications of sex patterns could result in interesting changes. Hutt asks if 'earlier and more systematic exposure of the different sexes to materials characteristically reserved for one sex or the other could improve subsequent skills'. In our study attracting the girls into Block and the boys into House might have had interesting developmental possibilities.



Using a percentage of criteria of sex dominance within the Areas

- 0-5% No sex dominance
- 6-20% Slight dominance by one sex
- 20%+ Dominance by one sex

we have the following diagram:

Incidence of Domination by Area and by Sex

NURSERY	A	B	C	D	E	F	G	A	B	C	D	E	F	G
Manipulative						N								N
Book	N						N							
Malleable							N							N
Art & Creative														
Blocks														
Large Apparatus														
Music														
House														
Sand														
Water						N							N	

- 20%+  Greatly dominated
- 6-20%  Slightly dominated
- 0-5% N No sex dominance

Looking at sex dominance of Areas over all Nurseries, no decisive pattern emerges. Explanations may lie in the particular circumstances appertaining to a Nursery and the prevailing play cult. It might have been expected that the House Area would have shown a female dominance overall, but this is affected by boys in Nursery D. Because of inclement weather, plus a previous period when the children were tied to quiet games

while the Nursery was being decorated, during the count the boys were extremely active. They used the House Corner as a base for a chasing game, preventing the girls from entering. They were very mobile (.48 median index .36), their participation was irrelevant, 14%, and there was some destructive play, 4%. The Large Apparatus Area was near to the House Area and some of the girls chose this as a second best. The misuse of the House Area needed attention from the adults and this may have been overlooked during the count which, unfortunately, had to be made during a time which, for this Nursery, was a re-settling period.

Boys from each Nursery largely dominated the Block Area and in five/seven Nurseries largely dominated the Large Apparatus, Nursery D again providing one exception (mentioned above), the other Nursery (F) only showing a slight male dominance. Girls largely dominated Art and Creative, two Nurseries (F, G) showing only slight female dominance and in five Nurseries the Malleable Areas were largely dominated by girls. Only one school, Nursery B, showed all Areas clearly dominated by either boys or girls.

Sex dominance exists in five of the ten Areas, showing that boys and girls do have sex preferences and are to be found playing with members of their own sex (Dawe, 1934: Mischel, 1970: Brindley, 1972: Hutt, 1972). Only in four Areas, and these were the less active ones, did both sexes share the facilities provided rather more evenly but this happened in only three schools.

Factors influencing the children's decision to populate the Areas are not likely to be isolated or completely causal. Correlations, however, might show association between certain phenomena, e.g. population density, size of Area and its siting.

Table 3a

Size of Area and Population Density
Mean Size Sq. Metres and Mean Population
of Areas over 7 schools

	m ²		
1) Large Apparatus	38.15	1) Large Apparatus	127.1
2) House	9.47	2) House	116.2
3) Art & Creative	9.16	3) Block	102.6
4) Block	8.77	4) Manipulative	96.3
5) Book	7.05	5) Malleable	84.9
6) Manipulative	5.14	6) Art & Creative	79.2
7) Music	3.27	7) Book	69.5
8) Malleable	2.97	8) Sand	58.6
9) Sand	2.73	9) Music	47.7
10) Water	2.73	10) Water	28.3

Rank Order Co-efficient of Correlation = .80 p < .01

The high correlation between size of Areas and population density would need to be interpreted with caution as the variance in size could make the mean an inaccurate measure. (Nursery C, size of Large Apparatus caused an extreme range).

Table 3b

A Rank Co-efficient Correlation between Size of Area
and Population in each Nursery

Nursery A	.29	
Nursery B	.86	p < .01
Nursery C	.69	p < .05
Nursery D	.22	
Nursery E	.81	p < .01
Nursery F	.28	
Nursery G	.80	p < .01

Table 3c

A Rank Co-efficient Correlation between percentage
size of each Area over all play area and
percentage population over total

	m^2	
Nursery A	.3	
Nursery B	.84	p < .01
Nursery C	.70	p < .01
Nursery D	.19	
Nursery E	.73	p < .01
Nursery F	.28	
Nursery G	.70	p < .01

It would appear that size and population density bear some relationship, as suggested by Shure. The range of correlation co-efficient between Nurseries is of interest. In Nurseries A, D and F the co-efficient is weakened by the following situations where the small size of Area nevertheless yielded large populations. It would appear that there is a common interesting feature.

Nursery A

Area: Malleable

Size: 1.86m²

Population: 142 appearances
46 children

This was the second smallest Area in the Nursery with the second highest number of appearances. It was below the mean for all Malleable Areas (2.97) and was stable particularly for the girls, .24 Median Index .36. It was constructive, 70%, and positive affect was high, 80%. There were 32 adult appearances in the Area - the highest recorded in the Nursery apart from Art and Creative. The children usually worked in the presence of an adult.

Nursery D

Area: Malleable

Size: 2.90m²

Population: 224 appearances
60 children

In Nursery D, this was the most number of appearances of all Areas although its size was below the mean (2.97) for all Malleable Areas and only 5.8% of all play area in the Nursery. The Area was stable, .3 Median Index .41 and had the lowest mobility index for girls, .19, Median .36. It was the girls who sought the Area (134/224). "The high rate of stability in this Area may have resulted from the fact that the children had to

associative behaviour, 26%. There was no encouragement for co-operative work, and only 13% imaginative participation because of the lack of creative materials. The adult controlled the degree of freedom the children could have experienced and imposed codes of behaviour, as well as painting techniques."

Nursery F

Area: Book

Size: 2.40m²

Population: 180 appearances
39 children

This was the smallest Book Area over all Nurseries and had the largest population density. Equipment did not appear to differ from that in any other Nursery. However, it recorded the highest number of adult appearances, 30 (along with Nursery D), it was stable, .18, Median Mobility Index, .33, Relevance of behaviour, 85%, Positive Affect, 93%, Positive Social Behaviour, 70%.

Observers report that the presence of the adult, her choice of book for the requested story encouraged other children to stop looking at the book of their choice and listen. The corner also encouraged conversation.

These examples throw some light on the attraction of adult presence in an Area introducing a variable to affect relationship between size and population.

Siting of Areas

In Nursery life the children's choice of Area may be determined to some extent by siting. This is usually at the discretion of the Headteacher who, after consultation with staff, may effect a policy which at one extreme could include the complete re-siting of Areas every week. Justification for such a policy would probably be:

- 1) to increase the child's awareness of the Nursery building and its play opportunities;
- 2) to avoid monotony and the development of habits of movement.

Argument against this policy, however, would be some loss of stability of environment and increasing insecurity among the youngest children who appear to respond to the familiar and enjoy the routine of the known. Entrance to Nursery life can be a big step for the young child to take and many teachers would wish to present a secure stable world in order to develop feelings of familiarity and confidence. To this end the siting of Areas assumes importance and factors affecting decisions are various. Undoubtedly, the total appearance of

the Nursery is important, convenience of access, fixed apparatus and building fixtures all play their part, while at the same time, mobile screens, cupboards, and furniture are deployed in order to make the siting conducive and appropriate to the type of play envisaged. Teachers are conscious of the part siting plays in the life of the Nursery but an ecology study can throw further light or induce further thinking when it is revealed that children are not choosing to populate an Area. Evidence that can develop a more objective approach to the problems of siting should not be rejected.

Observation together with low population density revealed the following aspects of poor siting:-

- 1) The splitting of an Area, i.e.
in two parts, allowing a passage for movement with its consequent distractions or the establishment of two small Areas with some loss of identity.
- 2) A quiet Area (e.g. Malleable) in over-close proximity to a noisy, active one (e.g. Large Apparatus).

- 3) A quiet Area (e.g. Books) away from the Main Play Room.
Some Nurseries seek to establish an 'attractive' entrance and site the Book Area there. This can lead to neglect unless an adult is almost permanently available.
- 4) A through passage between items of equipment.
- 5) A dual purpose Area, e.g. Book Area, used as Retreat or for waiting.

Observation together with high population density revealed the following aspects of good siting:-

- 1) Close proximity of Areas where equipment blended into more complex behaviour, e.g. Block and Large Apparatus, House and Malleable.
- 2) A separate Area with fixed walls within the Main Play Room for a clearly defined activity, e.g. Music. One Nursery had removed the doors of a small room providing an ideal extension.

- 3) Maximum space around equipment,
e.g. Sand Area needs floor
space for 'spills' and manoeuvring
with tools, as does Water.
- 4) A sense of privacy and relative
quiet for the less active
play, e.g. Manipulative Area.

The questions arose,

- 1) Are the Areas that are well sited
the largest in size?
- 2) Do the Areas that are well sited
have the largest populations?

Shure had found that her Block Area had the largest population, largest size, and its siting was in 'an adjoining room' - an aspect of siting which we would have labelled 'poor'. Ranking the siting of the ten Areas after scoring against positive and negative attributes and correlating with size for each Nursery, we have,

Table 4

a) <u>Ranking size and siting</u>	b) <u>Ranking siting and population</u>
Nursery A .17	Nursery A .51
Nursery B .73 p < .01	Nursery B .72 p < .01
Nursery C .26	Nursery C .63 p < .05
Nursery D .51	Nursery D .11
Nursery E .25	Nursery E .20
Nursery F .15	Nursery F .80 p < .01
Nursery G .74 p < .01	Nursery G .73 p < .01

Nursery A

A low correlation with size and siting overall, was produced by the Book Area which ranked (1) in siting but was small (6). It also effected the correlation with population - its size would be likely to make low density population since it did not have any outstanding number of adult appearances.

Nursery B

Both correlations here are high. This was a Nursery which carried out a great deal of experimentation on siting, and, indeed, protested about our request for constancy of siting during the investigation. It would appear that the Nursery Areas were sited to a very high degree of satisfaction for the children; and that size was an important variable within the final decision.

Nursery C

The low correlation between size and siting was mainly affected by the Book Area, ranked lowest since it was an Area which was physically cut off from the Main Play Room and also used as a waiting Area and a retreat for children who were not feeling well. Observers' comments ran as follows: "This Area though large was unsuccessful. It had no major function. If a child is seeking a refuge because he is ill, or rejected by the group, or just needs to be quiet, he may need an adult in her role as comforter. The positioning of the Area meant that the adult could be unaware that he has crept off. If the child wants to look at books and the Area is to be of educational value, then the adult as educator must be readily available. It was disappointing that there was no score for adult participation." The higher correlation between siting and population indicates that on the whole the siting attracted appropriate populations.

Nursery D

Here there is a fair measure of correlation between size and siting. In spite of the Large Apparatus, first in size, having a through passage as did the Block, third in size. The House Area, second in size, had difficult access. The low correlation in siting and population is caused by the Malleable Area, already commented on for its small size and large population. It did not enjoy a good siting (9). This additional information strengthens the effect of adult presence.

Nursery E

This was a new Nursery which had not had much opportunity for experiment with siting or numbers of Areas. Our request for a standard number of Areas introduced more changes which appeared to affect the use the children made of the Areas. The low correlation between size and siting resulted from the Manipulative Area where siting was affected by restriction of table area by double doors - Macador was on a blanket on the floor - Art and Creative was split into two by children moving to and from the bathroom, and the Malleable Area, placed in the centre of the floor was subjected to interference from every side and in every way. Correlation between siting and population was depressed by the Book Area, well situated (1) but with low popularity (8). The Manipulative Area in spite of its poor siting had the second largest population. Neither Area had any number of adult appearances (2, 7 respectively) and the popularity of Manipulative Area may have been simply 'because it was there'.

Nursery F

This Nursery had been the subject of a pilot ecological study and observers found difficulty in ranking since siting had already been manipulated and 'there was very little difference in siting value between 2 and 8'. It is interesting, therefore, that eventual decisions resulted in a low correlation. The discrepant Area is Book, given first rank siting, while it was ninth in size (see previous discussion). Its high population correlated perfectly with its siting rank.

Nursery G

Correlations here were high giving evidence of the largest Area occupying the best sites and attracting highest populations.

Siting as a variable in attracting population is difficult to isolate. It may contribute to popularity as does size, but it is difficult to state an overwhelming case as other variables are connected. The nature of activity must always play some part - Malleable, Manipulative and Art and Creative activities are satisfying in themselves, they do not demand large areas of space but do need some feeling of exclusion from the main bustle of activity.

Alignment of Areas

An off-shoot of siting problems includes the possibility of periodically inter-sparsing poorly used Areas with those showing maximum frequency or extreme sex dominance. Continual observation and control could result in the possibility of correcting imbalance of use of equipment, and encouraging more complex social participation. Certainly the linking of Areas as recently quoted would be likely to have this effect and the carry over of equipment to produce heightened involvement and imagination. In one Nursery (F) the first three Areas in order of choice for the boys were adjacent. This had been planned as a result of a pilot ecology study which had recorded limited use of the Block Area. Resiting had increased its popularity with the boys and the quality of behaviour within the Area had 'improved'. Encouragement of relevant participation or co-operative behaviour are worthy goals. Teachers also might wish to encourage wider participation within the Nursery if they know that certain children frequented only a few Areas.

Quality of Equipment

The standard of equipment over all the Nurseries was high and reasonably constant. This probably reflected the fact that they were all Local Education Authority schools, they had a common Adviser for Nursery Schools, were in fairly good reach of each other and Headteachers and teachers belonged to the Local Branch of the Nursery School Association. Nevertheless, there were differences in deployment of apparatus, care of equipment, availability (there was an overall tendency to present equipment rather than allow the children to choose) and attention to detail, e.g. the consistencies of sand, clay and dough, variety in colour and restriction, the use of templates, variety of elemental material (the extent over the seven Nurseries was limited and traditional) and the use of 'real' life material (preparation of vegetables in House Corner, cooking and eating). In all Areas the largest populations correspond with good equipment and the smallest with poor. Subjective descriptions can perhaps illustrate this:

i) Nursery F

Area: Water Population: 8 Size: 3.90m²

ii) Nursery D

Area: Water Population: 83 Size: 4.80m²

i) A trough of water, cold: a miscellaneous selection of plastic toys all rather dumped and left in the water. A dismal and little used Area. No adult ever present.

ii) The Water Area consisted of a trough situated adjacent to the Art and Music Areas. For each session the toys were changed and included a variety of toys relevant to water play: pipes, funnels, corks, sponges, sieves, boats and a water wheel, margarine cartons with holes. The water was warm and varied with washing-up liquid and vegetable dyes. No adult ever present.

Size and adult presence being reasonably controlled, quality of equipment appears to attract population.

iii) Nursery F

Area: Sand Population: 93 Size: 3.90m²

iv) Nursery D

Area: Sand Population: 127 Size: 4.80m²

iii) The sand, wet and dry, was contained in two troughs. There appeared to be an assortment of equipment, including spades, buckets, sieves, funnels, rakes, measures, scoops, boats, mostly of heavy plastic materials. There was a variety of polythene bottles and an assortment of dinky toys, very battered and very prized. The troughs were near the window receiving a great deal of light. No adult ever present.

iv) The Area received much light from the window. The sand was in a moulded rigid polythene tank on a tubular stand and was covered when not in use. The texture of the sand varied daily: damp/dry, fine/coarse, and there were a few plastic moulds and buckets which were changed. No adult ever present.

Again, the daily change in quality of the medium attracted a higher population.

Attention to detail with regard to equipment is an important variable. The slight evidence offered seems to suggest that the care and forethought of possible manipulation by the children can attract the children to the Area.

Finally,

Adult Presence and Population Density

A count was made from noting each time an adult (Headteacher, Teacher, Nursery Nurse or student) was present in each of the ten Areas observed. It is necessary to state that the adults, whilst the observer was present, reacted very differently from the children. Although it had been stressed that the observer was neutral, was observing the children's behaviour and would only indicate whether the adult was present or not, it was evident that the adults avoided as much as possible being present at the same time as the observer. This could have resulted from a feeling that two adults in one Area was overwhelming for the children, or an unconscious unwillingness to be involved. The count was disappointingly low, only one Nursery (A) having adult appearances in all Areas, while Nursery F recorded no appearances in seven Areas. The timing of the observation period, beginning as it did one month after the start of term, may also have affected adult presence in the Areas, in that intensive involvement may have taken place in the early weeks of the term, with

gradual relaxation. It was observed during the beginning of the next term that the first weeks brought the adults back into the Areas. This was a subjective observation as no count was being made at that time but involvement was high 'settling in the new children'.

It has been suggested that in Areas with low correlation between size and population that adult presence was an important variable. We should have liked to have answered the question, "Did adult presence attract children to an Area?". It is considered, however, that the low count is not likely to provide a satisfactory answer overall. Nevertheless, correlation between population density and adult appearance was effected (except in Nursery F), (Table 5(a)).

Table 5(a)

Nursery A	.29
Nursery B	.50
Nursery C	.48
Nursery D	.29
Nursery E	.11
Nursery F	--
Nursery G	.50

No clear pattern emerges but as adults were present for only 14% of the observed time, this is not surprising. A more complete study of adult presence is made later.

Table 5(b)

Population Density correlated with size, siting and adult presence

<u>Nursery</u>	<u>Size</u>	<u>Siting</u>	<u>Adult Presence</u>
A	.29	.51	.29
B	.86 p < .01	.72 p < .01	.50
C	.69 p < .05	.63 p < .05	.48
D	.22	.11	.29
E	.81 p < .01	.20	.11
F	.28	.80 p < .01	--
G	.80 p < .01	.73 p < .01	.50

Nurseries B and G reach levels of significance ($p < .01$) between population density and size: siting only just failing ($p < .05$) to reach significance between population density and adult presence. Nursery C has a lower

significance level ($p < .05$) between population density and size: siting again only just failing ($p < .05$) to reach significance with adult presence. Nursery E reaches significance ($p < .01$) between population density and size: Nursery F between population density and siting.

This could be interpreted to suggest that the children were responding to maximum deployment of size, siting and adult presence by the Headteacher and staff in Nurseries B, G and C. In others there were anomalies not necessarily harmful but provoking situations that could have been improved on behalf of the children. Only an ecological survey can reveal such anomalies.

Mobility and Stability

Although reference has previously been made to the concept of Mobility/Stability interest is now centred on this phenomenon. It will be remembered that the mobility index for an Area may be calculated with sex differences in mind. Also a Median mobility index within a Nursery over all Areas can indicate the mobility level of the Nursery. Similarly a Median mobility index of similar Areas over all the schools can point to mobility/stability as characteristic of a type of Area.

Table 6
Mobility Indices of Nurseries

M.M.I. = Median Mobility Index

	Manipulative	Book	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water	
B	.41	.41	.36	.48	.27	.48	.27	.38	.30	.29	M.M.I. .37
G	.15	.27	.24	.16	.34	.62	.16	.17	.68	.52	M.M.I. .31
Nursery A M.M.I. = .36 All Children											
B	.21	.47	.50	.33	.42	.58	.37	.40	.38	.50	M.M.I. .41
G	.33	.48	.29	.41	.42	.72	.86	.25	.31	.24	M.M.I. .37
Nursery B M.M.I. = .36 All Children											
B	.33	.37	.16	.29	.18	.10	.29	.25	.22	.33	M.M.I. .27
G	.32	.20	.03	.33	.13	.17	.15	.20	.80	.33	M.M.I. .20
Nursery C M.M.I. = .26 All Children											
B	.41	.50	.41	.41	.68	.61	.40	.48	.50	.20	M.M.I. .44
G	.36	.64	.19	.25	.56	.41	.35	.36	.55	.36	M.M.I. .36
Nursery D M.M.I. = .41 All Children											
B	.28	.30	.36	.30	.42	.47	.07	.44	.39	1.00	M.M.I. .38
G	.23	.36	.18	.12	.42	.26	.04	.34	.26	.04	M.M.I. .26
Nursery E M.M.I. = .30 All Children											
B	.36	.17	.00	.15	.31	.64	.59	.43	.37	.25	M.M.I. .34
G	.35	.19	.17	.35	.00	.50	1.00	.25	.42	.25	M.M.I. .30
Nursery F M.M.I. = .33 All Children											
B	.21	.52	.29	.19	.30	.18	.31	.11	.20	.43	M.M.I. .30
G	.15	.22	.47	.18	.63	.37	.24	.18	.27	.21	M.M.I. .23
Nursery G M.M.I. = .24 All Children											

The Nurseries

The range of indices .24 - .41 shows three Nurseries, A, B, D, above the median, F, and three, E, C and G below. Nursery D, the most mobile, it will be remembered, was the Nursery which yielded unexpected behaviours (see page 157). Nursery G, the most stable, showed significant correlations between population size and siting.

In each Nursery the M.M.I. was higher for boys than for girls indicating that boys were more mobile than girls over all.

Each Nursery appears to have its own distinctive pattern of indices, Nursery F covering the full range from .00 to 1.00, and Nursery E showing .04 to 1.00. Nursery F, .00 Malleable Boys, .00 Block Girls, were recorded thus for two different reasons viz. the boy responsible for only ten appearances in the Malleable Area scored no mobilities and the Block Area had no girl appearances! Both situations call for comment and investigation. The 1.00 index of Nursery E Water Boys, is in contrast with the index for girls, .04, again suggesting that investigation of the nature of the equipment might lead to boys showing more stability in the Area.

The Areas

Within Areas over all Nurseries the Median Mobility Index shows:

	Manipulative Play	Books	Malleable	Art and Creative	Blocks	Large Apparatus	Music	House	Sand	Water
Boys	.33	.41	.36	.30	.31	.48	.31	.40	.37	.33
Girls	.32	.27	.19	.25	.42	.41	.24	.25	.42	.25

with the index lower for girls in all but two Areas viz. Sand; Block. The range for boys, R = .30 - .48, again indicates more mobility among boys than girls, R = .19 - .42.

A Four Minute Stability was extracted from the data as a measure of 'holding power' of an Area.

Table 7

Four Minute Stabilities and Areas (7 schools)

Manipulative Play	Books	Malleable	Art and Creative	Blocks	Large Apparatus	Music	House	Sand	Water
99	70	108	90	92	142	56	136	51	26

Ranking the order of the Areas:

1. Large Apparatus
 2. House
 3. Malleable
 4. Manipulative
 5. Blocks
 6. Art and Creative
 7. Book
 8. Music
 9. Sand
 10. Water
- Rank Correlation Co-efficient
with Mean Population Density
.94 p < .01

As might be expected, there is a significant correlation ($p < .01$) with the population density of the Areas and four minute stabilities.

The four minute stabilities ($N = 870$) showed boys making 402 and girls 468. Dividing the age range into three groups we have:

Table 8

Age	36-40 months	41-45 months	46-50 months	Total	Total
Boys	128 n = 16	72 n = 11	202 n = 28	402	55 Boys
Girls	102 n = 12	160 n = 21	206 n = 24	468	57 Girls
	230 28	232 32	408 52	870	112

t = .28 N.S. t = .88 N.S. t = 1.18 N.S.

The null hypothesis of no difference between the Means cannot be rejected. Thus there is no significant difference between the Means for boys and girls.

In order to look more closely at four minute stabilities as a developmental phenomenon, we see that the Means for each group are:

Table 9

Age	36-40 months	41-45 months	46-50 months
Boys	8.00	6.55	7.21
Girls	8.50	7.62	8.58

The proportion of four minute stabilities by each group shows a decline for the boys - the higher proportion for boys in the 36-40 month group was caused by twins who had just entered the Nursery (G), who played together constantly and were very stable in the Large Apparatus Area. It appears as if the size of groups and limited age range prevent the results from being other than descriptive. This is supported by the variance in the range of the total number of four minute stabilities, 83-197 with respect to Nurseries and 1-20 with respect to children.

Qualities of Behaviour in Areas

Interest is now centred on different qualities of behaviour in the Areas. Each category is dealt with separately, and it will be seen that the differences amongst the Areas were significant ($p < .01$) in each Nursery.

PARTICIPATION Table 10(a)

Relevant

Criteria in this sub-category lay in the appropriate nature of the behaviour or use of equipment within the Area. The introduction of equipment from another Area is counted relevant if the use is related to the essential qualities of the Area. Behaviour could also be relevant without the use of equipment as in role play.

Relevant play amounted to 70% of the category of PARTICIPATION, and was statistically significant.

Irrelevant

Criteria in this sub-category lay within the inappropriate use of an Area for behaviour which could more usefully be carried out in a more appropriate part of the Nursery.

Irrelevant play accounted for only 7% of the main category. Only in four Areas was irrelevant behaviour over 20% - the highest, 36%, in the Book Area, Nursery A.

Books 36% Nursery A:

"Although this Area was not by any means the least used, the amount of irrelevant play was the highest over all Areas. A conclusion arrived at from our observations is that the three year old children, most of them having started the Nursery in September, exhibited a marked interest in the Area and in the books, but at the age of four this interest had diminished considerably. Only 38% of the children were four years old, but they were responsible for the irrelevant play. The decline in interest was all too evident. The Book Area (the Nursery was situated in an E.P.A. district), was losing its hold on the older children. A possible explanation was the lack of continuity of interest in the home. The Headteacher had begun a borrowing service for mothers and grandmothers who were themselves responding to the books but not using them alongside the children."

Imaginative

Criteria in this sub-category lay in the use of materials in an extended fashion, the behaviour being accompanied by gesture or speech indicating some transcendence beyond the merely appropriate or relevant.

Selected beyond the relevant, this sub-category accounted for only 12% of the main category. Nevertheless it was felt worthy of extraction as imaginative behaviour is a quality in which there is much interest. Only one Nursery, D, scored imaginative behaviour in all Areas. Two Areas, Blocks and House, showed imaginative behaviour in all Nurseries. Ten Areas showed percentage levels above 20% - the highest, 47%, Large Apparatus, Nursery A.

Large Apparatus 47% Nursery A:

The Large Apparatus and Block play joined into "adventure". Transport was a popular theme, trains, lorries, fire engines, 'buses, were "driven" to stated destinations. Role play featured strongly with verbalisation and adults, often merely in passing, entered into the imaginative situation.

Absent

Criteria in this sub-category was concerned with negative response, children seemingly not aware of play opportunity.

Absent play accounted for only 11% of the main category. Only in five Areas was absent behaviour over 20% - the highest, 35%, in the Malleable Area, Nursery D.

Malleable 35% Nursery_D:

As only four children could be working in this Area at any one time, there was the highest absent/participation because children would just stand waiting with absent looks on their faces. They were not participating even mentally.

Table 10(a)
Participation

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
PARTICIPATION																					
A Relevant	144	77	54	47	77	54	105	84	105	75	58	43	70	85	67	48	45	71	79	89	894
B Irrelevant	30	16	41	36	2	1	13	10	25	18	1	1	8	9	21	15	2	3	1	1	144
C Imaginative	---	---	---	---	51	36	---	---	4	3	64	47	---	---	44	32	10	15	5	6	178
D Absent	13	7	19	17	12	9	8	6	6	4	12	9	5	6	6	5	7	11	5	6	93
TOTALS	187		114		142		126		140		135		83		138		64		90		1219

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
PARTICIPATION																					
A Relevant	82	79	66	78	62	89	63	73	52	51	39	81	35	80	186	74	65	89	22	73	672
B Irrelevant	16	15	3	4	5	7	5	6	12	12	6	13	5	11	18	7	---	---	---	---	70
C Imaginative	6	6	2	2	---	---	---	---	24	24	---	---	---	---	34	13	7	10	6	20	79
D Absent	---	---	14	16	3	4	18	21	14	14	5	6	4	9	15	6	1	1	2	7	74
TOTALS	104		85		70		86		102		48		44		253		73		30		895

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
PARTICIPATION																					
A Relevant	75	76	40	43	129	90	23	82	137	81	322	87	27	96	94	72	35	100	22	99	914
B Irrelevant	3	3	12	13	4	3	2	7	6	4	---	---	---	1	1	---	---	---	---	---	28
C Imaginative	5	5	16	17	9	6	1	4	4	2	10	4	---	---	14	13	---	---	---	---	59
D Absent	13	14	24	26	1	1	2	7	21	13	33	9	1	3	11	13	---	---	1	1	97
TOTALS	96		92		143		28		168		365		28		120		35		23		1098

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
PARTICIPATION																					
A Relevant	65	59	25	59	91	41	108	68	57	39	139	79	58	80	34	35	77	61	57	68	711
B Irrelevant	12	11	8	19	---	---	---	---	33	23	9	5	4	5	13	14	6	4	---	---	85
C Imaginative	27	24	1	2	54	24	21	13	27	18	22	13	4	5	41	43	27	22	23	27	247
D Absent	7	6	9	21	79	35	28	18	30	20	8	4	7	10	8	8	12	13	3	4	196
TOTALS	111		43		224		157		147		178		73		96		127		83		1239

NURSERY	Manipulative		Books		Halleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
E																					
PARTICIPATION																					
A Relevant	121	77	48	63	135	91	103	69	72	53	69	55	22	100	147	60	77	83	25	93	819
B Irrelevant	1	6	7	9	1	6	2	1	39	29	11	9	---	---	81	33	1	1	---	---	143
C Imaginative	5	3	---	---	---	---	---	---	8	6	20	16	---	---	4	2	5	5	---	---	42
D Absent	30	19	21	28	12	8	45	30	16	12	25	20	---	---	12	5	10	11	2	7	473
TOTALS		157		76		148		150		135		125		22		244		93		27	1177

NURSERY	Manipulative		Books		Halleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
F																					
PARTICIPATION																					
A Relevant	126	74	153	85	42	78	69	70	46	51	71	75	23	82	92	70	28	83	8	100	708
B Irrelevant	5	3	3	2	---	---	---	---	8	9	9	9	1	4	3	2	---	---	---	---	29
C Imaginative	28	16	---	---	7	13	12	12	28	31	6	6	---	---	19	14	4	4	---	---	104
D Absent	12	7	24	13	5	9	17	17	9	10	9	9	4	14	18	14	12	13	---	---	110
TOTALS		171		180		54		98		91		95		94		132		94		8	951

NURSERY	Manipulative		Books		Halleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
G																					
PARTICIPATION																					
A Relevant	99	72	84	80	61	90	104	71	78	32	166	51	162	83	148	83	93	93	20	91	1015
B Irrelevant	6	4	16	15	2	3	1	1	57	23	8	2	23	12	2	1	---	---	1	5	116
C Imaginative	25	18	2	2	---	---	---	---	75	31	138	42	---	---	22	12	---	---	---	---	262
D Absent	7	5	3	3	5	7	42	29	33	14	13	4	11	5	7	4	7	7	1	5	129
TOTALS		137		105		68		147		243		325		196		179		100		22	1522

PARTICIPATION

Percentage over
all Nurseries

Relevant	70%
Irrelevant	7%
Imaginative	12%
Absent	11%

Table 10(b)
Participation by Area and Sex

PARTICIPATION	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water							
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G						
Relevant	40	104	13	41	54	32	45	77	15	90	105	90	15	105	21	49	70	21	46	67	30	15	45	59	20	79
Irrelevant	13	17	30	29	12	41	2	2	11	13	14	11	25	1	3	5	8	7	14	21	2	2	2	1	1	
Imaginative	--	--	--	--	--	20	31	51	--	--	4	--	4	64	--	--	--	19	25	44	10	--	10	5	--	5
Absent	--	13	13	13	6	19	6	6	3	5	8	3	3	5	7	12	2	4	2	6	6	1	7	4	1	5
TOTALS	53	134	187	95	99	114	60	82	142	20	106	126	111	29	140	120	15	135	87	158	48	16	64	69	21	90

PARTICIPATION	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Relevant	64	18	82	25	42	66	10	52	62	22	41	63	38	44	52	26	13	39	28	7	35	59	127	186	13	52	65	5	17	22
Irrelevant	7	9	16	--	3	3	--	5	5	5	5	5	10	2	12	6	--	6	2	3	5	11	7	18	--	--	--	--	--	
Imaginative	3	3	6	--	2	2	--	--	--	21	3	24	--	3	24	--	--	--	--	--	--	5	29	34	3	4	7	2	4	6
Absent	--	--	--	5	9	14	2	1	3	5	13	18	4	10	14	3	--	3	4	4	--	1	14	15	--	1	1	1	1	2
TOTALS	74	30	104	28	57	85	12	58	70	27	59	86	73	29	102	35	13	48	34	10	44	76	177	253	16	57	73	8	22	30

PARTICIPATION	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Relevant	44	31	75	7	35	40	20	109	129	6	17	23	122	15	137	226	96	322	9	18	27	15	79	94	26	9	35	5	17	22
Irrelevant	3	--	3	2	10	12	--	4	4	1	1	2	4	2	6	--	--	--	--	--	--	1	--	1	--	--	--	--	--	--
Imaginative	4	1	5	2	14	16	2	7	9	--	1	1	3	1	4	7	3	10	--	--	--	4	10	14	--	--	--	--	--	--
Absent	7	6	13	9	15	24	--	1	1	2	2	2	21	--	21	19	14	33	--	1	3	3	8	11	--	--	1	1	1	1
TOTALS	58	38	96	20	72	92	28	121	145	7	21	28	150	18	168	233	113	365	9	19	28	23	97	120	26	9	35	6	17	23

Sex Differences

Tabulations by Area and sex within the Nurseries are shown in Table 10(b). In calculating χ^2 it was often necessary to combine categories. Discussion is, therefore, centred on χ^2 calculated over the seven Nurseries.

Calculating sex differences amongst all the children over the seven Nurseries, these were highly significant ($p < .01$) in Manipulative, Book, Malleable, Art and Creative, Blocks, Large Apparatus and House Areas.

In the Manipulative Area (χ^2 96.77), the boys were significantly more imaginative than the girls and less absent in their behaviour. In Book (χ^2 44.59), the girls were significantly more relevant and imaginative and in Malleable (χ^2 16.98) and Art and Creative (χ^2 57.24), the girls were significantly more active in each category and the boys showed more absent behaviour in the Art and Creative Area. In Blocks (χ^2 22.64) and Large Apparatus (χ^2 35.98), the boys were significantly more purposeful in each category but they were more irrelevant in their behaviour in House (χ^2 73.53) where the girls were more relevant and more imaginative.

AFFECT Table 11(a)

Positive

Criteria lay in a positive aspect of temperament and mood, an indication, vocal, facial expression of confidence, contentment, cheerfulness and happiness.

The overall affect was positive in all Areas of all Nurseries. The children were content with their world and showed their happiness in devotion to their freely chosen activities which within them contained the measure of discipline likely to afford satisfaction. (See Table 11(a) overleaf). This sub-category accounted for almost 90% of the main category.

Neutral

Criteria here lay in the lack of concern or indifference to the activity.

It is of interest that seven Areas showed a range of 20-37% of this neutral behaviour. All were in two Nurseries, D and E. The highest, 37%, was in the Book Area.

Book 37% Nursery E:

Again the Area was "disappointing" - it elicited most neutral affect and unoccupied social participation possibly because the choice of books was more suited to older children, were borrowed and were only changed infrequently. The three oldest girls were not attracted by the Area.

Negative

Criteria lay in an active though negative response accompanied by an unpleasant mood.

Incidence of negative affect was very low in all Nurseries, <1%. Nursery G commented on negative affect by boys in the Blocks Area, but this was only 2%.

Table 11(a)

Affect

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
A																						
AFFECT																						
A Positive	151	81	99	87	134	94	103	82	121	86	127	94	73	88	118	86	59	92	85	94	1070	
B Neutral	36	19	15	13	8	6	23	18	19	14	7	5	10	12	20	14	5	8	5	6	148	
C Negative	---	---	---	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	1	
TOTALS	187		114		142		126		140		135		83		138		64		90		1219	

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
B																						
AFFECT																						
A Positive	104	100	80	94	59	84	84	98	95	93	48	100	44	100	234	92	69	95	29	97	806	
B Neutral	---	---	5	6	11	16	2	2	7	7	---	---	---	---	18	7	4	5	---	---	47	
C Negative	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	---	1	3	2
TOTALS	104		85		70		86		102		48		44		253		73		30		895	

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
C																						
AFFECT																						
A Positive	95	99	87	95	143	100	27	96	154	92	335	91	27	96	109	85	355	100	22	99	1034	
B Neutral	---	---	---	---	---	---	1	4	8	5	25	7	---	---	11	15	---	---	1	1	47	
C Negative	1	1	5	5	---	---	---	---	6	4	5	1	1	3	---	---	---	---	---	---	17	
TOTALS	96		92		143		28		168		365		28		120		75		23		1098	

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
D																						
AFFECT																						
A Positive	101	91	34	79	197	88	103	66	127	86	146	82	65	89	76	79	112	88	65	78	1026	
B Neutral	9	9	9	21	26	11	54	34	18	12	32	18	7	10	20	20	14	11	18	22	207	
C Negative	1	1	---	---	1	1	---	---	2	2	---	---	1	1	---	---	1	1	---	---	6	
TOTALS	111		43		224		157		147		178		73		96		127		83		1239	

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
E																					
AFFECT																					
A Positive	126	80	48	63	135	91	103	69	120	89	91	73	22	100	223	91	82	88	25	93	975
B Neutral	31	20	28	37	12	8	47	31	15	11	34	27	---	---	21	9	11	12	2	7	201
C Negative	---	---	---	---	1	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
TOTALS	157		76		148		150		135		125		22		244		93		27		1177

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
F																					
AFFECT																					
A Positive	160	94	168	93	52	96	85	87	77	85	89	94	26	93	123	93	89	95	8	100	877
B Neutral	10	6	11	6	2	4	13	13	11	12	6	6	2	7	7	5	5	5	---	---	67
C Negative	1	1	1	1	---	---	---	---	3	3	---	---	---	---	2	2	---	---	---	---	7
TOTALS	171		180		54		98		91		95		28		132		94		8		951

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
G																					
AFFECT																					
A Positive	133	97	95	90	65	96	146	99	232	95	308	95	184	94	179	100	91	91	22	100	1455
B Neutral	---	---	10	10	3	4	1	1	5	2	15	5	11	6	---	---	7	7	---	---	52
C Negative	4	3	---	---	---	---	---	---	6	2	2	1	1	1	---	---	2	2	---	---	15
TOTALS	137		105		68		147		243		325		196		179		100		22		1522

AFFECT

Percentage over
all Nurseries

Positive	89.41%
Neutral	9.49%
Negative	.60%

Table 11(b)
Affect by Area and Sex

NURSERY A

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	46	105	50	49	99	54	80	134	15	88	105	101	20	121	118	9	127	22	51	73	42	76	118	43	16	51	65	20	85	
Neutral	7	29	36	5	10	15	2	8	5	18	23	10	9	19	2	5	7	4	6	10	9	11	20	5	—	5	4	1	5	
Negative	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
TOTALS	55	134	187	55	59	114	60	82	142	20	106	126	111	29	140	120	15	135	26	57	83	51	87	138	48	16	64	69	21	90

NURSERY B

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	74	30	104	27	53	80	10	49	59	27	37	84	71	24	95	35	13	48	34	10	44	74	160	234	16	53	69	8	21	29
Neutral	—	—	—	1	4	5	2	9	11	—	2	2	2	5	7	—	—	—	—	—	—	2	16	18	—	4	4	—	—	—
Negative	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—
TOTALS	74	30	104	28	57	85	12	58	70	27	59	86	73	29	102	35	13	48	34	10	44	76	177	253	16	57	73	8	22	30

NURSERY C

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	57	38	95	15	72	87	22	121	143	7	20	27	138	16	194	233	102	335	9	18	27	20	89	109	26	9	35	5	17	22
Neutral	—	—	—	—	—	—	—	—	—	—	1	1	8	—	8	15	10	25	—	1	1	3	8	11	—	—	—	—	—	—
Negative	1	—	1	5	—	5	—	—	—	—	—	—	4	2	6	4	1	5	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	58	38	96	20	72	92	22	121	149	7	21	28	150	16	168	252	113	365	9	19	28	23	97	120	26	9	35	6	17	23

NURSEY - B

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	64	37	101	25	11	34	75	122	197	33	70	103	82	45	127	53	85	146	49	16	65	41	35	76	78	34	112	37	28	65
Neutral	7	2	9	5	4	9	14	12	26	29	25	54	11	7	18	16	16	32	5	2	7	13	7	20	12	2	14	11	7	16
Negative	1	—	1	—	—	—	1	—	1	—	—	—	1	1	2	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—
TOTALS	72	39	111	28	15	43	90	134	224	62	95	157	94	53	147	79	99	178	55	18	73	54	42	96	90	37	127	48	35	83

NURSEY - E

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	56	70	126	25	23	48	19	116	135	9	94	103	96	24	120	84	7	91	18	4	22	69	154	223	43	39	82	—	25	25
Neutral	7	24	31	21	7	28	3	9	12	34	13	47	7	8	15	21	13	34	—	—	—	14	7	21	8	3	11	1	1	2
Negative	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	63	94	157	46	30	76	23	125	148	43	107	150	103	32	135	105	20	125	18	4	22	85	161	244	51	42	93	1	26	27

NURSEY - F

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	82	78	160	54	114	168	10	42	52	35	50	85	77	—	77	49	40	89	10	16	26	34	89	123	52	37	89	4	4	8
Neutral	3	7	10	8	3	11	—	2	2	9	4	13	11	—	11	5	1	6	1	1	2	4	3	7	1	4	5	—	—	—
Negative	—	1	1	—	1	1	—	—	—	—	—	—	3	—	3	—	—	—	—	—	—	2	—	2	—	—	—	—	—	—
TOTALS	85	86	171	62	118	180	10	44	54	44	54	98	91	—	91	54	41	95	11	17	28	40	92	132	53	41	94	4	4	8

NURSEY - G

AFFECT	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Positive	80	55	135	26	69	95	35	30	65	68	78	146	184	48	232	251	57	308	58	126	184	47	132	179	49	42	91	7	15	22
Neutral	—	—	—	1	9	10	1	2	3	1	—	1	5	—	5	6	9	15	3	8	11	—	—	—	—	1	6	7	—	—
Negative	2	2	4	—	—	—	—	—	—	6	—	—	6	—	6	2	—	2	—	—	—	—	—	—	—	1	1	2	—	—
TOTALS	82	55	137	27	78	105	36	32	68	69	78	147	195	48	243	259	66	325	61	135	196	47	132	179	51	49	100	7	15	22

Sex Differences

These were calculated and tested for significance over the seven Nurseries. Differences were significant ($p < .01$) in Manipulative, Book, Art and Creative, Large Apparatus and House Areas. (Table 11(b)).

In the Manipulative Area (χ^2 23.74), the girls were significantly more neutral in their behaviour than the boys but they were less neutral and less negative than the boys in Book (χ^2 19.66). There was no negative behaviour recorded in any of the Nurseries in Art and Creative but the boys showed significantly more neutral behaviour than the girls (χ^2 31.53). In Large Apparatus (χ^2 14.73), the boys showed more significant affect in each category. In House (χ^2 14.73) where only three instances of negative behaviour occurred, the girls showed more neutral behaviour than might have been expected.

CONSTRUCTIVENESS Table 12(a)

Constructive

Criteria in this sub-category lay in the positive use of material. (See Table 12(a) overleaf).

Constructive behaviour accounted for 82.5% of the category of CONSTRUCTIVENESS, and was statistically significant.

Neutral

Criteria in this sub-category lay in the inability to summon the impetus for constructive behaviour.

Neutral behaviour accounted only for 6% of the main category. This could be some indication of the children's ability to put equipment to some constructive use. Timid or shy children might exhibit this type of behaviour.

Manipulative 18% Nursery_A:

Two rather timid girls occupied this Area without any constructive effect. They were hesitant and uncertain and appeared to need constant support. Perhaps there was an over-abundant choice of manipulative activity.

Destructive

Criteria in this sub-category lay in destroying equipment or preventing and obstructing other people.

The incidence was negligible accounting for less than 2% of the main category. All Nurseries had instances, the range being from 2 (Nursery C) to 43 (Nursery E). Of the latter, 33 instances in House constituted 14% of the main CONSTRUCTIVE category for that Area.

House 14% Nursery E:

One of the boys, the second oldest in the group, was responsible for much of the destructive play in the Area. He led a group involved in "Monsters" and, after careering wildly around the Nursery, used the Area as a 'hiding-place', interrupting and spoiling the activity therein. Clearly there was need for intervention on the part of the staff and the presence of the observers may have prevented alternatives from being given to the boys.

Absent

Criteria in this sub-category lay within complete inability to make contact with the material.

There was a lower incidence of absent behaviour, this sub-category accounting for 10% of the main category. However, the percentage is high enough to warrant special comment. Nine Areas had a percentage of more than 20, the highest being 32%, Nursery D, Malleable.

Malleable 32% Nursery D:

The children were kept waiting. The high absent score resulted from organisational weakness. This Area is unsatisfactory and has been previously reported for ABSENT/AFFECT.

Reasons suggested for some of the other Areas are of interest:

Art and Creative 20% Nursery G:

Absent/constructive behaviour resulted from two occasions when the adult (Nursery Nurse) was making Christmas models and the novelty attracted the children without involving them constructively.

Art and Creative 23% Nursery B:

The high percentage in absent/constructiveness was due to the presence of the adult who over-directed all activities.

Art and Creative 30% Nursery E:

The use of scissors in this Area provoked tension among the adults and the children were affected waiting for 'permission' to use the equipment. This resulted in periods of time which were not constructive for the children.

Table 12(a)
Constructiveness

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
A																					
CONSTRUCTIVE- High																					
A Constructive	141	75	86	75	125	88	101	80	119	85	115	85	68	81	114	82	56	87	84	93	1009
B Neutral	33	18	6	5	5	3	19	13	14	10	8	6	13	17	18	13	---	---	---	---	116
C Destructive	1	1	3	3	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	5
D Absent	12	6	19	17	12	9	6	5	7	5	11	8	2	2	6	5	8	13	6	7	89
TOTALS	187		114		142		126		140		135		83		138		64		90		1219

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
B																					
CONSTRUCTIVE- High																					
A Constructive	89	86	58	68	58	83	53	62	82	80	43	90	39	89	228	90	67	92	28	93	745
B Neutral	---	---	13	10	4	6	13	15	3	3	4	8	1	2	14	6	6	8	---	---	58
C Destructive	---	---	---	---	---	---	---	---	3	2	---	---	---	1	---	---	---	---	---	---	4
D Absent	15	14	14	16	8	11	20	23	14	14	1	2	4	9	10	4	---	---	2	7	88
TOTALS	104		85		70		86		102		48		44		253		73		30		895

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
C																					
CONSTRUCTIVE- High																					
A Constructive	78	81	54	59	138	96	24	86	119	71	335	91	27	96	109	85	35	100	22	99	941
B Neutral	5	5	11	12	4	3	1	4	28	17	27	7	1	3	11	15	---	---	1	1	89
C Destructive	---	---	---	---	---	---	---	---	2	1	---	---	---	---	---	---	---	---	---	---	2
D Absent	13	13	27	29	1	1	3	11	19	11	3	1	---	---	---	---	---	---	---	---	66
TOTALS	96		92		143		28		168		365		28		120		35		23		1038

SUBJECT	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
D																					
CONSTRUCTIVE- High																					
A Constructive	96	86	31	72	144	64	125	79	88	60	148	83	65	89	78	82	105	83	76	92	956
B Neutral	5	5	3	7	7	3	8	6	9	6	25	14	2	3	8	8	3	2	4	5	74
C Destructive	6	5	---	---	2	1	---	---	4	3	---	---	1	1	4	4	3	2	---	---	20
D Absent	4	4	9	21	71	32	24	15	46	31	5	3	5	7	6	6	16	10	3	3	189
TOTALS	111		43		224		157		147		178		73		96		127		83		1239

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
E																					
CONSTRUCTIVE- TOTAL																					
A Constructive	126	80	48	63	133	91	103	69	95	70	89	71	22	100	150	61	82	88	25	93	874
B Neutral	1	1	7	9	1	5	2	1	15	11	11	9			22	9					59
C Destructive					1	5			9	6					33	14					43
D Absent	30	19	21	28	12	8	45	30	16	12	25	20			39	16	11	12	2	7	201
TOTALS		157		76		148		150		135		125		22		244		93		27	1177

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
F																					
CONSTRUCTIVE- TOTAL																					
A Constructive	157	92	155	86	49	91	80	82	74	81	77	81	23	82	111	84	81	86	8	100	815
B Neutral			5	3	1	2	1	1	1	1	6	6			4	3	2	3			20
C Destructive	3	2							6	7					1	1	1	1			11
D Absent	11	6	20	11	4	7	12	12	10	11	12	13	5	18	16	12	10	11			105
TOTALS		171		180		54		98		91		95		28		132		94		8	951

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
G																					
CONSTRUCTIVE- TOTAL																					
A Constructive	124	91	94	90	61	90	105	71	187	73	302	93	183	93	167	93	91	91	20	91	1336
B Neutral	3	2	11	10	7	10	13	9	20	8	12	4	10	5	5	3	7	7	1	5	89
C Destructive	3	2							10	4	8	2	2	1	2	1	2	2			27
D Absent	7	5					29	20	24	10	3	1	1	1	5	3			1	5	70
TOTALS		137		105		68		147		243		325		196		179		100		22	1522

CONSTRUCTIVENESS

Percentage over
all Nurseries

Constructive	82.41%
Neutral	6.23%
Destructive	1.38%
Absent	9.97%

Table 12(b)
Constructiveness by Area and Sex

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water								
	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both						
CONSTRUCTIVENESS	43	98	141	35	51	86	15	86	101	99	20	119	108	7	145	21	47	68	40	74	114	41	15	56	64	20	84
Constructive	6	27	33	3	3	6	4	1	5	8	6	14	6	2	8	4	9	13	9	9	18						
Neutral	1		1	3		3							1		1												
Destructive	3	9	12	14	5	19	7	5	12	4	3	7	5	6	11	1	1	2	2	4	6	7	1	8	5	1	6
Absent	53	134	187	55	59	114	60	82	142	111	29	140	120	15	135	26	57	83	51	87	138	48	16	64	69	21	90
TOTALS																											

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water								
	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both						
CONSTRUCTIVENESS	67	22	89	25	35	58	10	48	58	64	18	82	30	13	43	30	9	39	69	159	228	14	53	67	7	21	28
Constructive																											
Neutral																											
Destructive																											
Absent	7	8	15	5	9	14	2	6	8	4	10	14	1		1	4		4	5	5	10				1	1	2
TOTALS	74	30	104	28	57	85	12	58	70	75	29	102	35	13	48	34	10	44	76	177	253	16	57	73	8	22	30

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water								
	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both	B	G	Both						
CONSTRUCTIVENESS	46	32	78	10	45	55	21	117	138	105	16	119	233	102	335	9	18	27	20	89	109	26	9	35	5	17	22
Constructive	5		5	1	10	11	1	3	4	26	2	28	16	11	27		1	1	3	8	11				1		1
Neutral										2		2															
Destructive	7	6	13	9	17	26		1	1	19		19	3		3												
TOTALS	58	38	96	20	72	92	22	121	143	150	18	168	282	113	365	9	19	28	23	97	120	26	9	35	6	17	23

NURSERY D

CONSTRUCTIVENESS	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Constructive	62	34	96	21	10	31	50	94	144	44	81	125	55	33	88	65	83	148	49	16	65	37	41	78	71	34	105	43	33	76
Neutral	4	1	5	2	1	3	6	1	7	4	4	8	7	2	9	12	13	25	2	2	2	8	8	8	3	3	3	4	4	
Destructive	4	2	6	—	—	—	2	—	2	—	—	—	3	1	4	—	—	—	1	—	1	4	—	4	3	—	3	—	—	
Absent	2	2	4	3	4	9	32	39	71	14	10	24	29	17	46	2	3	5	3	2	5	5	1	6	13	3	16	1	2	3
TOTALS	72	39	111	28	15	43	90	134	224	62	95	157	94	55	147	79	99	178	55	18	73	54	42	96	90	37	127	48	35	83

NURSERY E

CONSTRUCTIVENESS	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water											
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G										
Constructive	56	70	126	25	23	48	18	116	134	9	94	103	70	25	95	82	7	89	18	4	22	24	126	150	43	39	82	—	25	25
Neutral	1	—	1	3	4	7	—	1	1	2	—	2	14	1	15	11	—	11	—	—	—	14	8	22	—	—	—	—	—	—
Destructive	—	—	—	—	—	—	—	1	1	—	—	—	4	5	9	—	—	—	—	—	—	21	12	33	—	—	—	—	—	—
Absent	6	24	30	18	3	21	5	17	12	32	13	45	15	1	16	12	15	25	—	—	—	24	19	29	8	3	11	1	1	2
TOTALS	63	94	157	46	30	76	23	125	148	43	107	150	103	32	135	105	20	125	18	4	22	83	161	244	51	42	93	1	26	27

NURSERY F

CONSTRUCTIVENESS	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water												
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G											
Constructive	80	77	157	54	101	155	9	40	49	34	46	80	74	—	74	41	36	77	10	13	23	29	82	111	49	32	81	4	4	8	
Neutral	2	1	3	—	—	—	—	—	—	6	—	—	6	—	6	—	—	—	—	—	—	1	—	1	—	1	1	—	—	—	—
Destructive	—	—	—	4	1	5	1	—	1	1	—	1	1	—	1	4	2	6	—	—	—	3	1	4	—	2	2	—	—	—	—
Absent	3	8	11	4	16	20	—	4	4	10	7	17	10	—	10	9	3	12	—	—	—	7	9	16	4	6	10	—	—	—	—
TOTALS	85	86	171	62	118	180	10	44	54	91	—	91	91	—	91	54	41	95	11	17	28	40	92	132	53	41	94	4	4	8	

NURSERY G

CONSTRUCTIVENESS	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water													
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G												
Constructive	73	51	124	26	68	94	35	26	61	49	56	105	161	28	189	246	56	302	56	127	183	43	124	167	49	42	91	7	13	20		
Neutral	2	1	3	1	10	11	1	6	7	8	5	13	16	4	20	3	9	12	4	6	10	4	5	1	4	5	1	6	7	—	1	1
Destructive	1	2	3	—	—	—	—	—	—	—	—	—	10	—	10	7	1	8	1	1	2	2	—	2	—	1	1	2	—	—	—	—
Absent	6	4	7	—	—	—	—	—	—	8	16	24	3	—	3	—	3	—	—	—	—	1	1	4	5	—	—	—	—	1	1	1
TOTALS	82	55	137	27	78	105	36	32	68	69	76	147	195	48	243	259	66	325	61	135	196	47	132	179	51	49	100	7	15	22		

Sex Differences

Combining scores over all seven Nurseries sex differences were significant ($p < .01$) in Manipulative, Book, Malleable, Art and Creative, Blocks and House Areas. Tabulations by Area and sex are shown in Table 12(b).

In Manipulative (χ^2 11.44), the girls were less constructive than the boys but more neutral and absent. In Book (χ^2 35.98), the girls were more constructive and more neutral but less destructive and less absent than the boys. In Malleable (χ^2 16.22), the girls were more constructive, neutral and absent than the boys but less destructive. In Art and Creative (χ^2 26.72), the girls were more constructive and more neutral than the boys but less absent. In House (χ^2 60.63), the girls were more constructive, more neutral but less destructive and absent than the boys. In Blocks (χ^2 15.21), the boys were significantly more active in each category than the girls.

Areas and Total Numbers of
Negative Aspects of Behaviour exceeding 20%

Book	9
Art and Creative	5
Malleable	2
Large Apparatus	3
Blocks	3
House	2
Water	1

It is of interest that Nursery F was alone in showing no incidence of negative aspects of behaviour above 20%. The Nursery had been used for a pilot ecology survey and it had been noted that the 'climate' was adult controlled, eliminating some of the 'freedom' normally associated with the Nursery School. Nursery educators in the main would tend to argue that children should have the opportunity to give expression to negative feelings, particularly in an environment of protection and re-education. It would be an educational objective to reduce the amount of negative interaction and to promote positive aspects of behaviour, but recognition of the need to give vent to negative feelings would be upheld.

Research workers, other than teachers are often surprised by the apparently benign climate of the Nursery School. Brindley (1972):

"One of the somewhat surprising features of these nursery schools is the relatively low incidence of fighting, it was supposed that the presence of children from disturbed or disrupted backgrounds might result in greater aggression being displayed in groups or classes of which they were members."

Nursery teachers are skilled in dealing with children who initially show aggressive tendencies. Expert manipulation of social groupings, the use of appropriate equipment and sympathetic handling all help the aggressive child to channel his energies. This is an area of expertise in which Nursery teachers excel, though they would accept outbursts and breakdowns as part of the normality of children's behaviour.

SOCIAL PARTICIPATION Table 13(a)

"Probably the most distinctive feature of nursery experience for the child is the opportunity it provides for play with a group of age-mates."

(Swift, 1964).

Since young children play often by themselves, in the presence of other children and with only small groups, Nursery schools do not have the monopoly of provision. Any supervised play area will furnish the opportunity. In Nursery schools, however, social participation is an educational objective and the design of the Areas, their equipment and adult interaction, is one of the means by which the objective is fulfilled. Readiness for social interaction and group experience is monitored and provision made for the widest possible range of levels of participation with the expectancy of individual differences and preferences and needs.

A modification of the Shure categories provided a group of six, similar to those of Parten, and dividing into

Negative Indices - Unoccupied, Onlooker, Solitary

Positive Indices - Parallel, Associative, Co-operative.

Negative Indices

Unoccupied

Criteria in this sub-category lay within the inability to make social contact. A child could just sit, follow, stand around, but would not be involved in any ongoing activity or show signs of feeling the company of any one person.

Onlooker

Criteria in this sub-category lay within the watchfulness of the child as he placed himself to hear and see clearly all that was going on. He showed signs of being absorbed in the activity of other people.

Solitary

Criteria in this sub-category lay in the isolation of the child, both through space, lack of social interaction and choice of equipment. Interest was entirely on his own behaviour pursued without reference to other children. Behaviour of this kind in the presence of an adult was scored Solitary.

Positive Indices

Parallel

Criteria in this sub-category lay in the child's choice of activity, bringing him into the company of other children. Equipment is similar but is manipulated as the child wishes and without reference to nearby children. An element of awareness of proximity is counter-balanced by unwillingness to participate in joint behaviour and verbalisation is at a minimum.

Associative

Criteria in this sub-category lay within interaction, usually accompanied by verbalisation, exchange of ideas or illuminating conversation. There was, however, no organisation of activity - the individual role being still apparent.

Co-operative

Criteria in this sub-category lay within the sphere of interaction, verbal and behavioural. The play organised towards an accepted goal showed a sense of group feeling and interdependence. The exchange of ideas, support, help and physical contact were characteristic.

Table 13(a)
Social Participation

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
A																					
SOCIAL PARTICIPATION																					
A Unoccupied	6	3	22	17	11	8	6	5	2	1	9	7	6	7	10	7	6	9	3	3	81
B Onlooker	22	12	--	--	3	2	17	13	14	10	4	3	9	11	13	9	2	3	--	--	84
C Solitary	9	5	18	16	2	1	--	--	6	4	--	--	--	--	4	3	2	3	4	4	45
D Parallel	38	20	3	3	15	11	10	8	22	16	25	18	20	24	23	19	16	25	13	14	185
E Associative	100	53	25	22	47	33	83	66	70	50	47	35	39	47	43	31	34	53	62	70	550
F Co-operative	12	7	46	40	64	45	10	8	26	19	50	37	9	11	45	33	4	6	8	9	274
TOTALS		187		114		142		126		140		135		83		138		64		90	1219

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
B																					
SOCIAL PARTICIPATION																					
A Unoccupied	--	--	4	5	1	1	1	1	5	5	2	4	--	--	12	5	2	3	--	--	27
B Onlooker	12	12	4	5	10	14	21	24	7	7	--	--	4	9	15	6	1	1	1	3	75
C Solitary	5	5	25	29	16	23	15	17	18	18	11	23	7	16	5	2	22	20	2	7	136
D Parallel	44	42	12	14	22	31	18	21	15	15	14	29	21	48	35	14	28	38	1	3	209
E Associative	41	39	40	49	21	30	25	29	33	32	17	35	12	27	95	38	16	22	17	57	317
F Co-operative	2	2	--	--	--	--	6	7	24	24	4	8	--	--	91	36	4	5	9	30	140
TOTALS		104		85		70		86		102		48		44		253		73		30	895

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
C																					
SOCIAL PARTICIPATION																					
A Unoccupied	8	8	16	17	1	1	2	7	7	4	10	2	1	3	--	--	--	--	--	--	45
B Onlooker	3	3	5	5	2	2	1	4	18	11	21	6	--	--	11	15	--	--	1	1	62
C Solitary	16	16	3	3	4	3	6	21	12	7	11	4	6	21	2	2	5	4	--	--	65
D Parallel	24	25	12	13	66	46	5	18	28	17	154	36	16	57	22	13	13	37	17	70	357
E Associative	35	37	44	48	64	45	14	50	80	48	168	52	2	7	80	77	17	48	5	28	509
F Co-operative	10	10	12	13	6	4	--	--	23	14	1	--	3	10	5	4	--	--	--	--	60
TOTALS		96		92		143		28		168		365		28		120		35		23	1098

NURSERY	Manipulative		Books		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
D																					
SOCIAL PARTICIPATION																					
A Unoccupied	--	--	4	9	--	--	2	1	--	--	2	1	--	--	3	2	--	--	1	1	12
B Onlooker	4	4	1	3	77	34	28	18	28	19	1	1	4	5	2	2	18	14	2	2	165
C Solitary	30	27	10	23	29	13	31	19	59	40	35	19	26	36	16	12	24	19	17	20	277
D Parallel	46	41	9	21	95	43	56	36	33	22	41	23	37	51	31	33	29	23	30	36	407
E Associative	31	28	17	31	23	10	40	26	20	14	98	55	6	8	25	26	52	41	33	41	345
F Co-operative	--	--	2	5	--	--	--	--	7	5	1	1	--	--	19	20	4	3	--	--	33
TOTALS		111		43		224		157		147		178		73		96		127		83	1239

SUBSERY	Manipulative		Blocks		Manipulative		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
SOCIAL PARTICIPATION																						
A Unoccupied	15	10	15	20	1	1	11	7	1	1	23	18			4	2						70
B Onlooker	15	10	3	4	9	6	36	11	11	8	4	3			18	7	10	11	2	7		108
C Solitary	14	9	9	10	1	1			13	10	6	5			15	6	6	6				64
D Parallel	109	69	43	57	22	15	99	66	10	7	74	59			15	6	45	48	25	93		442
E Associative	4	25	2	3	115	78			34	25	6	5	22	100	64	26	20	22				267
F Co-operative			4	5			4	150	66	49	12	10			128	50	12	13				226
TOTALS		157		76		148		150		135		125		22		244		93		27		1177

SUBSERY	Manipulative		Blocks		Manipulative		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
SOCIAL PARTICIPATION																						
A Unoccupied	13	8	13	7	4	7	9	9	8	9	6	6	3	11	2	2						58
B Onlooker			17	9			7	7	5	5	6	6	3	11	16	12	12	13				66
C Solitary	24	14	25	14	10	19	40	41	12	13	19	20			2	2	16	17				148
D Parallel	74	43	44	24	13	24	32	33	19	21	40	42	10	36	24	18	56	60				316
E Associative	45	26	32	18	24	44	10	10	14	15	16	17			48	36	4	4	4	50		197
F Co-operative	15	9	49	27	3	6			33	36	8	8	12	43	40	30	6	6	4	50		166
TOTALS		171		180		54		98		91		95		28		132		94		8		951

SUBSERY	Manipulative		Blocks		Manipulative		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
SOCIAL PARTICIPATION																						
A Unoccupied	4	3	8	8	2	3	14	10	12	5	9	3	2	1	1	1	5	5				57
B Onlooker	4	3	1	1	5	7	17	12	16	7	6	2	9	5	6	3	2	2	1	5		67
C Solitary	11	8	25	24	5	7	16	11	23	9	20	6	12	6	10	6	5	5				127
D Parallel	41	30	15	14	6	9	72	49	9	1	5	2	23	12	52	29	14	14	6	27		243
E Associative	68	50	32	30	50	74	26	18	128	53	170	52	102	52	94	53	74	74	15	68		759
F Co-operative	9	7	24	23			2	1	55	23	115	35	48	24	16	9						269
TOTALS		177		105		68		147		243		325		196		179		100		22		1522

SOCIAL PARTICIPATION

Percentage over
all Nurseries

Unoccupied	4.32%
Onlooker	7.74%
Solitary	10.64%
Parallel	26.54%
Associative	36.34%
Co-operative	14.42%

There was significantly less negative social behaviour than positive, the three sub-categories accounting for 23% of the main Social Participation.

Incidence of unoccupied behaviour was minimal, as in Shure, 4%. Nevertheless the fact that some instances did occur suggests that Nursery teachers should be aware of the possibility that a child could spend a disproportionate amount of time, after a settling-in period, in this way. The work of Allen (1967) shows how adult attention in the form of reinforcement when a hitherto "unoccupied" child is engaged in attending for one continuous minute brought increased attention and a decrease in activity changes. In some cases incidental environmental stimuli may not be sufficiently strong to effect behaviour modification. Onlooker behaviour showed a somewhat higher incidence, 7%, but in only one Area of one Nursery did it reach beyond the 20% level. This was the Malleable Area of Nursery D, 34%, previously commented upon. Solitary behaviour (10%) involving a single child would be a feature of social

participation regarded by some Nursery teachers as desirable within the total programme of social activities. Indeed, some Areas are designed to provide this opportunity and children can be found deliberately trying to "shut themselves off". Three Nurseries, A, F and E, had no Areas showing more than 20%. Nursery B had four Areas, Nursery C two, Nursery D four, and Nursery G one. These were distributed over all the Areas with the exception of House, an Area of high density population where presumably it was difficult to be "on one's own".

The highest incidence, 40%, was in Blocks, Nursery D.

Blocks 40% Nursery D:

This was an unsatisfactory Area. Because of bad positioning it was used as a through passage, resulting in onlooker behaviour and low constructiveness. The high percentage of solitary behaviour does not result from one or two children shutting themselves off for deep involvement, but rather from fragmentary counts when children were left on their own, not making fullest use of the equipment.

There was significantly more positive social play, the three sub-categories accounting for 77% - Parten 75%. Looking at all Nurseries there is a trend toward the positive indices. Nurseries A, B, C and G reach a peak at Associative level and decline towards Co-operative. Nurseries D, E and F show their peak at Parallel with subsequent decline. All Nurseries have less Co-operative play than Parallel or Associative. Co-operative play, the most complex form of social interaction appears to be a quality of play still developing.

"The tendency towards the familiar developmental norms of increased sociability or co-operative play with age,"

(Ralph, 1968)

is thus confirmed.

Parallel

This sub-category accounted for 26% of the main Social category, indicating an important stage of social awareness intermediate from solitary activity to the company of peers. Parten found that almost all her subjects engaged frequently in parallel behaviour. The distribution of high incidence over all Areas would confirm this. The percentage, 27%, is greater than the total percentage within the three negative indices, 23%.

Associative

This sub-category was the most frequent form of interaction accounting for 36% of the main category. Distribution was over all Areas, the percentage falling below 20% in some Areas in those Nurseries, D, E, F, which reached their peak at Parallel.

Co-operative

This sub-category accounted for only 14% within the main Social Participation but this may be taken as an indication that this most complex form of behaviour is beginning to be established. The nature of co-operative play amongst Nursery children reflects the 'wave crest' of identification with others, within a loosely organised group. Usually one child dominated for a short time and then the play relapses into Associative or Parallel behaviour. Parten corroborated studies showing that young children were able to dominate for only short periods. The leaders "more often than not excelled non-leaders in intelligence and occupation level of parents, and individual differences outweighed age differences."

Social Participation and the Areas

The percentage within each category is calculated and the Areas ranked. Within the positive indices of Co-operative, Associative and Parallel behaviour Large Apparatus, House, Blocks, Manipulative and Malleable Areas are outstanding.

Isolating the Solitary category, the ranked order Blocks, Book, Manipulative, Art and Creative and Large Apparatus are as might have been expected. Within the Unoccupied category, the position and high percentage, 23.42%, of Book seems to call for attention. The Book Areas throughout the study appear to have been the subject of negative comment.

<u>Ranking for positive</u> <u>social behaviour</u>		<u>Ranking for negative</u> <u>social behaviour</u>	
Large Apparatus	1	Blocks	1
House	2	Art and Creative	1
Blocks	3	Book	3
Manipulative	3	Manipulative	4
Malleable	3	Large Apparatus	5
<hr/>		<hr/>	
Art and Creative	6	Malleable	6
Book	7	House	7
Sand	8	Sand	8
Music	9	Music	9
Water	10	Water	10

The low position of Sand, Music and Water Areas reflect low population density. The Rank Co-efficient Correlation, r_s .22 (N.S.), indicates that the Areas occupy significantly different rank orders within positive and negative indices.

Play Areas ranked as percentage within each Social Behaviour Category

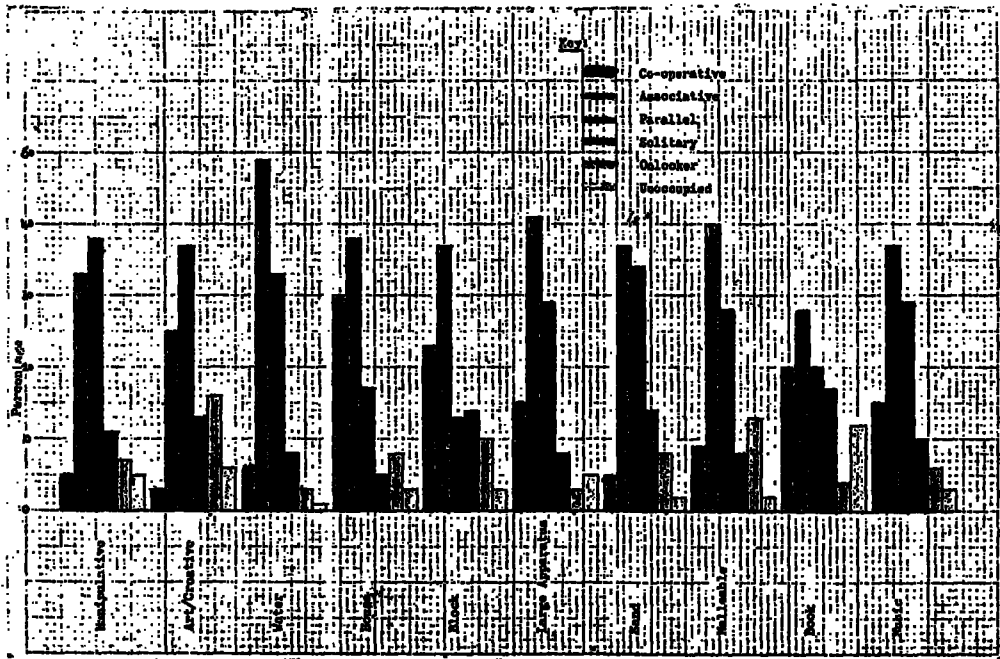
Co-operative		Associative		Parallel		Solitary		Onlooker		Unoccupied	
	%		%		%		%		%		%
Blocks	29.45	Large Apparatus	19.73	Manipulative	17.48	Blocks	16.38	Art & Creative	20.25	Books	23.42
Blocks	20.00	Home	19.25	Large Apparatus	16.41	Books	13.34	Malleable	16.90	Large Apparatus	17.42
Large Apparatus	16.33	Blocks	12.87	Art & Creative	13.58	Manipulative	12.64	Blocks	15.78	Manipulative	13.14
Books	11.72	Malleable	11.68	Malleable	11.11	Art & Creative	12.32	Home	12.91	Art & Creative	12.82
Malleable	6.25	Manipulative	11.00	Home	9.39	Large Apparatus	11.83	Manipulative	9.56	Blocks	10.00
Music	6.16	Sand	7.37	Sand	9.34	Sand	9.28	Sand	7.17	Home	9.14
Manipulative	4.10	Art & Creative	6.72	Books	6.41	Malleable	7.77	Large Apparatus	6.69	Malleable	5.71
Sand	2.56	Books	6.32	Blocks	6.32	Home	6.26	Books	4.95	Sand	3.71
Art & Creative	1.80	Music	6.21	Music	5.90	Music	5.91	Music	4.62	Music	5.42
Water	1.79	Water	4.61	Water	4.27	Water	2.66	Water	1.11	Water	1.14

POSITIVE

NEGATIVE

The bar graph illustrates the percentage quality of play within each Area. Manipulative produced the most parallel play, Books the most solitary and also the most unoccupied (twice as much as the next Area in rank order), Art and Creative the most onlooker, House the most co-operative and Water the most associative.

Percentage of Social Behaviour within each of the Ten Areas



Sex Differences

Tabulations by area and sex within the Nurseries are shown in Tables 13(b) and 14. There was no Area where sex differences were significant throughout the Nurseries. This would reflect the variance amongst the Nurseries.

Over all the Nurseries sex differences are significant ($p < .01$) in the following Areas:

In Manipulative (χ^2 34.74) the girls were more unoccupied and onlooking than the boys and more parallel in their play. The boys were more solitary, associative and co-operative.

In Books (χ^2 25.51) the girls were more solitary and more associative and co-operative. This was the Area where girls showed their second highest score for co-operative behaviour.

In Malleable (χ^2 54.34) the girls were more parallel and associative.

In Art and Creative (χ^2 81.30) the girls were more solitary than the boys, more parallel and co-operative.

In Large Apparatus (χ^2 95.74) the girls were significantly less active in every category. This was a male dominated Area.

In Music (χ^2 24.72) the girls were more associative and co-operative than the boys.

In House (χ^2 15.31) the girls were significantly more positive (parallel, associative and co-operative) than the boys. This Area showed the highest score for girls in the co-operative category.

In an ecology study the emphasis is on the nature of the environment and associated behaviours. In considering sex differences there appears to be a suggestion that girls show more co-operative type behaviour than boys. This is supported by behavioural studies, e.g. Brindley (1972) who found girls far exceeded boys in the frequencies with which they exhibited co-operative acts. Mischel (1970) has reviewed evidence indicating that sex typed social responses are affected by the situation in which they are made and by such variables as the sex of the person eliciting the response. Thus, girls might be expected to identify with the female teachers and be more aware of the types of social behaviour they are expected to display.

Table 13(b)
Social Participation by Area and Sex

HUSSEY A		Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water				
		B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G			
SOCIAL PARTICIPATION																								
Unemployed		1	5	6	15	7	22	6	5	11	2	4	6	2	2	4	6	6	4	6	6	1	3	
Onlooker		3	19	22	--	--	--	1	2	3	3	14	17	5	9	14	3	1	4	3	6	9	1	2
Solitary		4	5	9	10	8	18	2	--	2	--	--	6	--	--	--	--	4	4	2	--	4	--	--
Parallel		9	29	38	2	1	3	8	7	15	5	5	10	17	5	22	3	25	17	6	25	13	3	16
Associative		32	68	100	16	9	25	16	31	47	10	73	83	39	11	70	42	5	47	12	27	39	11	34
Co-operative		4	8	12	12	34	46	27	37	64	--	10	10	22	4	26	50	--	50	4	5	9	12	35
TOTALS		55	134	187	55	59	114	60	82	142	20	106	126	111	29	140	120	15	135	26	57	85	51	87

HUSSEY B		Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water				
		B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G			
SOCIAL PARTICIPATION																								
Unemployed		--	--	--	1	3	4	1	--	1	2	3	5	2	3	5	2	--	2	--	2	2	--	--
Onlooker		5	7	12	1	3	4	1	9	10	3	18	21	2	5	7	--	--	--	4	--	4	6	9
Solitary		5	--	5	5	20	25	1	15	16	9	6	15	18	--	18	9	2	11	2	5	7	1	4
Parallel		25	19	44	7	5	12	6	16	22	9	9	18	10	5	15	10	4	14	18	3	21	7	28
Associative		37	4	41	14	26	40	3	18	21	6	19	25	18	15	33	10	7	17	10	2	12	35	62
Co-operative		2	--	2	--	--	--	--	--	--	6	6	6	23	1	24	4	--	4	--	--	--	24	67
TOTALS		74	30	104	28	57	85	12	58	70	27	59	86	73	29	102	35	13	48	34	10	44	76	177

NURSEY C.

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water						
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G					
SOCIAL PARTICIPATION																									
Unoccupied	2	6	8	6	10	1	1	1	1	2	8	8	2	10	1	1	1	1	1	1					
Onlooker	3	5	3	5	5	2	2	1	1	18	18	12	9	21	3	8	11	1	1	1					
Solitary	6	10	16	5	5	4	4	5	6	13	13	7	4	11	1	5	6	2	2	5					
Parallel	13	11	24	4	8	8	56	64	5	5	27	29	168	154	5	17	22	7	6	13					
Associative	29	6	33	8	36	8	58	68	5	9	67	12	79	116	2	65	80	15	2	17					
Co-operative	5	5	1	2	10	6	6	1	1	17	4	21	1	1	3	5	5	1	1	5					
TOTALS	58	38	96	20	72	22	121	143	7	21	150	18	168	252	113	365	23	97	120	26	9	35	6	17	23

NURSEY D.

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water					
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G				
SOCIAL PARTICIPATION																								
Unoccupied	2	2	4	1	1	36	41	77	18	10	28	1	1	2	2	1	3	1	1	1				
Onlooker	26	4	30	6	4	10	27	2	29	37	22	59	15	20	35	8	16	7	7	24				
Solitary	26	20	46	5	4	9	23	72	95	28	5	33	24	19	41	20	11	23	6	29				
Parallel	18	13	31	12	5	17	4	19	23	11	9	20	59	98	2	14	11	25	17	52				
Associative	72	39	111	2	2	15	43	90	134	94	53	147	79	99	178	54	42	96	37	127				
Co-operative	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
TOTALS	181	111	292	28	15	134	224	62	95	157	94	53	147	79	99	178	54	42	96	37	127	48	35	83

NURSEY E.

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water					
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G				
SOCIAL PARTICIPATION																								
Unoccupied	1	15	15	12	3	15	1	1	6	5	11	1	10	13	23	1	3	4	1	1				
Onlooker	6	9	15	3	3	5	9	26	10	36	10	1	4	4	4	14	4	18	7	3				
Solitary	6	8	14	5	4	9	1	1	12	1	13	6	6	6	9	6	15	4	2	6				
Parallel	50	59	109	26	17	43	22	10	89	99	5	10	73	1	74	7	8	15	26	19				
Associative	1	3	4	2	2	18	97	115	30	4	34	6	6	6	11	53	64	9	11	20				
Co-operative	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
TOTALS	63	94	157	46	30	76	125	148	103	32	135	105	20	125	244	83	161	244	51	42	93	1	26	27

NURSERY F.

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water		
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	
SOCIAL PARTICIPATION																					
Unoccupied	4	9	5	8	—	4	2	7	8	—	4	2	—	3	1	1	—	—	—	—	
Onlooker	—	—	6	11	—	—	5	2	5	—	4	2	2	1	8	8	4	8	—	—	
Solitary	8	16	9	16	5	10	13	27	12	—	10	9	—	—	—	2	9	7	—	—	
Parallel	40	34	21	23	4	9	20	12	19	—	30	10	9	1	16	8	39	17	—	4	
Associative	22	23	13	19	1	23	4	6	14	—	5	11	—	—	9	39	1	3	4	4	
Co-operative	11	4	8	41	—	3	—	—	33	—	1	7	—	12	6	34	—	6	—	—	
TOTALS	85	86	62	118	10	44	44	54	91	—	54	41	26	11	40	92	53	41	94	4	

NURSERY G.

	Manipulative		Book		Malleable		Art & Creative		Block		Large Apparatus		Music		House		Sand		Water		
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	
SOCIAL PARTICIPATION																					
Unoccupied	4	—	1	7	1	1	9	5	7	5	5	4	—	2	1	—	—	5	—	—	
Onlooker	3	1	—	1	—	5	7	10	8	8	2	4	3	6	—	6	1	1	—	1	
Solitary	8	3	7	18	4	1	3	13	12	11	10	10	4	8	—	10	3	2	—	—	
Parallel	14	27	3	12	3	6	40	32	4	5	2	3	7	16	3	49	6	8	14	2	
Associative	46	22	8	24	28	22	10	16	128	150	137	33	26	76	31	63	41	33	74	5	
Co-operative	7	2	8	16	—	—	—	2	54	1	103	12	21	27	12	4	—	—	—	—	
TOTALS	82	55	27	78	36	32	69	78	195	48	259	66	61	135	179	132	51	49	100	7	

Table 14
Social Participation by Area and Sex

	Manipulative		Block		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS		
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	Both
Unoccupied	11	35	42	40	9	11	20	25	28	8	33	28	2	10	16	16	6	7	2	2	169	182	351
Onlooker	22	38	11	20	42	64	62	65	65	34	26	16	13	14	38	43	28	17	4	3	313	514	627
Solitary	63	46	42	73	39	28	38	70	110	34	37	43	32	19	18	36	43	33	11	12	423	398	823
Parallel	177	199	68	70	52	185	110	182	110	27	267	86	69	58	73	127	117	84	37	39	1082	1077	2159
Associative	183	139	71	121	78	268	41	137	309	69	349	173	68	113	124	325	128	89	76	60	1429	1516	2945
Co-operative	29	19	32	109	33	40	1	21	193	37	172	19	28	44	103	241	11	19	13	4	617	549	1166
	χ^2 34.74		χ^2 29.51		χ^2 34.73		χ^2 81.30		χ^2 14.06		χ^2 95.74		χ^2 24.72		χ^2 15.31		N.S.		N.S.		4069	4056	8101
	p < .01		p < .01		p < .01		p < .01		N.S.		p < .01		p < .01		p < .01								

Social Participation as a Percentage of Total Play

	Unoccupied	Onlooker	Solitary	Parallel	Associative	Co-operative
Boys %	4.16	7.70	11.19	26.62	33.13	15.18
Girls %	4.51	7.78	9.86	26.68	37.56	13.60
Children %	4.33	7.74	10.53	26.65	36.33	14.39

Social Participation with reference to age

The median point of the age range was established as 43.7 months.

62 children formed the older group 112
50 children formed the younger group

The bar graphs for the older group, all children and the younger group, show similar characteristics, each increasing from "unoccupied" through "onlooker", "solitary", "parallel" and "associative", and then decreasing to "co-operative".

In comparing the graphs for the younger and older groups it is apparent that the younger group shows higher percentages of unoccupied, onlooker and parallel play, but lower percentages of associative and co-operative play, than the higher age group. It is of interest that the older children show a higher percentage of solitary play overall. When expressed as a percentage of the group play, solitary play is slightly higher for the young children but the difference is marginal (see Table 15).

Age differences were calculated over the seven Nurseries and listed for significance within the Areas (see Table 16).

In Manipulative (χ^2 30.25) the older children were more positive in their play but they were also more unoccupied and solitary.

In Books (χ^2 18.56) the older children were less unoccupied and onlooking than the younger. They were also less parallel and associative but more co-operative.

In Art and Creative (χ^2 77.36) the older children were less unoccupied and onlooking and less parallel but more associative.

In Blocks (χ^2 22.64) the older children were less unoccupied and onlooking but more solitary. They were less parallel and associative but more co-operative.

In Large Apparatus (χ^2 17.84) the older children were more unoccupied and solitary. They were more associative and co-operative.

In Sand (χ^2 18.84) the older children were more onlooking and less solitary. They were less parallel and associative in their play but more co-operative.

In Water (χ^2 27.75) the older children were less onlooking and more solitary. They were more associative and co-operative.

The developmental trend appears to be confirmed in the majority of the Areas, though the subtle distinctions have important implications.

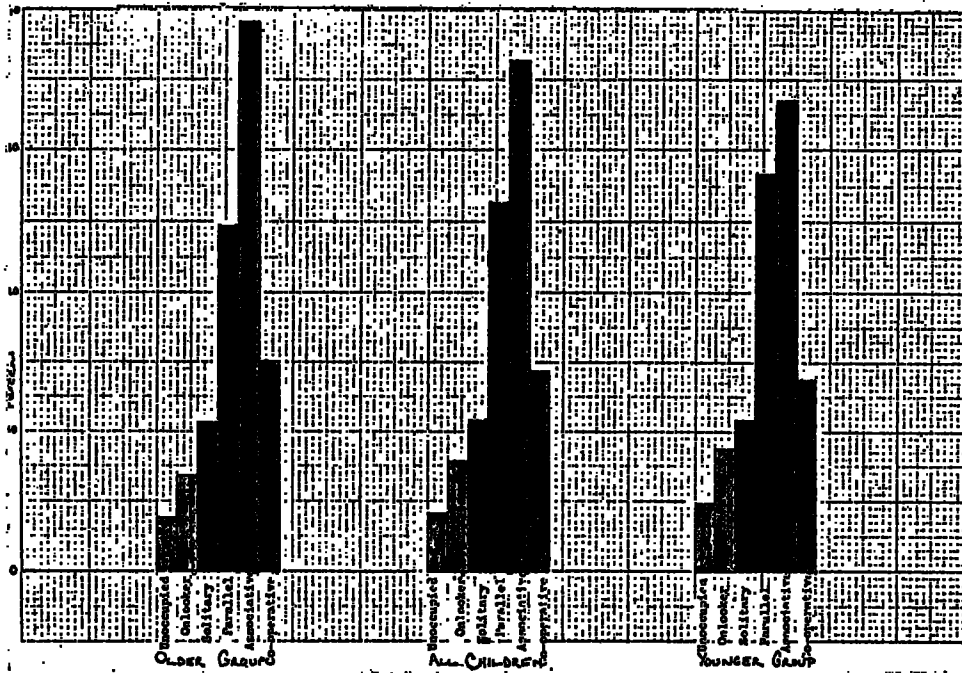
Table 15
Social Participation by Area and by Age

	Manipulative		Book		Malleable		Art & Creative		Blocks		Large Apparatus		Music		House		Sand		Water		TOTALS		
	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	O	Y	Both
Unoccupied	26	20	32	30	7	13	18	27	12	24	38	23	6	6	14	18	5	8	2	2	160	191	351
Onlooker	25	35	8	23	67	39	30	77	39	60	17	25	10	19	38	43	30	15	1	6	286	341	627
Solitary	61	48	59	56	37	30	56	52	85	61	58	44	21	30	47	37	32	48	15	8	435	414	853
Parallel	202	174	56	82	137	100	142	150	62	75	174	179	58	69	90	112	85	118	37	59	1041	1108	2159
Associative	222	102	94	98	200	146	132	46	183	195	320	202	85	98	191	258	107	110	88	48	1642	1303	2945
Co-operative	35	13	78	59	48	25	11	11	158	94	107	84	32	40	147	197	20	10	11	6	627	541	1168
	370	393	327	368	495	354	429	365	317	509	714	577	212	262	497	665	272	314	154	129	4189	3912	8101
	965		695		849		792		1026		1271		474		1162		586		283				
	χ^2 30.25		χ^2 18.56		N.S.		χ^2 77.36		χ^2 22.64		χ^2 17.84		N.S.		N.S.		χ^2 18.18		χ^2 27.75				
	p < .01		p < .01				p < .01		p < .01		p < .01						p < .01		p < .01				

Table 16
Social Participation Categories of Behaviour and Age

	Unoccupied			Onlooker			Solitary			Parallel			Associative			Co-operative		
	O	Y	Total	O	Y	Total	O	Y	Total	O	Y	Total	O	Y	Total	O	Y	Total
Appearances	160	191	351	286	341	627	439	414	853	1041	1118	2159	1642	1303	2945	627	541	1168
%	45.58	54.41		45.61	54.39		51.47	48.53		48.22	51.78		55.76	44.24		53.68	46.32	
% of all behaviour	4.33			7.73			10.52			26.63			36.35			14.41		
% by age group	3.82	4.88		6.82	8.72		10.48	10.58		24.85	28.27		39.20	33.31		14.97	13.83	

Social Participation Categories of Behaviour
with reference to Age Groups



Adult Presence

Adult presence has been seen to be a variable affecting the relationship between population density and size (some small Areas had a high number of appearances when an adult was present), quality of behaviour (Absent participatory and Neutral Affect was recorded in Areas where adult presence was seen to be directive) and throughout the study there has been a suggestion of the importance of adult intervention.

Adult Presence in the Ten Areas

	Manipulative	Books	Malleable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water	Totals
Nursery A	17	22	32	33	5	12	17	3	11	9	161
Nursery B	10	15	0	55	0	0	10	10	0	0	100
Nursery C	9	0	12	0	0	100	5	1	1	0	128
Nursery D	10	30	40	100	5	0	5	20	0	0	210
Nursery E	2	7	12	62	2	4	5	1	0	2	97
Nursery F	9	30	0	69	0	0	0	0	0	0	108
Nursery G	18	20	5	65	0	30	25	8	5	0	176
Totals	75	124	101	384	12	146	67	43	17	11	980

Adults were present in the Areas for 14% of the observed time.

Art and Creative had the highest number of adult presence and Blocks, Sand and Water the lowest.

37 Areas out of the possible 70 observation Areas (53%) had 5 or fewer appearances recorded.

Nursery A is the only Nursery to have adults present at some time in each Area.

Highest recording in Nursery D (210) and fewest Nursery E (97).

Nursery F shows adults present in only 3 out of the 10 Areas.

As previously reported the adults showed a reluctance or inability to ignore the observer, and thus refrained from fulfilling their varieties of role during the count. There is little doubt that the picture presented is affected by this factor. Nevertheless the question arises about professional standards of appreciation of the educative value of interaction. It would appear that the traditional "Hands Off, Don't Teach" ethos still prevails to some extent. That this continues in Nursery School can be seen by an ethologist's bland description of the 'adults non-interference policy during Free Play' during her investigation (McGrew, 1970) when 'adults were available for help but rarely interfered, i.e. a supervising adult only interfered in activities or

disagreements which appeared likely to lead to injury or damage'. Such a description may be due to lack of appreciation of the educationist's role but in terms of intelligent observation it cannot be ignored. Ralph et alia (1968), in their study of interaction, define free play as 'that period wherein conditions allowed for maximal interaction among the children and minimal interference on the part of the teacher'. This perhaps reflects the dichotomy which exists in American Nursery Education where there is a recognised structured/unstructured approach to the daily programme. In Britain where play is accepted as a vehicle for learning, the teacher might be expected to be observed in an educative role at any time.

Further evidence comes from Thomas (1973) reporting limited adult interaction: both adults and children appeared to consider the teacher's role as 'caretaking rather than educative'. Further analysis of adult presence would support this.

Area: Large Apparatus Nursery C
100 appearances

"The Area always had an adult on supervisory duty for safety reasons. The Headteacher had made excellent equipment provision and instigated a differing pattern of arrangement each day. The fact that an adult was always present may also have attracted the children, giving them the security of knowing that whatever adventure they have, an adult was nearby to come to the rescue if necessary." (Arsenian, 1947).

Area: Large Apparatus Nursery G
30 appearances

"Staff standing by made the play more attractive."

Area: Art and Creative Nursery D
100 appearances

As previously described, this Area was 'controlled' by an adult. "The adult controlled the degree of freedom the children might have experienced and imposed codes of behaviour as well as painting techniques."

Area: Art and Creative Nursery F

69 appearances

"Adults, in fact, spent most time in the Art and Creative Area although it was noticed that the time was spent in making artefacts for children, rarely with them. This particularly applied to the N.N.E.B. students. It was thought that the students were often impatient to observe the end product."

Area: Art and Creative Nursery G

65 appearances

"Neutral and absent behaviour resulted in the children being either unoccupied or onlooking. This was due to the fact that on two occasions an adult was making Christmas models and the novelty of this attracted the children without involving them constructively."

Area: Art and Creative Nursery E

62 appearances

"An interesting fact about this Area was that the adults were present for the highest number of minutes but is a disappointing one, because, for more than half of the time, they were not relevantly involved with the children. The

presence of the adults was necessary because there were scissors in the Area though the children were never seen or encouraged to use them."

Area: Art and Creative Nursery B
55 appearances

"A member of staff was invariably in the Art and Creative Area. Here is an example where there may have been too much adult participation. The children's efforts tended to be directed by the adult."

It would appear that the adult role in the Art and Creative Area was not always an educative one. Over-emphasis on pictorial result could indicate preference for presentation standards rather than child involvement.

The Book Area and Adult Presence

Area: Book Nursery F
30 appearances

"It was here that verbal interaction between child and adults occupied one third (approximately) of the time, in minutes, spent in sampling. Some children, however, preferred sitting in the rocking chair without a book - just rocking themselves in a soothing manner, or standing watching the adults read to other children."

Area: Book

Nursery D

30 appearances

Only on two occasions was an adult present using the opportunity to read to the children. The Area was used by the nursery assistants when they were making apparatus and the children were attracted by the novelty of the situation. Children also used the Area as a place just for sitting without being engaged in any activity.

Area: Book

Nursery A

22 appearances

"When a teacher appeared in the Area, and began to show signs of reading a story the quality of behaviour improved and the children gathered round her. A conclusion arrived at from our observations is that the three year old children, most of them having started in the Nursery in September, exhibited a marked interest in the Area and in the books, but at the age of four, this interest had diminished considerably.

Area: Book

Nursery G

20 appearances

"The following points are relevant:

- 1) The Book Area lacks entity,
- 2) The number of books displayed

is rather small and related accessories, such as puppets, mobiles, pictures, are lacking,

- 3) The staff often tell stories in another Area when groups are gathered together for milk or after lunch.

Whenever I sat in the Book Area, children immediately approached me with requests for stories.

It would appear that the Book Area had a dual purpose but the presence of the adult was necessary for educative pursuits."

Area: Malleable

Nursery D

40 appearances

"The high rate of stability in this Area resulted from the fact that they had to put aprons on and that there was an adult present, or nearby, most of the time. The children enjoyed this Area."

Area: Malleable

Nursery A

32 appearances

"Imaginative play increased when a teacher was present."

Adult presence promoted and instigated enjoyment and creative use of materials.

All other Areas had less than 25 appearances, except in Nursery G where Music had 25 appearances. This was an Area sited off the main play-room, scoring high for siting since it had an open entrance. No comment is made on adult interaction but the Area was active - "children were usually drawn by the sound of music and wanted to join in. The Area was high in co-operative play as the children frequently played instruments together as a group." The influence of the teacher was probably felt here.

The low incidence of adult appearance in the Areas House, Blocks, Sand and Water may be accounted for by the teacher's reliance on the educative potential of the equipment. Here the work of the adult may be seen in the choice and arrangement of equipment. The quality of the child's response, however, without adult over-sight would prevent evaluation, both of the equipment and the child's progress.

Quality of play with/without the
presence of an adult

Using categories of

Imaginative and Relevant play = RELEVANT

Irrelevant and Absent play = IRRELEVANT

we have the following percentage of behaviours linked with the number of adult appearances in each Area (see Table overleaf).

Percentage of Relevant and Irrelevant Behaviour
linked with number and percentage of
adult appearances in each Area

Nursery	Manipulative	Books	Rollable	Art & Creative	Blocks	Large Apparatus	Music	House	Sand	Water	Total %
A											
Relevant	77	47	96	83	78	90	84	80	86	93	81
Irrelevant	23	▲53	4	17	22	10	16	20	14	7	19
Adult	17	22	32	33	5	12	17	3	11	9	16
B											
Relevant	85	80	89	73	75	81	80	87	99	93	84
Irrelevant	15	20	11	▲27	25	19	20	13	*1	*7	16
Adult	10	15	—	55	—	—	10	10	—	—	10
C											
Relevant	83	61	96	86	84	91	96	90	100	100	89
Irrelevant	17	39	4	14	16	9	*4	*10	*—	*—	11
Adult	9	—	12	—	—	100	5	1	1	—	13
D											
Relevant	82	60	65	82	57	90	85	78	81	96	78
Irrelevant	18	▲40	▲45	▲18	43	*10	15	▲22	19	*4	22
Adult	10	30	40	100	5	—	5	20	—	—	21
E											
Relevant	80	63	91	64	59	71	100	61	88	93	77
Irrelevant	20	37	9	▲36	41	29	*—	39	12	*7	23
Adult	2	7	12	62	2	4	5	1	—	2	10
F											
Relevant	90	85	91	83	91	81	82	84	87	100	87
Irrelevant	10	15	*9	17	*9	19	18	16	13	*—	13
Adult	9	30	—	69	—	—	—	—	—	—	11
G											
Relevant	91	82	90	71	63	94	82	95	93	91	76
Irrelevant	9	▲18	*10	▲29	37	6	18	5	*7	*9	24
Adult	18	20	5	65	—	30	25	8	5	—	18

* It would be expected that a low adult presence would produce high irrelevance, but in 16 Areas, 5, or fewer than 5, adult appearances are shown and nevertheless 90%, or higher, relevance of behaviour.

▲ Conversely it would be expected that a high adult presence would encourage low irrelevance, but in 9 Areas with 20 or more adult presence there is over 18% of irrelevance, though this is mainly absent behaviour.

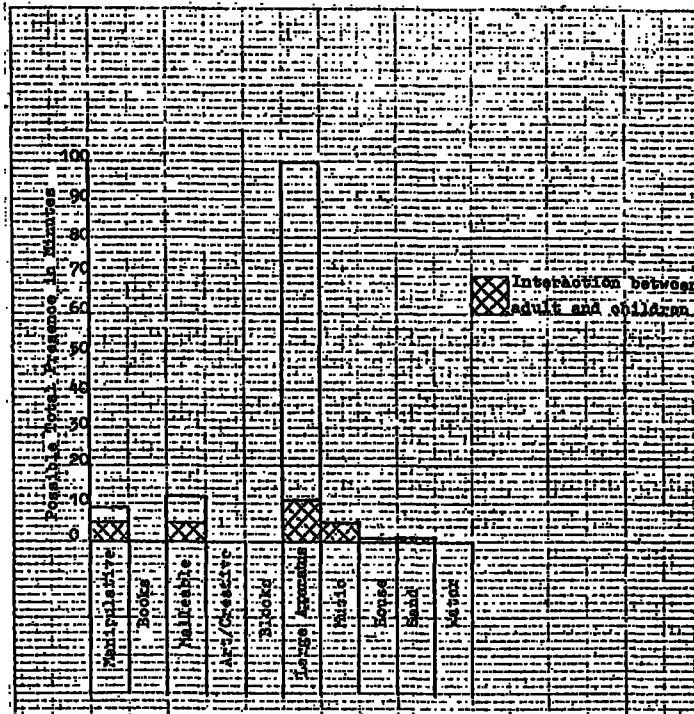
- * In the Sand Areas $\frac{3}{7}$ of the Nurseries get on relevantly, i.e. over 90% without an adult.
- * In the Water Areas $\frac{6}{7}$ of the Nurseries get on relevantly, without an adult.
- ▲ In the Book Areas $\frac{3}{7}$ of the Nurseries have high irrelevant play, in spite of the adult.
- ▲ In the Art and Creative Areas $\frac{4}{7}$ of the Nurseries have high irrelevant play, in spite of the adult.

Relevant/Irrelevant criteria, however, indicate only the child's unsupported response to Area opportunities. Increased adult interaction would be necessary to promote understanding, and consolidate through language, developmental progress. It would appear that countless teaching opportunities are overlooked (Jackson, 1968; Thomas, 1972) particularly in the Sand and Water Areas where concept development (number, weight, space, capacity and time) is taking place.

Nursery C

In this Nursery a note indicated the amount of interaction during adult presence in the Areas (see graph and list of Areas observed overleaf). It highlights the lack of quality in adult interaction.

Adult presence and interaction. Nursery C



An adult was present for 128 minutes (i.e. 12.8% of the possible time during the study). Only 25 minutes of the adult present time (i.e. 2.5% of the possible time), was spent in interaction situations, e.g. in the Large Apparatus Area an adult was always on supervisory duty for safety reasons but was not necessarily communicating with the children. This is a very low interaction time.

List of Areas Observed showing
Adult presence and influence in Nursery C

1. Manipulative

9 minutes adult presence. 1 minute teacher entered Area to ask older girl in group of three to look after another child who had just returned after absence and was feeling miserable. All the children went off to another Area to do this. 3 minutes N.N.E.B. student clearing up apparatus. 5 minutes qualified N.N.E.B. assistant playing with the children, and prompting conversation.

2. Book

Adult entered to borrow a table and left immediately.

3. Malleable

12 minutes adult presence. Delivery of coffee - 3 minutes, no change in play. N.N.E.B. student helping and talking with children, 5 minutes, play as usual. Visiting student presence, 4 minutes, no change in play.

4. Art and Creative

No adult present when Area was being observed.

5. Blocks

No adult present when Area was being observed.

6. Large Apparatus

100 minutes adult presence. This constant adult presence is for safety reasons. Out of the 100 minutes, there was interaction between adult and children for 11 minutes. 4 minutes qualified Nursery Nurse playing "Jack-in-the-Box" game with a group of children who were taking turns to get into the barrel. 5 minutes qualified Nursery Nurse leading game of football, conversation about kicking and dribbling the ball. 2 minutes qualified Nursery Nurse sweeping up leaves, helped by children.

7. Music

5 minutes adult presence. Nursery teacher was playing records, moving herself, and encouraging the children

to move and clap in response to the music. This 5 minute period accounted for 18 out of the 28 total appearances in this Area, and produced the only instances of associative behaviour recorded in the Area.

8. House

1 minute adult presence, visiting student, no change in play.

9. Sand

1 minute adult presence. Child given help in finding a lorry. No change in play.

10. Water

No adult presence when Area was being observed.

Such low interaction figures in Nursery C are counter-balanced by a high percentage of relevant play, 89% - the highest of all Nurseries. The staff were aware of the variance within their role and the teachers undertook responsibility for the educative function whereas the Nursery Nurses were controllers, caretakers and comforters. It was interesting that the Nursery Nurse commented

on the fact that when she stopped to consider what she was doing, and was aware that play was going well, she felt unnecessary. Uncertainty of role and function, observed by Gardner and Cass (1965) led to the adult concerning herself with equipment and materials rather than children.

Discussion of Areas

Manipulative Areas

These were popular Areas in all seven Nurseries, ranking $3/10$ for boys, $4/10$ for girls and $4/10$ for all children in number of appearances, and ranking $4/10$ in mean population.

Their holding power was ranked $4/10$ with 99 four minute stabilities. The mean size, $5.14m^2$, was ranked $7/10$ (range $2.5 - 8.0m^2$), indicating that they were small Areas.

Qualities of behaviour showed significant sex differences. The boys were more imaginative than the girls, more solitary in their play but also more associative and co-operative. The girls showed more neutral and absent behaviour and socially were more negative, being more unoccupied and onlooking than the boys. It appears that in this Area the boys were more content and more purposeful than the girls. The Manipulative Area also showed clearly the positive social developmental trend with age though the older children showed more solitary behaviour here than the younger. Adult presence in the Area was minimal (75 appearances) but it was the only Area with a count in each Nursery.

The Manipulative Area is an important one from this evidence - catering for fine motoric activity of a physically restful nature and stimulating ideational thinking and verbalisation.

The picture that emerges of Manipulative Areas is one where space is limited but where children are more sedentary and perhaps more occupied in their work with free exchange of conversation while pursuing individual projects. Teaching, educative interchange of ideas between adult and child, was minimal with the adults relying on the quality and characteristics of the equipment to support ongoing behaviour and appropriate responses. Development could come through opportunities for group behaviour with larger type interlocking, connector, manipulative material, e.g. Matador, Playpax. Such introduction would call for physical expansion of the Area and possible link or near siting to, for example, the Block Area, so that a wider range of activities could take place with the possibility of co-operative group behaviour.

Book Areas

The Book Areas were not popular, ranking 7/10 in number of appearances for boys, 5/10 for girls and 7/10 for all children. Mean population over all Nurseries was 69.5, ranking 7/10. Size ranged from 2.4m² - 18.5m² - mean 5.14m², ranking 7/10 overall. Size did not appear to be related to popularity. The largest Book Area, Nursery C, was multi-purpose leading to breakdown in functional use, and the smallest Book Area, Nursery F, had the highest population density of the Nursery, because of adult presence. The holding power of the Areas ranked 7/10 with 70 four minute stabilities.

Qualities of behaviour showed significant sex differences. The girls used the Area more relevantly and with greater imaginative behaviour than the boys. The children were happy in the Area but the boys did show more neutral and negative behaviour and were more destructive. Socially the girls showed more onlooking behaviour and were often more solitary. They were overall more positive in their social behaviour, more associative and co-operative than the boys. This was an Area where girls were more purposeful

than boys, but the significant age differences are of interest. Younger children were more onlooking and unoccupied but scored equally with older children in solitary behaviour. They were more parallel in their behaviour than older children but less co-operative. The Area showed more solitary behaviour than any other but also had the highest count for unoccupied (as distinct from solitary) and this appears to suggest that the Area needed some positive reinforcement through continuous adult presence or mechanical aids which could act as a substitute.

Book Areas need special siting, not cut off from the general round of activity but enclosed, comfortable and reasonably quiet for concentration and retreat from physical exertion. If children are to begin to appreciate books, use them properly and learn to recognise them as a source of wonder, enjoyment and information then they must be helped by purposeful adult intervention. Ideally the Area should have a team of adults in almost constant attendance, using books with the children, seen using books for pleasure and information and telling stories at intervals throughout the daily programme of events.

Probably the Book Areas were more used by the adults at times other than that during which the count took place, e.g. at the end of the morning when a quiet group activity is often organised before lunch or at the end of the day. However, such activity should ideally stimulate individual use of the Area. The supply of highest quality picture book literature is so good that Book Areas should attract human beings of all ages at all times.

Malleable Areas

These were girl dominated, ranking $2/10$ for girls, $8/10$ for boys, and $5/10$ for all children in number of appearances and ranking $5/10$ for mean population (84.9). They were small in size, range $1.8m^2 - 6m^2$, and mean size, $2.97m^2$.

Behaviour was sedentary, the children sitting around a table and in Nursery D a high proportion of absent/participation behaviour was recorded by children waiting idly 'for a turn'. It is of interest that the media appeared to promote more associative behaviour, than in the Manipulative and Art and Creative Areas where activities were similar. The more malleable media had fascination, particularly for the girls and the Areas had high stability, ranking $3/10$ with 108 four minute stabilities.

Qualities of behaviour had significant sex differences. In participation the girls were more relevant and imaginative and constructive. The boys were more neutral and destructive. Emotional affect shows no significant difference between boys and girls but social differences were significant. Boys showed more solitary behaviour and girls were more onlooking. The girls were more positive socially than the boys, showing more associative and co-operative behaviour than the boys. The girls were more drawn to the Area and their behaviour was more purposeful. Age differences were not significant.

Adult presence showed 101 appearances but two Nurseries (B and F) showed no adult presence at all. Such a 'safe' Area - the media carry negative risk to small fingers and thumbs - might well be considered low priority in a Nursery where outside play figured largely on the programme as in Nursery B and where the 'control' element was high as previously mentioned in Nursery F.

Malleable Areas offer much opportunity for aesthetic satisfaction as moulding and fashioning is a basic physical function. Promotion of the Area could lie through either close proximity to House or incorporation with the Art and Creative.

Art and Creative Areas

These Areas were dominated by girls, ranking $\frac{6}{10}$ for boys, $\frac{3}{10}$ for girls and $\frac{6}{10}$ for all children in number of appearances and $\frac{6}{10}$ mean population (79.2). They were larger, 9.16m^2 than Malleable and Manipulative, possibly because of use of easels and the range of size was considerable, $2.9\text{m}^2 - 20.9\text{m}^2$, reflecting possibly the importance teachers placed on these activities. And yet this appears contradictory as the smallest Art and Creative Area, 2.9m^2 in Nursery D, had an adult present on all occasions and a high population density. The adult function was one of control and a picture is conjured up of children painting almost by instruction and to time! The Areas ranked $\frac{6}{10}$ for stability with 90 four minute stabilities.

Qualities of behaviour showed significant sex differences. The girls showed more imaginative behaviour than the boys but also more irrelevant play. The boys were more absent/participatory, more neutral in affect but no child was scored for negative affect. There was no destructive play in the Area but the girls showed more neutral/constructive behaviour than the boys.

Socially the girls were more positive showing more associative and co-operative behaviour. They were also found more often in solitary play. Age differences were significant. More older children used the Area and they were more associative than younger children. There was not much co-operative behaviour in the Area but younger and older behaved in this fashion. Older children, however, were more associative while younger were more unoccupied and onlooking.

Adult presence was highest of all Areas with only one Nursery (C) showing no count. The overall high score was largely caused by Nursery D, already commented on for the control element. This adult presence did not always have the educative effect of stimulating creative activity when the adults adopted an over-controlling or over-participatory role. Then the children were either over-conscious of direction or were forced to act in a stereotyped way, e.g. sticking on 'a snowflake'. Picture making for decorative use can be a trap into which adults can fall, employing children in a non-educative way. Picture making by children should be creative and aesthetically stimulating to the child-artist as he explores his media and creates through individually constructed thoughts

and ideas. Guidance is needed in use of tools or through provocative discussion but the child's picture should be his own invention.

Blocks Areas

These were popular Areas in all Nurseries, ranking $2/10$ in number of appearances for boys, $9/10$ for girls, and $3/10$ for all children. Thus the Areas were largely dominated by boys in each Nursery. The mean size $4/10$ was $8.77m^2$, the range being $4.9m^2 - 11m^2$, indicating that they were larger: size being dependent upon the number and quality of blocks each Nursery provided. The Areas were carpetted for warmth and protection. Their holding power was $5/10$ showing 92 four minute stabilities.

Qualities of behaviour showed significant sex differences. The boys were significantly more active in all categories of participation, particularly in imaginative behaviour. Behaviour was positive in affect for both sexes, the small amount of negative affect being shown by the boys. Constructively they were different from the girls, more destructive and negative but this was because it was a male dominated Area, and the play by the boys was perhaps more

involved. Age differences were significant. Younger children were more unoccupied and onlooking and older more solitary. Younger children showed more parallel and associative play but the older more co-operative.

Adult presence (12) was abysmally low; three Nurseries, B, D, F showing no count. The Area had high co-operative play (second only to House) showing that the material had high potential for exchange of ideas and goal oriented behaviour. Adult presence could have stimulated further thinking, but the safety of the medium probably led to neglect of the Area by the adults.

Blocks Areas can provide fundamentally satisfying constructive opportunities for children. Great care is usually taken in the quality and variety of material and the Areas can cater for varying social needs. Earlier experiences of balance and manipulation should develop into actual construction allowing full range to imaginative ideas and co-operative venture. The alignment of Blocks Areas is important, e.g. in separating Blocks from Large Apparatus in Nursery E - we were guilty of destroying qualities of play though the

children were probably re-acting against disturbance of the known routine. Alignment with Manipulative Areas, when small toys may be added to larger constructions, e.g. cars in garages, can lead to richer play. Proximity to Large Apparatus may provide new experiences and new ideas, e.g. 'stepping stones' between pieces of equipment.

Large Apparatus Areas

These are clearly one of the most important Areas in the Nurseries. Our study, undertaken in the months of inclement weather, limited the variety of large physical apparatus to indoor provision with the exception of one Nursery (C), which had a large enclosed verandah and could offer almost the full range of physical action under any type of weather condition. A second Nursery (B) kept the outdoor option open, but it was of interest that some children preferred the indoor apparatus and although the 'outside' option reduced the count of behaviours the proportions compared favourably with the other Nurseries.

The Areas ranked $\frac{1}{10}$ in order of number of appearances for boys, $\frac{6}{10}$ for girls and $\frac{1}{10}$ for all children. The mean population

(127.1) was ranked $1/10$ and boys dominated the Areas in five Nurseries. Mean size was $38.15m^2$ but this mean was affected by the large area previously mentioned - excluding that Nursery the range was $1.92m^2$ (the outdoor option open) - $14.4m^2$, including it, the range increases to $190.92m^2$. There were the greatest number of four minute stabilities (142) - the greater proportion of these at the younger and older ends of the age range. The girls in the Nursery with the largest area scored their greatest number of four minute stabilities but as this Area also scored highest for adult appearances (safety element primarily), this may have been a contributing factor.

Qualities of behaviour showed significant sex differences. In participation the boys were more active in every category. The overall affect was positive but boys showed more neutral negative behaviour than girls. Constructively the boys were more in evidence, more neutral, more destructive and more negative because they were more active. Only in one Nursery (D) was there a higher girl than boy presence. Socially the boys were more active in each category but were significantly higher in parallel, associative and co-operative play. Age differences were

significant. The older children showed more unoccupied behaviour as well as solitary: younger children showed more parallel but older children more associative and co-operative behaviour.

Adult presence was second highest overall but this was because of the high priority of Nursery C, where an adult was present throughout the count. Three Nurseries, B, D, F, had no count. The discrepancy reflects the difference of emphasis Headteachers place on 'safety', but it should be remembered that it was Nursery C that had the largest Area with a wide variety of apparatus.

Large physical apparatus is essential for use by young children, since their bodies are their basic equipment for coming to terms with the physical world. Physical achievements in, for example, climbing, swinging, twisting, balancing, bring their own rewards and contribute to self satisfaction. They provide the antidote to sedentary occupations and the popularity of these Areas could suggest that education after five should offer this opportunity more freely.

Music Areas

These Areas were not popular with the children, ranking $9/10$ in order of number of appearances for boys, $7/10$ for girls, and $7/10$ for all children. The musical life of a Nursery appears to be dependent upon the adults stimulating and being concerned with musical activity: only then will children carry over from the adult conducted musical experience into free choice of play activity. It could be a tendency to think that because musical parts of the programme (singing songs, dancing and moving to music, usually group activities) are popular, the incidence of 'play' musical behaviour is not important. It appears that something of this attitude was prevalent in our Nurseries because the children did not frequent the Areas. The mean size of the Areas was $7/10$, $3.27m^2$, the range being $.29m^2 - 13m^2$ - the latter size being the room adopted by one Nursery as a music area. Holding power was ranked $8/10$, showing 56 four minute stabilities.

Qualities of behaviour did not show significant sex differences overall though there was a prevalence of relevant, positive affect and constructive play. Sex differences were significant socially. Girls were more

unoccupied in the Area and boys showed more solitary behaviour. Differences were less in parallel behaviour but the girls were more associative and co-operative. Age differences were not significant.

Adult presence (67 appearances) was low, Nursery E, where a music 'room' had been created showing most musical activity by both adults and children. The Music Area is probably, as previously described for Book, in use at peak times under adult leadership, e.g. singing together, finger plays and percussion band and these activities would be likely to take place towards the end of morning and afternoon sessions. However, as in Books, it did not appear that such sessions stimulated the children to individual musical activity at other times.

House Areas

These were popular Areas being ranked $4/10$ in order of number of appearances for boys, $1/10$ for girls and $2/10$ for all children, mean population being 116.2. They were largely dominated by girls except in one Nursery (D) where some 'abuse' of the Area by the boys was reported. The Areas reflected all aspects of

home life during the count, ranging from domestic to experiences perhaps not contained within the home, but affecting home life, e.g. hospitals, hairdressing salons, with built-in dressing-up, and apparatus for extension of 'home' - shopping and going for walks with baby. The mean size was 9.4m^2 , $^2/10$, the range being 4.9m^2 - 18.7m^2 .

It was evident that the Nurseries attached great importance to this type of play and the children responded. The Areas ranked $^2/10$ for four minute stabilities (136) and showed a constant pattern throughout the age range. In six Nurseries, girls' four minute stabilities were twice those of the boys. In the remaining Nursery where boys' four minute stabilities were greater than girls' it was noted that the contents of the Area varied for each count and catered well for both sexes. Only in one Nursery (E) was irrelevant play above 20% where the abuse previously mentioned was unfortunately allowed to develop. It is of interest that this continued over the period of the count - showing the boys' need for large physical movement but also neglect of the Area by the adults where adult presence was scored only once.

These Areas promoted the highest, $\frac{1}{10}$, score for co-operative play, 30%; fourth highest, $\frac{4}{10}$, associative, 38% and low parallel, $\frac{9}{10}$, indicating that children were more aware of each other and wanted to socialise in this, the second most popular play area.

Qualities of behaviour showed highly significant sex differences. In all Nurseries there were more girl than boy appearances. The girls were more imaginative: the boys showing more irrelevant behaviour but less neutral. Affect was positive, the girls showing more content than the boys but also more neutral behaviour. There was a count of 1 for the girls of negative behaviour and 2 for the boys showing that the Area was highly successful. The boys showed more destructive and absent behaviour than the girls in the constructive category. Socially the girls were more positive, showing more parallel, associative and co-operative play but also more solitary than the boys. House was a female Area overall but the boys, except for Nursery D and E where there was some unfortunate behaviour, also played well in the Area. Age differences were not significant again suggesting the importance of House play.

The Area is a significant one in the life of the Nursery - promoting social behaviour into the highest categories. Adult presence was minimal (43). It may have been that the Nursery adults were satisfied with the positive affect, qualities of behaviour and degree of social intercourse among the children. Nevertheless, the adult can stimulate ideas, add vocabulary to ongoing behaviour or, if only observing, can use evidence for changes of equipment to effect desired result.

Sand Areas

These Areas were not popular, ranking $5/10$ for boys in number of appearances, $7/10$ for girls and $7/10$ for all children, the mean population being 56.8, $8/10$. The Areas were small, 2.73m^2 , $9/10$ mean size, the range being $1.8\text{m}^2 - 4.8\text{m}^2$. It is likely, therefore, that the number of children using the Areas would be limited and as adult presence was minimal, there would not be the added attraction which had promoted high attendance in small areas.

The holding power of the Areas was low, ranking $9/10$ in number of four minute stabilities (51).

Qualities of behaviour showed no significant sex differences though there was the reported prevalence of relevant, positive affect and constructive behaviour. The Area showed more instances of positive than negative social behaviour with the peak at associative level but sex differences were not significant. Age differences, however, were significant. Younger children were more unoccupied and solitary than older who showed more onlooking behaviour. Younger children were more parallel, more associative than older, but less co-operative. Younger children made more appearances in the Area than older. Observation showed that the younger children were more content to explore the medium but older children used the Area (onlooking) until something more attractive became available. However, when they did involve themselves it was usually in a co-operative venture, e.g. cake-making, castle-building.

Adult presence was minimal (17) being recorded only in three Nurseries.

It may be argued that Sand is a safe basic material for manipulative and moulding purposes and, therefore, children do not need adult presence and stimulation. Conversely, the

medium may be seen as offering valuable intellectual pursuits, furthering concepts of size, shape, weight and volume, all dependent not only on experience but also on guidance and teaching.

Water Areas

These were the least popular Areas, ranking $10/10$ for boys, girls and all children. They were the smallest Area in all Nurseries, $10/10$, $2.73m^2$, the range being $1.8m^2 - 4.8m^2$. Their holding power was ranked $10/10$ with 26 four minute stabilities.

Qualities of behaviour showed no significant sex differences. The Areas were neglected by the children though the appearances resulted overall in relevant, positive affect, and constructive behaviour. Socially the appearances showed the overall trend with the peak at associative level. Boys did show more co-operative behaviour than girls but this was not a significant level. Of all the behaviour in the Area, Water showed the highest percentage of associative behaviour, suggesting that this Area could have a very positive part to play in promoting social behaviour.

Age differences were significant. Younger children were more onlooking: older children more solitary. Younger children were more parallel and older children more associative and co-operative.

The neglect of the Area and the medium is to be regretted. Adult presence was lowest of all Areas, 11 appearances, with five Nurseries showing no count. And yet the children were using the medium with confidence as it is, of course, an elemental one, satisfying physically and aesthetically. There was some evidence to show that attention to equipment affected population but this was not enough to promote attendance overall. The Water Area is one which should be used to strengthen mathematical experience and to develop concepts. Intellectual goals can be indicated through choice of equipment and intellectual grasp strengthened by adult interaction.

Educational Implications of the Study

The study appears to highlight a need to have the objective means of coming to terms with ecological forces. The tepidity of the results, the lack of decisive conclusion could be the natural outcome of the methods of investigation. There remains, however, some conviction of the degree of appropriateness of the method to such a delicately complex field of inquiry. It is plainly demonstrated that psychological ecology itself is exceedingly complex and in attempting to look closely at the most obvious aspects of, for example, population density without disturbing the natural scene one cannot overlook a host of variables each interacting with relative strengths as a result of the most dynamic variable of all - the child. Nevertheless the child's eventual decision to occupy an Area and the qualities of his involvement is something to be cherished and known about. An ecological survey will furnish illuminating knowledge and it is not a difficult investigation to mount. It is dependent on reasonably sophisticated knowledge of children and behaviour categories, but this is built up by teachers

especially if they set out to increase their observational expertise. Looking closely at behaviour as demanded by ecological survey is surely one of the best means of sharpening awareness.

Population Density

A teacher needs to know not only the range of opportunities as determined by the evident provision but also something of that which determined the choice of Area by the child. The study has revealed some of the variables affecting that decision but has failed either to highlight any one variable, or shown possible connections between variables. The size and siting of Areas together with the characteristics of work engendered by each Area appears important. Observational evidence resulted only in lists of criteria for good and bad siting but there was evidence from Nursery F where a pilot study had suggested changes in siting that more even population had been achieved and from Nursery B where siting was an aspect of Nursery provision high on the Headteacher's list. This Nursery had high correlations between population density,

size and siting. The evidence remains merely indicative. It would be infamous, however, to experiment, for example, by inconveniencing children through the setting up of deliberate negatively sited Areas. There was some suggestion of aligning Areas (Nursery F) and of merging (Nursery G) with fewer demarcations to improve distribution of population and affect behaviour pattern. Quality of material is a variable more often taken into account and the study appears to show how even subtle inadequacies can have an effect on children's choice of action and quality of behaviour. Cockrell's work in 1935 highlighted the qualities of a play activity likely to attract children and promote sustained effort. Nursery schools could organise their resources more effectively. One school, after the study had taken place, achieved a higher standard of provision of quality of material when members of staff became responsible for provision within certain Areas for a limited time. Unfortunately no means were employed to obtain an objective estimate of any 'improved' quality of work. A schedule of objectives tied into increasingly enriched material together with a scaled assessment of children's achievement would do something towards

a more realistic appraisal. Population density or, to put it more simply, why children chose certain Areas rather than others, is a very important question. The study does highlight the neglected Areas, e.g. Sand and Water, two Areas offering elemental experience and which should occupy an important place in the priority of learning experiences. Teachers should be concerned that all children are reacting to challenges of strengthening and deepening mathematical concepts for it is in these early basic experiences that there lies an indispensable, as yet undocumented, factor for further development.

Mobility

The study has attempted to use a concept first developed by Shure in the Nursery school, which in no way affects, or impedes, the free form of choice and free flow of movement. A mobility study could be isolated and tailored to answer the question relating to degrees of holding power of an Area or conversely, children's individual movement patterns. An Area with high mobility gives indication of less than satisfying experience: a child who

'flits' in butterfly fashion needs help, likewise one who is unable to make fullest use of all opportunities. The young twin boys of Nursery G who stayed together mostly in the Large Apparatus Area during the count, were beginning to need help towards fuller exploration of the Nursery. The study indicated a tendency towards greater stability with age for the girls but not for the boys. There were too many descriptions of play which lacked purpose (e.g. Nursery D, the 'rushing' of the boys into the House Area; Nursery E, the 'monsters' game) by the boys, increasing their mobility and indicating a lack of goal oriented opportunity appealing to the boys. This could be a reflection of female-adult dominance and a necessary development in staffing is the appearance of the young adult male who would act as an identity figure for girls as well as boys, but would also introduce more male pursuits likely to hold the attention of older boys. This is not to produce a cleavage of sex interests but rather to enrich the spread of interests for all. There was a noted lack of 'scientific' opportunity, e.g. clocks, bells, wireless, cars, chemistry, which would have attracted boys and girls alike. It is of interest

that Child Care Centres in Denmark and all organised playgrounds are staffed by both sexes. Young males serve while studying Child Development, as part of their teaching qualification, or while studying in the Social Sciences.

It would be reasonable to expect that length of stay in the Nursery would also increase stability. The study failed to provide evidence of this. Indeed there was a falling away of sustained activity as time in the Nursery increased. Did this mean that the provision failed the children: that they reached their maximum reaction after a few short months of Nursery attendance? An experimental study could be designed but the difficulties of controlling the personal variables would seem overwhelming (Brown and Hunt, 1961; Emmerick, 1964).

This is an issue of some importance to Nursery education. Is the Nursery School capable of making a substantial contribution to the development of children or is it a place of introduction only, serving as a link between home and school as in the case of a good Play Group? The Nursery School should be able to demonstrate its distinctive contribution of

which increased stability, increased inquiry, increased learning, increased intellectual reaction could be seen as an important part. The use of the mobility concept could conceivably contribute a good deal to such a declaration.

Qualities of Behaviour

The study demonstrated the preponderance of relevant and constructive play with positive affect. The negative aspects of irrelevance, destructive and neutral affect were well contained in low percentages overall. Within individual Nurseries, however, there was higher incidence with explanations usually confined to the individual characteristics of the Nursery. A teacher employing observational techniques even in a spasmodic manner could note negative qualities of behaviour and take appropriate action. The higher incidence was spread over the Areas, but two, Book and Art and Creative, appeared to show weaknesses of Nursery procedure of a more general nature. The Book Areas suffered from multi-purpose use weakening their identification with the very stuff of their existence, stories, pictures,

words, pleasant listening experiences. This was exacerbated in some Nurseries by stories being 'told' in almost any part of the Nursery and books not being used as sources of reference material. In general there appeared a lack of appreciation of the powerful affect of a good Book Area. Strongly identified, with the best of children's literature being projected through natural voice, tape-recorder and other devices as well as the aesthetic value of quality illustrations, a book could be the most educative of all experiences. Adults were not readily available, machines were not in use and this led to a higher incidence of negative behaviour in four Nurseries. In Art and Creative the explanations appeared to stem from the over-directive behaviour of the adult concerned to produce artefacts of educationally questionable value together with over-control of apparatus. This was reported in four Nurseries. Educational implications seem to be tied into the role of the adult which will be fully dealt with later.

It is in the quality of social interaction that the study provides most useful information. Areas may be seen to have special attributes in promoting positive and negative behaviour, e.g.

House - Co-operative, Large Apparatus - Associative, Manipulative - Parallel and in the negative bracket Art and Creative - Onlooker and Book - Unoccupied. There is evidence here for full use of all Areas in order to promote a wide range of social experience. Solitary behaviour was seen to be associated with Blocks (confirming Shure, 1963) and Book. The teacher can do much to balance social experience, to promote social awareness and to help deepen the lessons from anti-social behaviour through manipulation of Areas, although the latter, scored through negative affect and destructive categories, was a minimal feature of all Nurseries. It could strengthen a teacher's therapeutic handling of a child to know when to encourage involvement, e.g. the Water Areas, underpopulated and under-used as they were, nevertheless had the highest percentage of Associative behaviour for any Area. Here is where a timid, unresponsive older child, habitually indulging in parallel play, might be introduced to an 'associative' atmosphere.

The study demonstrated that three Nurseries reached their peak of social incidence at Parallel. This could be judged as a lower level of overall

social behaviour than those whose peak was at Associative. Decisive action could be taken to promote more positive behaviour. The general trend was in a positive direction, supporting all previous investigation and there was an increase in positive behaviour with age (Arrington, 1943). It was a disappointing feature of the study that the age range was so limited and this is a disturbing feature of contemporary trend. Nursery schools should demonstrate their educative potential over a wide age range for all children to counteract what is hoped is a temporary tendency for their use as 'introductory places'. Undoubtedly there is a strong case for objective assessment, both of an ecological nature and individual appraisal.

An interesting feature of an ecological study is the possibility of extraction of an individual profile (see example overleaf). Here the child's movements and qualities of behaviour are isolated and such a profile may be compared to the general characteristics as they emerge from the total study. Thus each child may be described and rated against the prevailing tendency, e.g. in mobility/stability

Individual Profile - Ecology Study

Name																				
No.																				
Nursery	MSA	Manipulative Play	Blocks	Malleable	Art and Creative	Blocks	Large Apparatus	Music	House	Sand	Water	Mobility	Stability	E.P.V.F.						
PARTICIPATION		2	10	1	13	0	2	3	3	1	9	0	4	0	4	2	4	11	49	129
A Solent	42	10	17		3		2		4	6										
B Irrelevant	10					4	1	5												
C Imaginative	9						8		1											
D Absent	6	2				4														
TOTAL	67	12	17		3	8	11	5	5	6										
AFFECT																				
A Positive	63	12	15		3	8	11	5	5	6										
B Neutral	2		2																	
C Negative																				
TOTAL	67																			
CONSTRUCTIVENS																				
A Constructive	61	12	15		3	8	11	5	5	6										
B Neutral	2		2																	
C Destructive																				
D Absent	4					4														
TOTAL	67	12	17		3	8	11	5	5	6										
SOCIAL PARTICIPATION																				
A Unoccupied	3		2			1														
B Solitary	2					2														
C Solitary	3		1				1		1											
D Parallel	18	7	1		2	1		5		2										
E Associative	22	5			1	4	5		3	4										
F Co-operative	19		13				5		1											
TOTAL	67	12	17		3	8	11	5	5	6										

8-4 min. stability

and qualities of behaviour. If two studies were undertaken, one after a settling in period at the beginning of the academic year and another within one month of its end, such profiles would demonstrate rate of progress and any change of behaviour patterns. The first study could be used as a basis for individual therapy and ecological change: the second would serve to assess value of interaction and wisdom of ecological variation.

Adult Presence

The study revealed a very low percentage of adult presence in the Areas. This was undoubtedly caused by an inability to overlook the presence of the observer and demonstrated the unwillingness of the teachers to interact with the children in the hearing of another adult except when safety regulations (Adult presence in Nursery C, Large Apparatus), control of apparatus (Nursery D and E), and direction of art activities (Nursery G) became an over-riding factor. It appeared as if the teachers were relying on open-ended experience as a foundation for intellectual development. To some extent this may be a denial of the teacher's role. (Thompson, 1944; Bonney and

Nicholson, 1958). Piagetian theory recognises the role of structure. Speaking of Susan Isaac's ideal educative environment, Piaget is reported to have said,

"while the young child is impelled by its own inner tendencies to undertake a continual organising process of its experiences and to retain the results for use in subsequent attempts, some form of systemisation applied by the adult would not be wholly harmful."

(p. 168), 1971.

Help in the systemisation of knowledge demands adult presence and reliance on interaction from peers will fail to structure experience. The adult is required to be at first hand, in genuine contact with the child, making rational deductions by gesture, movement of objects or verbalisation but always inviting the child to move in a deductive way towards alternative solutions of problems. It is not enough to structure material exclusively so that the child himself can 'discover' - the moment may be too fleeting, the satisfaction too illusory for accommodation to take place. The adult must 'call' for reflection, abstraction and perhaps verbalisation. The teacher must show her respect of individual differences in rates and power of learning within a clear

developmental perspective by instituting 'match' between learner and situation. Thus guided discovery takes place with support for the quiet moments when a child may be actively constructing his own knowledge, for an active learner is not necessarily engaged in physical activity. While direct contact with real objects must provide the foundation for development, a blending of the child's own cognitive activity with empirical experience is necessary for logical mathematical knowledge - abstraction from co-ordinated action - which Piaget believes to be the roots of logic.

"We know today that experience is necessary to the development of intelligence but also that it is not sufficient in itself and above all that it occurs in two very different forms: physical experience and logico-mathematical experience."

(p. 37), 1971.

Any accompanying language, in itself not sufficient to transmit a logic, nevertheless causes the child to re-structure, re-invent, re-order his actions. Our Nursery schools did not instruct and thus did not fall into the trap of 'information giving' but they appeared not to maximise the learning opportunities - the adults did not sufficiently interact with the children

stimulating them to classify or categorise behaviour and to consider alternatives. The sympathetic presence, word or gesture, can invite comment and recapitulation of ideas.

A direct result from the low interaction was paucity of language. A limitation of this ecological study was the neglect of language though it is difficult to imagine how a language count could be structured into the study without the use of very sophisticated technology. Even with such aid the isolation of children's utterances from the background noise promotes great difficulties (Shields, 1973). The observers could only gain the impression, and this was subjective, of low language usage both on the part of the children and the teachers. Direct teaching of language, however, has not been part of the English Nursery tradition. The language programmes of Beireter and Engelmann strike horror into the breast of many who have done much to make the English Nursery school the envy of the world. However, it may be claimed that reliance on language training, arising from normal everyday experiences as the children go about their work, demands adult presence. Giving the traditionalists

the benefits of appreciation of Piagetian belief in the need to establish insights without the trammels of early language, nevertheless the lack of adult presence could suggest an inability to appreciate just when the action might be accompanied and illumined by verbalisation. If the schools were emphasising the importance of thinking, it would be necessary to have an objective scale of action achievements, re. the practical solutions of problem situations directly set by the teachers. Even so it is difficult to believe that if teachers were observing their children closely they could withhold verbal communication.

This is perhaps the most important implication of this study, i.e. the need for increased adult/child interaction, though the lack of experimental design in an observational study prevents the accumulation of evidence to give weight to the implication. However, at least it does challenge the assumption that interaction is a normal requirement of the situation which is fully carried out. The teachers were with the children for only 14% of the observed time, thus denying many aspects of the teacher's role. As provider, caretaker

and controller, these aspects of role were seen to be upheld by the relevance, constructiveness and positive affect of the children's behaviour. As educator, promoter of language skill, participator and evaluator, the study has no evidence that these important aspects were receiving attention. The presence of the adult, moving and working with the children, even to the point of structuring group experiences (N.F.E.R. extension of Peabody Language Programme in Slough Nursery Schools) would seem a 'sine qua non' of the educational scene. And how the children reacted to adult presence! The variable of adult presence confused the logistical relation between size of Area and population density in so many instances described in the study. There appeared little doubt that the children wanted to share adult presence.

Piaget adds yet another dimension to the adult role.

"To educate is to adapt the child to an adult social environment, to change the individual's psycho-biological constitution in terms of the collective realities to which the community consciously attributes a certain value."

(p. 137).

The adult is seen as a model transmitting values, the potency of which is linked to her prestige. Her bearing, her actions, reinforce that which the child recognises as goals to be pursued. Furth (1974) believes that a distinguishing hall-mark of Piagetian theory is its goal-setting, the path towards these goals being not merely method oriented but self directing and the means the adult employs should illustrate the principles of learning. To tell, to instruct, merely to uphold, is not enough. The adult should help the child grow towards social and moral values through critical discussion, the allowing of wrong behaviour while preserving what is right about it so that the child can appreciate and accommodate. So a child can be helped to achieve social awareness through his own effort in personal experience and thus move towards autonomy. Ready made morality is seen to be in the same useless category as ready made knowledge. Opportunities for construction of moral standards and social values through the child's own reasoning are essential.

"If a child's thought is qualitatively different from our own, then the principle aim of education is to form its intellectual and moral reasoning power. And since that power cannot

be formed from outside, the question is to find the most suitable methods and environment to help the child constitute it itself, in other words, to achieve coherence and objectivity on the intellectual plane and reciprocity on the moral plane."

(Furth, 1969)

Our Nursery schools demonstrated this principle but the low level of adult and child interaction seemed to indicate a falling away of practice.

Further Research

Ecological research is descriptive. It has a potency of its own in setting the scene, in describing the action and relating the two. This study was undertaken to establish the educational viability of the schools: to serve as a background for more detailed observation of the children. The background having been established, a further investigation of the children's behaviour including language usage, and the introduction of the experimental situation of structured presence of the adult was undertaken.

THE SECOND STUDY

A PROCEDURE FOR PATTERNING RESPONSES
OF ADULTS AND CHILDREN
A.P.P.R.O.A.C.H.

Ecological research has many problems. The plethora of information gathered in naturalistic observation may often be more than surplus; indeed it may be impedimentary, to a major theme. The science of the experimental approach, its laboratory efficiency lingers nostalgically in the back of the mind. The compelling neatness of a hypothesis - its acceptance or rejection - is a temptation to reject the more fluid method since, it may be argued, the data must, in some way, be categorised eventually. However, the time sampling of the '30s demonstrated the limitations of selecting variables and rating during observation. Conservation of time and labour had led to a loss of detail, a contortion of the natural scene and a return 'to the way of studying behaviour while leaving it alone' (Wright, 1960), can be seen to be justified when technological devices can be employed. Above all, the advantages of naturalistic observation in the study of young children where behaviour is spontaneous continues to outweigh the deterrents.

It was decided, therefore, to adopt a second method of observation likely to be complementary to the ecology study where the emphasis had been on the quality of location, in order to permit a closer look at the verbal interaction of the individuals. A Procedure for Patterning Responses of Adults and Children was the code system used, acronym A.P.P.R.O.A.C.H.

Since language can be seen to have a crucial role not only in communication but also in conceptualisation and symbolic manipulation of the environment, it is not surprising that teachers of young children profess concern to promote its development among their charges. Research covers all aspects of language development but that most appropriate to this study viz. language used by young children in the Nursery school setting with and without adult interaction is somewhat limited.

A Review of Literature

The following review is intended to focus on work carried out in the school, day care setting with children of pre-school age. Thus much research which has undoubtedly influenced the writer is omitted, e.g. Brown and Bellugi (1967), Houston (1970), McNamara (1972), Bruner (1974), Wootton (1974). Some studies at present being undertaken in this country are not available in final form, but reference is made to those being undertaken in schools where findings are under discussion.

The work of Caldwell et alia (1970) is of supreme importance since it is her basic code which has been adopted to continue this ecological study. The code (A Procedure for Patterning Responses of Adults and Children), developed within the Nursery school setting over a period of more than a decade, describes the behaviour of a person alone or in a group, adult as well as child, from the frame of reference of the particular person called the Central Figure. Caldwell's subjects were a group of 32 children, eight in each of four age groups: 1 year olds, 2 year olds, 3 year olds and 4 year olds. The group was drawn from a nursery day care centre and included boys and girls, white and non-white, lower and middle socio-economic classes. Twenty minutes of continuous sequential observations were obtained for each child during two activity settings, structured learning time and unstructured (free play) time. Only the information processing predicates (10-19 of the Code) were reported.

Age was found to be a significant factor (F at .05 level) in the mean number of emitted clauses. Simple conversing showed a relative decline with age but continued to occupy the

largest share of information processing with inquiring, informing and role-playing showing marked (but uneven) increases with the age of the child. These predicates represented 18% of the total information processing output of the 1 year olds and almost 50% of such output for the 4 year olds.

In children aged 1 and 2 years, 97% of all the information processing behaviour transactions came from adults, 90% for 3 year olds and 70% for 4 year olds. This decline was evident in each of the separate predicates, giving support for high teacher-child ratios in educative settings. In structured settings there was a significant decrease in didactic adult-child encounters with age: older children were more often involved in group settings. This was not significant in the free play situation, suggesting that the teacher structured groups of older children for teaching purposes. In such a setting didactic teaching (informing) was a major technique up to 3 years of age but with 4 year old children the teacher used questioning. The differences in pattern of these predicates over the age range was significant at the .05 level. As the

children grew older there was a marked increase in communication with other children both at the conversational level and with the more complex predicates. There was a decline in ego-centric or self-directed verbalisation with age.

The detail of the study illustrates 'the power of an observational technique' to describe the social environment of young children in group settings even when such settings are not completely 'naturalistic'.

An unpublished doctoral dissertation (Cazden, 1965) of a manipulative experiment in respect of possible effect of different qualities of adult verbal interaction rather than amount of interaction can be seen to be complementary to Caldwell's study. The two specific forms of interaction were defined, by Cazden, as 'expansions', intensive and deliberate correction of the child's vocabulary and immature syntax, e.g. Child: Dog bark - Adult: Yes, the dog is barking - and 'extensions' where the child's utterance is followed up to maintain a reasonable conversation, e.g. Child: Dog bark - Adult: Yes, but he won't bite - I guess he is mad at the kitty. Three groups of

children, twelve in all, attending a day care centre in Boston, were the subjects where one group received 40 minutes a day of 'expansions', another of 'extensions' and the third, a control group, merely familiarised themselves with the tutors and the play room, which was equipped with toys and books selected to stimulate conversation. Tape recordings were made of each child's speech at the beginning, middle and end of a three month period and these were, after transcription, coded on six measures of syntactical development. Two statistical analyses were used to test the hypothesis that 'expansions' would provide the more effective treatment. In neither analysis was there evidence to support the hypothesis, but rather that 'extensions' were slightly more helpful in promoting improvements in grammar and sentence length. Cazden suggests that the richness of verbal stimulation may be a critical variable. Focussing on grammatical structure may be limiting whereas focus on ideas introduces more varied grammatical elements in the expression of the developed meaning. An impoverished language, Cazden suggests, may be harder, not easier, to learn.

In a discussion of Cazden's work, McNeil (1970) suggests that deliberate expansion as in this experiment could produce inattention as a direct result of over-concentration on child initiative. There might also be, since the children were young (28-38 months), some misinterpretation of meaning so that the 'expansion' made nonsense to the child, to interfere with his learning. Cazden herself (1972) states that 'artificial elevation of expansion rates may depress attentional processes in the child' and goes on to apply the psychology of attending in young children, 'not too familiar, not too strange', to the context of verbal interaction. 'Extension' produces that degree of novelty which is seen to be affective. Cazden concludes that there might well be a lesson here for reinforcement schedules that isolate specific features of the environment in an attempt to promote child development. It would seem that Bereiter and Engelmann did not heed the warning!

One of the most important projects undertaken in this country to study the effects of a language programme in Nursery schools is that carried out by H.L. Williams and his colleagues from the National Foundation for

Educational Research (N.F.E.R.). The aim during a six year action research was to develop and later evaluate the effect of a specifically designed programme of language teaching and perceptual stimulation in Nursery schools with special reference to socially disadvantaged children. Inspired by the then current belief that language made available to a child might be a 'lure for cognition' (Roger Brown), the programme was built around the Peabody Language Development Kit and its Manual. The Nursery schools involved were in the Borough of Slough and the first phase, the use of the programme, covered the period 1969-71. The planning and evaluation was the joint work of research staff and Nursery Headteachers. One hundred and fifteen children from the programme and eighty-nine control are being followed to produce a longitudinal comparison. The final report awaits publication and is likely to shed important evidence on the efficiency of language programmes, their enduring effects and the necessary qualities of a programme. One of the most interesting results of the Slough experiment is the production of the British Manual of the Peabody Language Development Kit (Quigley and Hudson, 1974). In working

through the sequence of activities it became apparent that many of the irritations for the British teacher arose from the fact that the pattern of language deficiencies among American Negro children attending ghetto schools, which the activities were especially designed to alleviate, was not applicable to British children. Furthermore, the minute instructions necessary for untrained teachers were not necessary for qualified teachers accustomed to autonomy in the classroom. A revised version, therefore, could eliminate these drawbacks while preserving the 'carefully sequenced, thoroughly programmed' nature of the original version, which, in the hands of experienced teachers, could introduce an element of structure into language stimulation. To this end the following revisions were made:

1. Pictures were re-drawn to produce British equivalents.
2. Stories were re-written in English and taped with an English narrator.
3. Lessons were given a more flexible framework in order to leave more scope for the individual's expertise.

4. Content was adjusted to emphasise the areas in which local children appeared to need help.
5. American tunes and poems were replaced by Nursery Rhymes and Jingles.

Such modification, reported by Hudson, made the programme an instrument better suited to the English tradition of Nursery education. With hindsight, again, experimentation might well have been delayed, until the British version was widely available.

Meanwhile some written reports (Williams, 1973 in CHAZAN) suggest that the initial notion of 'compensatory education' is proved to be a dubious one: that teaching is a matter of what is done and how it is done to the individual child: that methods should be judged in terms of quantitative and qualitative effect on the individual; particularly in the pre-school field. It is to be hoped that these benefits of hindsight will not completely invalidate the published findings.

The Peabody Language Development Kit was also used in the E.P.A. Action Research Project sponsored by the S.S.R.C. A report by Quigley (1971) on teachers' reactions to the programme is of interest to this study. Illustrating a generally hostile and muddled approach to the use of the equipment the report clearly shows the lack of systematised thought by teachers in respect of language development among young children. Broadly speaking, the dichotomy lay between "the traditional nursery approach where children extract vocabulary, syntactical competence and thinking skills from their interaction with a sufficiently lush environment skilfully guided by a non-intervening but omnipresent and omniscient teacher" and 180 sequenced lessons 'devised within the framework of Osgood's model of communication providing practice in auditory and visual reception, motor and vocal expression as well as associative, convergent and divergent thinking skills', viz. The Peabody Programme. Those teachers who adapted the programme and maintained a flexible approach were those seen to be understanding of the underlying principle quoted by Quigley from a personal communication from the deviser of the

programme: "You could throw away the materials provided and use your own but as long as you followed the sequence in which the material is presented and the amount of practice each skill receives you would still be teaching Peabody". Emphasis thus appears to be on sequence and regularity and recognition of the need to promote vocal thought. The report by Quigley subtly reveals the need among Nursery teachers to examine objectives in language development and the means whereby these might be promoted.

Meanwhile, Tizard (1975) reports interim findings from the Slough project. The experimental children made significant gains compared to their control on the Illinois Test for Psycholinguistic Abilities as well as in some of the perceptual tests. However, gains did not appear to be related to the length of time children spent within the programme nor were they related to social class. Later when treated at 7 years, i.e. two years after leaving Nursery school, there were no significant differences between the school attainments of experimental and control children. Detail in connection with these findings must be waited for in publication.

Finally the 1973-4 Annual Report of the N.F.E.R. throws light on a follow-up reaction from three Headteachers originally connected with the study. They decided to continue the special programme and to train their teachers and nursery assistants in the conduct of the daily language session and appreciation of its sequential nature. Leavers from one of the schools were tested by a member of the research staff and their performance was found to be decisively superior to that of their predecessors three years earlier. Later groups of leavers have averaged still higher scores. The report does not add that in some way this must affect the teacher's growing expertise and/or a growing relationship between what is taught and that which is tested.

Meanwhile, the West Riding Educational Priority Area Pre-School project, started in 1969, had demonstrated how pre-school programmes could have an impact on educational levels of attainment. The starting position for the programme was soundly based, recognising that a school programme could only have maximum impact if it operated over three levels, viz. the individual level, the group and the child's experience outside the group. Furthermore, the

interdependence of the three levels with recognition of the dominance of the third, was demonstrated to the children through the use of materials and people common to all three. This was in sharp contrast to 'isolation' programmes where school instruction in the group situation was the only teaching given. The shift of emphasis may be said to illustrate the recognition of the total educating forces of the whole of the waking time of the child's day.

Different forms of pre-school programme were structured within two schools, A and B. In school A the morning group (N = 26) were to follow the Peabody Language Development Kit sequence and the afternoon group (N = 24) ordinary traditional nursery work. In school B, the position was reversed - the morning group (N = 21) following the traditional programme and the afternoon the Peabody Language Development Kit (N = 21). In addition there was a morning group (N = 21) following an Individual programme, run not by the schools but by members of the E.P.A. project team. The model for this programme was to help the children recognise what they already knew (is

it a fair assumption that children from deprived backgrounds lack experience?) but learn to apply it to new situations thus developing verbal alongside conceptual competence. The Reynell Expressive Language Scale was used as a measure of pre- and post-test scores. The groups with intervention programmes had higher overall scores on the measure with differences on sub-parts of the scale. On age-level the intervention groups made gains significantly greater than the nursery group ($p < .025$) and in standardised terms the gains were significant ($p < .05$). Though the two intervention groups made similar levels of overall gain in relation to the nursery group, different parts of the expressive scale could be seen to contribute to this change. The P.L.D.K. group made greater gain on the vocabulary section than the nursery group ($p < .05$) whereas the individual group made greater gain ($p < .05$) on the 'picture description' section. On the 'structure' section the individual group scored significantly higher than either group ($p < .05$). It was hypothesised that such findings indicated the different effect of the two programmes.

In 1970 Tough selected four groups of children of nursery age, two of which were in nursery schools and two in the home situation. All sixty children were of comparable I.Q. (Stanford-Binet 105) but could be divided into those with favourable and less favourable linguistic backgrounds. Play sessions were organised in school and home for each child and the children's language used during the session recorded on tape. The data was examined to elicit

1. the kind of task for which
the child needed to
communicate,
2. the kind of information being
conveyed,
3. a description of linguistic
items and devices available
to the child.

Findings were presented on a comparative socio-ecological basis. The children in the 'less favoured' groups used language over a narrower set of categories of experience, selecting ineffective linguistic items for communication when concrete support for the listener was not present. This was due to their greater use of pronouns, less frequent

use of the noun phrase in shorter, less complex utterances. They used speech almost three times as often as the favoured children to secure attention for their own needs and to maintain their status by defending or asserting themselves. The 'favoured' children used more specification within the noun phrase and greater complexity within the verb phrase. They used language more readily for projection into imagined situations and for extension of planning and collaboration. At the age of three, children from linguistically favoured backgrounds were 'beginning to use language for recall, anticipation and planning, for explanations, for the expression of relationships and of possibilities'.

This study was later used as a springboard for a year's work planning a draft guide which would be likely to help teacher listen to children talking and to extend their vocabulary and syntax. "Listening to Children Talking", developed under the auspices of the Schools' Council, has now been distributed and is the official guide for a large complex project, "Communication Skills in Early Childhood". The first phase aims to make teachers more aware of how children use language, how to

extend talking and how to make useful records. In the picture situation teachers are shown how children may be helped to recall experiences, re-focus thinking as well as project ideas into the thoughts and feelings of others. In a toy situation language can be seen to be extended for planning, for deduction and for reasoning. Each group of teachers use video-tapes to form a basis for action and after use of the techniques in schools they meet and discuss findings. Appraisal of this first part of the project will be linked with the development of teachers' attitudes to ways and means of promoting children's use of language. The second phase of the project, "Fostering Children's Language", will carry more emphasis on the teacher entering into dialogue with the child. The techniques necessary, refined through the first part of the project, will be planned to be used in a systematic way, particularly for the benefit of those children who, by reason of their home backgrounds, have little experience of them. Using language as a means of learning and teaching is an art which has to be acquired both by adult and child. Tough's earlier work demonstrated class differences in communicative skills which middle

class mothers and children developed together, exploring meaning, enlarging ideas and solving problems. Thus the emphasis differs from the use of a "Language Programme" as with Peabody and relies more on the application of principles through individual people in individual situations, at the appropriate psychological moment in time.

The above may be seen as an alternative approach to the adoption of a language programme 'per se'. This modification would appear to many concerned with upholding the flexibility and spontaneity of learning particular to the English Nursery school to be more justified. It would likewise do something to explain how apparent dissimilar approaches to teaching can effect increased achievement when principles are well understood and used to under-pin practice.

In 1972 Thomas observed 20 children (10 boys and 10 girls) matched in age (4½-5 years) and nursery experience, for a complete day in the setting of a nursery class. Their activities and the time spent on them and all accompanying language was recorded in long hand. The language behaviour of the adults was also

recorded and the nursery environment scrutinised. All the responses and activities of the children were categorised and analysed in relation to intellectual/verbal ability and social class.

The amount of speech (measured by total number of responses) of the children was found to be associated with social class (sig. $p < .025$) rather than verbal ability or intelligence. Linguistic interaction between adults and children was minimal: the children did not respond linguistically to adult questions, who in turn appeared to make minimal speech demands. The patterns of adult speech were not more elaborate than those of the children. When more emphasis on verbalisation was made deliberately by the investigator the children did respond. The conclusion was reached that the amount and quality of adult interaction was determined by the adult's conception of the value of pre-school education which emphasised social/emotional development at the expense of cognitive benefits.

In design the work of Thomas reflects that of Menyuk (1953) when eight children with a mean age of 3 years 8 months were observed for two complete half-day sessions with written

transcription made of all language produced, 'the children operating freely to demonstrate their naturally available linguistic repertoire'. That the Kindergarten may not offer a rich enough verbal environment for the acquisition of language skills was demonstrated through the lack of growth in the use of transformations during the enquiry.

Thomas' analysis of adult interaction may have been prompted by the work of Granowsky and Krossner (1970) who found that adult speech to children took the form of shorter sentences, more simple sentences, and fragments, rather than the elaborated speech used to adults. The findings were from seven Kindergarten teachers in New York. The children were aged 5-6 years and tape recorders were used to study the verbal interaction. Sentence length and sentence type were the variables examined. Sentences of fifteen words or more were found in 35.1% of the total number of sentences in Adult to Adult speech whereas for Adult to Child this fell to 13%. The difference was significant ($p < .01$). The second variable, sentence type, was measured by the complex nature of the sentences used. A mean of 61.6% of Adult to Child speech contained simple

sentences while Adult to Adult speech contained only 37.7%. Differences were again significant at $p < .01$. They concluded that 'in view of the importance of a rich verbal environment it seems incongruent that the child's initial step into the scholastic atmosphere should offer an environment that is simplified and structured'. A language level closer to Adult speech, it is claimed, would be more appropriate than simplification in the direction of child speech.

Shields and Steiner (1972) examined, from samples of spontaneous speech in children aged 3-5 years, norms of language structure in relation to situational context. Analysis was made, not only of what the children said but where this was done. Three types of pre-school groups, Nursery Schools, Nursery classes in Infant schools and playgroups were used and there were two conditions of sampling. The first was when children were playing spontaneously and the second when adults were present. One hundred and twenty-three children were involved, with reasonable division between the sexes and across the socio-economic scale. One hundred and seven children produced twenty remarks or more. Analysis fell under three

headings:

- a) The language competence of the children.
- b) Developmental trends within the competence.
- c) The contextual or inter-personal circumstances promoting the highest levels.

The main unit of measurement (the main clause around a verb and measured in words) showed a developmental trend in increased numbers of words with age with a 'plateau' between the ages of $3\frac{1}{2}$ and $4\frac{1}{2}$ years, confirming Templin (1957).

Six months difference in age produced greater differences in skill than differences in socio-economic background might have suggested. In fact differences in socio-economic background were insignificant amongst the children recorded. Grammatical immaturity (regularised plurals, regularised weak past tenses, lack of subject/verb agreement and instability of the auxiliary verb system) diminished with age. Grammatical omission did likewise but there was an interesting socio/economic difference where working class children continued to be

affected by colloquial omission - an effect probably not alleviated by meeting the more extended uses of written English as in the case of middle class children.

Communication flow was found to be affected by the situation when the 'dynamic of the conversation is under the control of a person other than one whose utterances are being considered especially when that other person is an adult who is trying to elicit a particular response'. The response in this situation was found to be briefer. A straight comparison showed child/child discourse providing longer mean attendance length (6.3 words) than adult dominated (6.1 words). This was felt to be the result of the child withdrawing from initiative and falling into a purely respondent role. However, communication between adult and child when the child's area of thinking and his interests were being explored, gave the highest score (7.9 words).

Shields comments that the implication for teachers is clear: the purely didactic approach should be infused with empathy and centred on the child's unique interests, his personal views, his opinions and plans. The adult who

seeks 'information about the child's information' is likely to receive short shrift 'minimal response'. The adult must be willing also to accept the child's own language at least as a starting point with no suggestion of 'inferiority' or 'paucity of expression'.

The importance of language both for communication and cognitive growth is now normally upheld. A child uses speech, however, for his own ends.

"For the child speech is not a linguistic exercise but a means by which he impresses himself upon the world, changing it or maintaining it and his position within it, against the actions of others."

(Tough, 1972).

He will be likely to benefit by operating in a linguistic environment which will promote exercise of speech which, in turn, could bring an important extension of the symbolic function producing particular skills, not only in linguistic expression but also in thinking. Children need to have the fullest opportunity to practise their skills amongst their peers, and to listen, emulate and respond to speech utterances of the adult which are not only more elaborate but are designed to promote cognitive action viz. moving

"from affective awareness and direct bodily reactions to input, toward symbolic and conceptual transformations and elaborations of that input."

(Schmidt, 1973, p. 107).

A.P.P.R.O.A.C.H. AND ENGLISH NURSERY SCHOOLS

A Research Design

The Procedure for Patterning Responses of Adults and Children was the code system employed, acronym A.P.P.R.O.A.C.H. (Caldwell, 1970). The objective was to obtain a full statement of all the behaviours of a child or an adult during a stated period. Using a small recording machine, observers spoke quietly into it, recording information organised around the behaviour of a central figure, the child or the adult, admitting all significant details about the people and objects with which he interacted. Such detail when transcribed from the tape was quantitatively analysed and assembled for computerisation.

The unit of emitted behaviour was a behavioural clause designated by the appearance in the record of a verb, e.g. "Mark throws his toy to Jim hurriedly". Each clause had four basic components: the subject (who or what does something), the predicate (what is done), the object (towards what or whom the action is directed) and a few selected qualifiers (adverbs) providing supplementary information. The four components translated (after transcription) into

Continued
SUMMARY OF THE MAJOR APPROACH BEHAVIOR CATEGORIES AND THE NUMBERS ASSIGNED EACH IN THE CODE

- 44 Expresses affection
- 45 Facilitates
- 46 Excuses
- 47 Bargains, promises
- 48 Protects, defends
- 5) Body activities (50-59):
- 50 Increases or accelerates
- 51 Decreases or retards activity
- 52 Perforates
- 53 Acts in situ
- 54 Adjusts or accommodates
- 55 Provides kinesthetic stimulation
- 56 Locomotes (toward)
- 57 Engages in large muscle activity
- 58 Marches, dances, or rhythmicizes
- 59 Voids or excretes
- 6) Miscellaneous (60-69):
- 60 Acts or occurs
- 61 Caretakes
- 62 Consummates activity
- 63 Consummates activity, with failure
- 64 Disorganizes
- 65 Disintegrates emotionally
- 66 Makes music (with)
- 67 Garbled record
- 7) Control techniques (70-79):
- 70 Suggests
- 71 Requests
- 72 Inhibits
- 73 Forbids
- 74 Offers
- 75 Orders
- III. Object of behavioral clause (fourth digit):
- 0-8 Same as for first digit
- 9 No information or self
- IV. Supplementary information (fifth digit):
- 0 Ineptly
- 1 Accompanied by verbalization (or with sound if subject is 1 or 4)
- 2 Involving interpersonal physical contact
- 3 With intensity
- 4 In a specified manner, place, or time
- 5 In a manner, place, or time other than that specified
- 6 Initiatively
- 7 In continuation
- 8 Complexity
- 9 No information

Figure 1 contains a brief paragraph taken from one of the protocols obtained for the present study. This figure demonstrates what a coded record looks like before keypunching.

To date, only a small coterie of persons is trained in the coding. Independent coding is permitted when a person achieves a level of reliability

SUMMARY OF THE MAJOR APPROACH BEHAVIOR CATEGORIES AND THE NUMBERS ASSIGNED EACH IN THE CODE

- I. Subject of behavioral clause (first digit):
- 0 Central figure (CF)
- 1 The environment
- 2 Female adult
- 3 Female child
- 4 Item
- 5 Male child
- 6 Group, including CF
- 7 Group, excluding CF
- 8 Meas-est: P₂
- 9 Setting alert
- II. Behavioral predicates (second and third digits):
- e) Environmental contact (00-09):
- 00 Ignores
- 01 Attends
- 02 Establishes or maintains contact
- 03 Terminates contact
- 04 Seals
- 9) Information processing (10-19):
- 10 Confirms
- 11 Shows (to) or demonstrates (for)
- 12 Communicates or converses
- 13 Writes or draws (for)
- 14 Reads (to)
- 15 Corrects or disconfirms
- 16 Inquires
- 17 Informs or teaches
- 18 Informs about culture
- 19 Role plays (with)
- e) Food behavior (20-24):
- 20 Gives food (to)
- 21 Takes or handles food
- 22 Prepares food (for)
- 23 Transports food (to)
- 24 Disorganizes or spoils food
- f) Manipulative activities (25-29):
- 25 Transfers item (to or toward)
- 26 Handles item
- 27 Manipulates item (to)
- 28 Transports item (to)
- 29 Throws or rolls item (to)
- g) Negative activities (30-39):
- 30 Withholds contact (from)
- 31 Shows disinterest
- 32 Expresses displeasure (to)
- 33 Criticizes or denigrates
- 34 Expresses hostility
- 35 Interferes or restricts
- 36 Resists or rejects
- 37 Threatens or frightens
- 38 Assaults
- h) Positive reinforcement (40-49):
- 40 Permits or sanctions
- 41 Expresses solicitude
- 42 Shows pleasure
- 43 Approves, encourages

learner and inter-observer (Agreement = $\frac{\text{Nos. agreed} - \text{Nos. different}}{\text{Nos. agreed}}$), reliability (+ .80) was eventually established for all observers. These, the trained teachers, who had undertaken the initial ecology study found this 'different' way of recording remarkably complementary to their previous experience. The subjects were the same (out of 112 children only 3 had left the sample and 'substitutes' were found), the settings likewise, the time was three months later. It was agreed that 10 minute records should form the time unit, such samples chosen from the time of day used for the initial study (i.e. 9.30 a.m. - 11.00 a.m.). Two different samples for each child (n = 112) were to be taken, one where the adult might intervene incidentally (unstructured), and the second, with adult presence structured into the sample at the beginning (structured). Because of the natural flow of behaviour observers often chose samples under the unstructured and structured headings but being unable to control the movement of teacher/child/other children, found a 'structured' sample dissolving as, for example, when the child moved away, or 'unstructured' losing its designation when a

teacher intervened strongly, or over-controlled an apparently 'open' behaviour session. However, such samples were rejected though it was inevitable that incidental adult effect could not be entirely eliminated from the 'unstructured' samples. Teacher presence and its effect was a variable chosen for analysis in this alternative observational study in order to complement the initial study, when the Areas were investigated and where the adult was commented upon more by reason of her absence than her presence.

Although the behaviours of the children and teacher covered a wide spectrum (see code sheet) verbal behaviour took precedence and the final (fifth) digit (1) with verbalisation was always employed when the subject spoke. Thus all the verbalising was coded and the number of instances compiled. Because the predicate indicated the nature of the verbalisation (e.g. informing, inquiring, conversing) the instances were also categorised. Emphasis now was on quantity and quality of verbalisation in interaction.

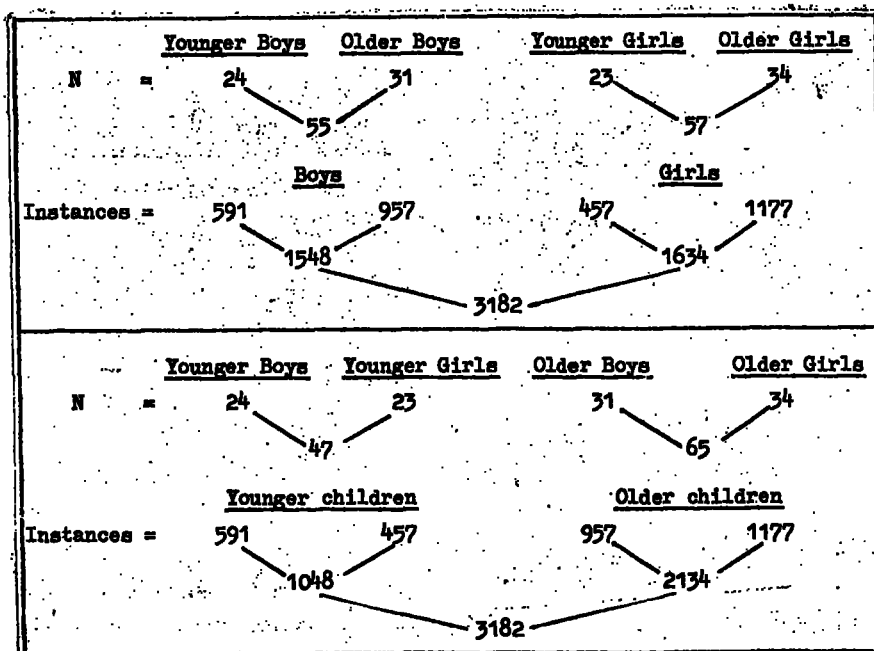
RESULTS

The Amount of Verbalisation

The fifth digit (1) indicating that the subject (0) (in this analysis) had spoken took precedence over all other fifth digits. If the child spoke, then whatever the manner of behaviour accompanying, the fifth digit was employed in the coding. This explains the high figures for verbalisation compared with other supplementary information.

Table 1

What differences are there in instances of verbalisation between boys and girls, younger and older children?



From the raw score it appears that there is little difference in amount of verbalisation between the sexes. However, older children verbalise more than twice as much as younger, thus confirming the well documented developmental trend.

Studies of vocabulary growth (Smith, 1926; Templin, 1957) show a rapid increase in vocabulary as the children move from sign (the naming) to symbolic language when the inherent possibilities of language function are appreciated.

Table 2a
Interaction of Age and Sex

Age

	Instances	Mean	S.D.	Range
Younger Boys Younger Girls	1048	22.30	12.51	5-52
Older Boys Older Girls	2134	32.83	16.75	8-85
	3182	28.41	15.98	5-85

Sex

	Instances	Mean	S.D.	Range
Younger Boys	591	24.63	11.61	5-52
Older Boys	957	30.87	16.17	9-79
	1548	28.15	14.69	5-79
Younger Girls	457	19.87	12.97	6-52
Older Girls	1177	34.62	17.07	8-85
	1634	28.67	17.31	8-85

From the raw scores the developmental trend is seen in both sexes.

The two 10 minute sequences, now called Unstructured and Structured, differ in that Unstructured indicates the absence of teacher involvement with the subject, except for incidental intervention which cannot in a natural situation with young children be prevented: Structured indicates that the sequence began with the teacher involved with the work of the children, one of whom was always the original subject:

8 boys 8 girls in 6 nurseries }
 7 boys 9 girls in 1 nursery } 55 boys 57 girls

Breaking down the raw scores into the two situations, Unstructured and Structured, it appears that the presence of the teacher is promoting verbalisation (Shields, 1972) among both sexes and age groups.

Table 2b

What effect is the teacher having?

	<u>Unstructured</u>				<u>Structured</u>			
	Instances	Mean	S.D.	Range	Instances	Mean	S.D.	Range
Younger Boys	247	10.29	7.31	1-24	344	14.33	7.11	1-29
Older Boys	456	14.71	9.41	2-36	501	16.16	9.19	2-43
Younger Girls	176	7.65	7.86	0-28	281	12.22	8.76	0-38
Older Girls	549	16.15	10.11	2-42	628	18.47	11.84	1-43

Sig. $p < .01$

A χ^2 (14.23) test shows the effect of the teacher to be significant at the $p < .01$ level.

The Approach Code breaks down Verbalisation (Information Processing 10-19) into several categories (see code sheet). From these the following aspects only were coded:

- 10 Confirms
- 12 Converses
- 16 Inquires
- 17 Informs
- 19 Role-play.

From the Reinforcement Techniques when Negative (30-38) or Positive (40-49) reinforcement was accompanied by verbalisation the scores were added and from Control Techniques Suggests (70) and Requests (71). In this way the categories of verbalisation were established principally because the verbal behaviours had grouped themselves more intensely around these code items. For elucidation the predicates are expanded.

Information Processing

Predicate 10 Confirms

Information is given which indicates that the pattern of behaviour being emitted is appropriate or correct or which confirms to another person (child or adult) that she has made correctly some informational assumption or hypothesis. Examples would be "Yes", "That is

right". Sometimes an adult asks a question in a general way, "Who wants to ...", implying confirmation and received by the individual as "Do you want to ..." and identification of self as in "I do" is coded as Confirmation.

Predicate 12 Converses

Informational transactions are carried out through brief or casual statements about routine situations. The person to whom the information is being given is clearly noted. Examples include, "That is a big, big bang" - i.e. below the informational/teaching level and somewhat low level conversational in tone.

Predicate 16 Inquires

Questions are asked, the content of which refers to information and the answers to which involve the giving or completing or correcting information. Examples include asking for labels, "What is it called?"; for confirmation, "How do we do this?"; for reassurance, "Is this right?"

A "16" always has a response and as these questions are asked of both peer and adult it would be likely that the quality of the response would vary.

Predicate 17 Informs or teaches

This involves the giving of information to another person. Examples include discussing, clarifying, explaining, and is done in a more formal manner than in predicate 12.

Predicate 19 Role-plays

This category refers to creative and imaginative verbalisation. A child walking around carrying some insignia may be role-playing but he will have said, "I'm a fireman. I'm going to put the fire out" to have been recorded in this section. He will also have said it clearly and it would be likely that there was a perceivable recipient of the role-playing remark.

Predicate 30 Negative Reinforcement

The code itemises nine types of negative reinforcement (30-39) including showing discomfort, expressing displeasure, criticising, interfering, threatening and assaulting. Because this analysis only deals with verbal reinforcement the incidents have been grouped under one heading.

Predicate 40 Positive Reinforcement

Again the code itemises across a range of behaviour with a positive emphasis, supporting the ongoing behaviour of another person, e.g. showing pleasure, approving, expressing affection, promises, etc. However, the verbalisation restriction has caused the incidents to be again grouped under one heading.

Predicate 70 Control technique - Suggests

These verbalisations describe an implied request given in the form of a declaration or interrogative rather than an imperative. However, the control element is strongly implied: the suggestion is to stimulate action which is structured into the verbalisation. Examples would include, "May I go to see the gerbils please?" from a child to the teacher. The teacher might reply, "Can you find the way yourself?". The control is indirect but the implication is strong.

Predicate 71 Control techniques - Requests

Reference is to clear requests for action on the part of the person to whom the request is directed, or else to requests for permission for the central figure to carry out some type of activity. A teacher might say, "David, I want you to pick up your blocks." A child asks the

teacher, "May I go to look now?". The request carries a degree of intensity or control since it carries with it no option other than that called for by the request, "Will you please ..." (a note of exasperation!)

Table 3
Categories of Verbalisation
What effect is the teacher having?

	<u>Unstructured</u>					<u>Structured</u>				
	All Ss	YB	OB	YG	OG	All Ss	YB	OB	YG	OG
<u>INFORMATION PROCESSING</u>										
Confirms	63	10	15	8	30	216	39	47	63	67
Converses	197	19	93	18	62	116	49	24	15	28
Inquires	123	24	26	18	55	135	40	46	15	34
Informs	413	71	138	57	147	876	124	252	120	380
Role-play	187	41	42	18	86	101	26	29	1	45
<u>REINFORCEMENT TECHNIQUE</u>										
Negative R.	129	21	44	18	46	122	22	42	13	45
Positive R.	119	20	41	14	44	77	19	21	12	25
<u>CONTROL TECHNIQUE</u>										
Suggests	57	14	22	9	12	37	5	18	3	11
Requests	140	27	30	16	67	74	20	22	7	25
		247	456	176	549		344	501	249	660
		703		725			845		909	
	1428	1428				1754	1754			

In the Structured situation the increase of verbalisation by the children is not dramatic, partly because the teacher is controlling the situation and the children are less free to talk with their peers, and to take the initiative. Shields (1972) had found child/child discourse more productive than adult/child, the mean utterance length being 6.3 words against 6.1. However, when the adult was concerned with the child's area of thinking and interest the mean utterance length varied from 7.2 to 7.9 words according to whether the initiative was by adult or child. When the adult dominated the discourse the mean utterance length fell to 2.5. Shields suggested that this was because the adult, in seeking information about the child's information, established a testing situation to which the child gave minimal response.

Our Structured situations were adult dominated which would account for the decrease in conversation except in the case of the young boys who showed a marked increase! They were not over-awed by the formality and seized the proximity of the teacher to continue to converse! The decrease is shown also in role-play for all groups and in the reinforcement techniques and control techniques.

The presence of the adult, however, increases the amount of information processing in confirming, inquiring and informing. A χ^2 test shows the increase to be significant ($p < .01$ $\chi^2 = 39.46$). The adult appears to view her role as one to develop information and increase knowledge.

The rank order of the categories is changed by the presence of the teacher - $R = .18$ - showing there is not a significant correlation between the two rank orders of categories. The most dramatic change is in the Confirming category which plays a small part in verbalisation procedures in the Unstructured situation. In the presence of the adult, however, Confirming occupies second place and of the 216 instances 200 (Table 5) are with the teacher. A major effect of teacher presence is a redistribution of amount of conversation over the categories.

In order to determine the relative importance of the inferred factors of Age and Sex, an Analysis of Variance, using an approximate method of unweighted means, was chosen, since the design was not balanced. The analysis is thus, only approximate.

VARIABLE CONFIRMS

1.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
Younger Boys	.42		1.63
Older Boys	.48		1.52
Younger Girls	.35		2.74
Older Girls	.88		1.97
<u>Factor</u>	<u>F. Ratio</u>		
Age	2.51		4.24 Sig. p < .01
Sex	.75		.42
Age/Sex	1.51		.42

The age factor in Confirming approaches significance at the $p < .05$ level in the Unstructured situation. In the Structured, when the teacher is present, increasing age is highly significant for the verbalised confirmation by the children of statements, ideas or actions. The presence of the teacher appears to emphasise the age factor in this category of verbalisation.

VARIABLE CONVERSES

2.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
Younger Boys	.79		2.04
Older Boys	3.00		.77
Younger Girls	.78		.65
Older Girls	1.82		.82
<u>Factor</u>	<u>F. Ratio</u>		
Age	16.61 Sig. p < .01		.31
Sex	2.59		5.07 Sig. p < .01
Age/Sex	2.52		2.10

The age factor in Conversing in the Unstructured situation is highly significant, and it is the mean of the older boys which is of particular interest (3.00) being the highest mean recorded. Factors of sex and interaction age/sex approach

significance at $p < .05$ level and therefore cannot be disregarded. In the Structured situation, the sex factor is highly significant supported by the interaction of sex and age though this falls below a significant level.

It is a finding of much interest suggesting that the older boys converse more than any other group when the teacher is not present. When, however, the teacher is present, the boys converse more than the girls and it appears that the younger boys (Mean 2.04) influence the age/sex interaction.

This finding would appear to be something of a challenge to the traditionally held loquaciousness of the female sex!

VARIABLE

INQUIRES

3. <u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
	Younger Boys	1.00	
Older Boys	.84		1.48
Younger Girls	.78		.65
Older Girls	1.62		1.00
<u>Factor</u>		<u>F. Ratio</u>	
Age	1.29		1.10
Sex	.90		2.11
Age/Sex	2.83 Sig. $p < .05$		2.61

The age/sex interaction factor reaches the $p < .05$ level of significance in the Unstructured situation where the older girls would appear to be carrying out more inquiring than the other

groups. In the Structured situation the higher means of the boys, both younger (1.67) and older (1.48) just fail to raise the age/sex factor to a significant level, $p < .05$.

VARIABLE

INFORMS

4.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
	Younger Boys	2.96	
Older Boys	4.45		8.13
Younger Girls	2.48		5.12
Older Girls	4.32		11.18
<u>Factor</u>		<u>F. Ratio</u>	
Age	5.32	Sig. $p < .01$.68
Sex	.15		5.57 Sig. $p < .01$
Age/Sex	.45		.70

The factor of age is highly significant ($p < .01$) when the children are informing one another without the presence of the teacher. It is the older children who 'know', who pass on information. In the presence of the teacher, however, the age factor is not operative. Rather it is the sex factor where the girls are more informative than the boys.

VARIABLE

ROLE-PLAYS

5.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
	Younger Boys	1.71	
Older Boys	1.35		.94
Younger Girls	.78		.04
Older Girls	2.53		1.32
<u>Factor</u>		<u>F. Ratio</u>	
Age	1.06		.68
Sex	.34		.22
Age/Sex	2.40		2.20

No factor is significant in either situation in role-playing. The higher F. Ratio for age/sex interaction in the Unstructured situation is probably accounted for by the older girls who carry a mean of 2.53. In the Structured situation it is again the older girls who are responsible for the interaction factor, the mean of the younger girls being very low.

VARIABLE NEGATIVE REINFORCEMENT

6.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
	Younger Boys	.88	
Older Boys	1.42		1.35
Younger Girls	.78		.57
Older Girls	1.35		1.32
<u>Factor</u>		<u>F. Ratio</u>	
Age	3.15	Sig. p < .05	3.30 Sig. p < .05
Sex	.29		.26
Age/Sex	.41		.38

Verbalised negative reinforcement, showing displeasure through hostilities, criticisms, threats and interference, show the age factor to be of significance, $p < .05$, in both situations. The older children may be more confident to give full expression to their hostile feelings. Such feelings would have been accompanied by verbalisation to be recorded here and it may be that younger children are not yet sophisticated enough to show such feeling other than through action.

VARIABLE POSITIVE REINFORCEMENT

7.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
Younger Boys	.83		.79
Older Boys	1.32		.68
Younger Girls	.61		.52
Older Girls	1.29		.74
<u>Factor</u>		<u>F. Ratio</u>	
Age	1.58		.62
Sex	.18		.28
Age/Sex	.74		.68

Positive reinforcement, showing pleasure, excusing, encouraging and depending, does not show any factor reaching a level of significance in either situation. In the Unstructured, the older children show higher means (1.32, 1.29) than the younger (.83, .61) so that one conjures up a picture of positive reinforcement emanating from the older children. In the Structured situation the older children have higher means (.68, .74) but only marginally so. No factor, however, can be isolated at a significant level.

VARIABLE SUGGESTS

8.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
Younger Boys	.58		.21
Older Boys	.71		.58
Younger Girls	.39		.13
Older Girls	.35		.32
<u>Factor</u>		<u>F. Ratio</u>	
Age	.89		3.38 Sig. p < .05
Sex	.87		1.19
Age/Sex	.42		.34

Suggesting, a verbalised control technique to modify behaviour giving an alternative rather than a negative, had the lowest raw score of the verbalisation categories. This can be understood as it requires experience, the holding of two courses of action in the mind before utterance. It is not a verbalising technique likely to be used by young children and the superiority of the age factor shows in that in the Structured situation, it reaches significance ($p < .05$) suggesting that part of the teacher's role is the support to consider alternatives, the teacher herself providing a model. Carefully structured questions can help a child to bring forward suggestions. The significance of the age factor suggests that the teacher is more successful with the older children and probably promotes more of this particular type of interaction with older children.

VARIABLE

REQUESTS

9.

<u>Group</u>	<u>Unstructured</u>	<u>Means</u>	<u>Structured</u>
Younger Boys	1.13		.83
Older Boys	.97		.71
Younger Girls	.70		.30
Older Girls	1.97		.74
<u>Factor</u>		<u>F. Ratio</u>	
Age	.96		.43
Sex	1.88		1.16
Age/Sex	.13		1.40

Requesting does not show any factor reaching a level of significance in either situation. The children have requested, in raw score, almost twice as much as suggested, showing that 'asking' is the more favoured verbal control technique. There is more requesting either to desist, to alter, or modify behaviour in the Unstructured situation in the effort to control behaviour: the teacher probably exerts an influence so that the children do not take the initiative, when she is present.

Table 3a
Analysis of Variance of Factors
F. Ratio

	<u>Unstructured</u>			<u>Structured</u>		
	Age	Sex	Age/ Sex	Age	Sex	Age/ Sex
Confirms	2.51	.75	1.51	<u>4.24</u> p < .01	.42	.42
Converses	<u>16.61</u> p < .01	2.59	2.52	.31	<u>5.07</u> p < .01	2.10
Inquires	1.29	.90	<u>2.83</u> p < .05	1.10	2.11	2.61
Informs	<u>5.32</u> p < .01	.15	.45	.68	<u>5.57</u> p < .01	.70
Role Plays	1.06	.34	2.40	.68	.22	2.20
Negative R.	<u>3.15</u> p < .05	.29	.41	<u>3.30</u> p < .05	.26	.38
Positive R.	1.58	.18	.74	.62	.28	.68
Suggests	.89	.87	.42	<u>3.38</u> p < .05	1.19	.34
Requests	.96	1.88	.13	.43	1.16	1.40

Discussion

The fore-going has revealed some interesting effects of teacher presence on children's verbalisation. Though overall there are more raw instances of verbalisation in Structured situations, this is not the case in each category. There is more confirming, inquiring and informing in her presence with particular emphasis on the confirming and informing, the bread and butter of educational interchange. There is less conversing, the teacher has a controlling effect on chatter and there is less role-playing. There is also less verbal reinforcement, negative and positive, and less use of verbalisation to control behaviour through suggesting and requesting.

The factor analysis of variance, using the factors of age, sex and age/sex interaction, shows teacher effect highlighting the incidence of significant factors within the groups. In Confirming, teacher presence emphasises the age factor, the older girls are always prominent but teacher presence emphasises the increased verbal behaviour of the younger girls. It appears that they use her availability to check their ideas and statements, at a ratio, Unstructured

to Structured, much greater than that of the other groups of children.

In Conversing, there appears to be some evidence for the contradiction of the traditional idea of girls talking more than boys. In raw scores over all the categories, the sexes differed only slightly but in the refined category of Conversing the older boys converse the most when the teacher is not present and their loquaciousness helps the age factor to become significant. When, however, the teacher is present the significant factor becomes that of sex when the younger boys are the only group to increase their amount of conversation. Her presence appears to give them more confidence, and more wish to converse, to talk in an inconsequential way, perhaps, than they are willing to do in the less structured situation.

In Inquiring, a different and more direct form of verbalisation, the F. Ratio, is significant as a result of the interaction of age and sex of the older girls in the Unstructured situation, whereas in Informing, age alone is significant without the presence of the teacher. The older children inform the younger but when the teacher is present it is the older girls

particularly who continue this activity. It may be that the boys defer more to her presence. However, all groups of children increase their informing, possibly because the teacher is responsible for setting a didactic climate and is eliciting information as part of the function of her role.

It might have been expected that age would be a significant factor in Reinforcement verbal behaviour, but this only is seen in respect of negative reinforcement. The older children accompany their threats, criticisms and hostilities with words while the younger do not. Age also is the significant factor in the verbal controls technique of Suggesting where the presence of the teacher probably aids the older, more verbal children in the thinking activity which must precede the technique.

Teacher presence can thus be seen to affect verbal behaviour both across the categories and within the groups of children. Greater awareness of her affect could lead to specific language enrichment procedures when she could consciously promote, for example, inquiry among boys, or encourage verbalisation when young girls are role-playing. Purposeful verbal interaction and

promotion of ideas would be likely to increase the general level of talking across all the categories but would be particularly effective in helping the children to use language for purposes other than information processing.

As an expression of wishes and desires, a means of promoting and controlling these through reinforcement and control, language can be seen as a powerful tool for personality development.

Distributions of Verbalisation

Interest is now centred on the distribution of the children's verbalisation among the people around: adult, peers and self (Table 4). When the teacher's presence is structured into the situation there is a decrease in the number of instances to peers and self but a substantial increase of verbalisation to the adult. This is true for the four groups of children. The rank order of distribution is also changed, the male child receiving most verbalisation in the Unstructured situation and the teacher in the Structured. A Rank Order Correlation nevertheless shows $R = .70$, significant at $p < .01$, indicating that correlation is high between the two situations.

Table 4

To whom do the children talk and what effect is the teacher having on this distribution?

	Unstructured					Structured				
	All Children	YB	OB	YG	OG	All Children	YB	OB	YG	OG
Adults	246	46	87	36	77	1246	222	332	206	486
Female Child	413	55	41	69	248	130	16	17	10	87
Male Child	446	89	185	41	131	190	50	100	13	27
Group	123	23	39	11	50	88	16	23	11	38
Self	200	35	103	19	43	100	41	28	9	22
		248 455		176 549			345 500		249 660	
		703			725		845			909
	1428	1428				1754	1754			

Further analysis shows the Mean, S.D. and Range for the four groups:

Children talking to the adult

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Younger Boys	1.92	3.16	0-15	9.25	6.68	0-21
t test of correlated means 4.79 Sig. p < .01						
<u>No. of children with 0 score</u>			<u>No. of children with 0 score</u>			
8			8			

As would be expected the Structured situation shows a higher mean and wider distribution about the mean. The difference between the means is highly significant. The range is greater in the Structured situation: the young boy responsible for the extreme (21 instances) is Paul, aged 40 months, ²/₂ family position and son of a Local Government Officer. Paul had only 4 instances of verbalisation in his Unstructured sequence, 3 to the adult and 1 to the group. In the Structured all instances (21) were to the adult as his transcript shows. It is a dyadic situation in the Malleable Area with the teacher working hard to stimulate conversation:

PAUL

Structured

Paul is sitting at the Malleable table. He is rolling some clay. He squeezes it. He bangs it. Teacher says, "What are you making?" He picks up the clay. He says, "I'm making chocolate." He presses it on the table. Teacher says, "Has chocolate got anything inside it?" He says, "No, it's just chocolate." He squeezes the clay. Teacher says, "Hasn't it got any cream inside?" He shakes his head. He says, "No." He says, "No, it's got nothing inside." He shakes himself. He rubs his hands together. He nods his head. He looks at teacher. She says to him, "Pick up this clay and make something." She says, "Can you make a rabbit?" He nods his head. Picks up clay. He says, "I don't think I can make a rabbit." Teacher says, "Make a ball of clay first." She puts clay in his hands. She takes hold of his hands. She manipulates his hands on the clay. He stops. He looks at clay. He sniffs. Teacher says, "You try now." He says, "I can't." She says, "Go on have a try." He says, "No, I can't."

Teacher says, "Can't you think of anything to make?" He says, "No, I can't make anything." She says, "I thought you were good at making things." He says, "No, I'm not." He picks up plasticine. He bangs it on table. He pulls it. Teacher says, "Are you tired?" He says, "No." He continues banging plasticine. Teacher says, "Did you sleep well?" He says, "Yes." She says, "Have you a bed to yourself?" He says, "No." He bangs plasticine again. She says, "Do you sleep with your brother?" He says, "Yes." She says, "Does mummy tell you a story?" He says, "Mummy and daddy tell me stories." She says, "What story do you like best?" He stops playing with clay. He looks at her. He says, "I like all of them." He turns to table. He picks up clay. He holds his hands in the air. He drops clay on table. Teacher says, "Haven't you got one favourite story?" He picks up clay. He rolls his tongue in his cheek. He rolls plasticine.

He says, "I like my bunny rabbit book best." Teacher says, "Has it got a bunny rabbit in?" He says, "Yes." She makes him a rabbit with clay. He watches her. She says, "Is it like this one?" He says, "Yes, my bunny rabbit book has pictures in." He picks up all the clay. He holds his arms up. He drops clay onto table. Teacher says, "What other story do you like?" He does not answer. He rolls his tongue in his cheek. He puts his head down. He says, "I don't know." Teacher says, "Have you any 'Topsy and Tim' books?" He says, "No." He shakes his head. He picks up plasticine. He puts his arms up. He drops plasticine. He continues. He continues. Says to teacher, "I like 'Topsy and Tim' stories."

Comment

The teacher works very hard to stimulate the conversation but Paul sees little point in it. Her technique for promoting conversation appears almost exclusively to be tied into

information seeking. He volunteers only scraps of information and the teacher fails to develop any aspect of his interest. The fact that both parents acted as story tellers could have been developed with the child in a listening role at the minimum. Nevertheless, the teacher is the instrument of increased verbalisation and increased practice.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Older Boys	2.81	3.94	0-15	10.71	8.63	0-38
t test of correlated means				5.65	Sig. p < .01	
<u>No. of children with \emptyset score</u>			<u>No. of children with \emptyset score</u>			
9			1			

The Structured situation shows a significantly heightened mean, wider distribution about the mean and wider range. The number of children with \emptyset score drops from 9-1. The older boy, responsible for the extreme of the range, is Simon, aged 48 months, ⁶/6 family position and son of an unemployed factory worker. In the Unstructured situation Simon addresses the teacher only six times but has 28 instances to the male child. In the Structured situation Simon and the teacher are together in the Manipulative Area. A male child is also present and Simon addresses him also but only four times:

SIMON

Structured

Simon is at the Manipulative table. He fixes bricks together. Fixes bricks together. "Are you going to leave holes in the castle?" says Teacher. Simon says, "I'm making a castle." Teacher says, "You want some little bricks to leave spaces for the windows." Simon says something to Teacher. He looks around. He puts on lego. Puts on lego. Puts on lego. "That's right, put the little bricks on," says Teacher. He says something to Teacher. He puts on lego. Puts on lego. Talks to Teacher. Talks to Teacher. He looks down inside the structure. He says, "There's a big hole down there." "Let's see," says Teacher. "Oh yes, it goes all the way down to the bottom," she says. Simon says, "I'm going to build it right up to the top." He puts more bricks on. Looks up at Teacher. He says, "It's going to be a big one." He stops. Looks down inside the structure. He says, "It's dark down there." "You've got to have

a light to go down there," says Simon. He talks. He talks. He smiles at teacher. Teacher asks, "Is that the window?" "They climb in there and they go down there." He points to the window and the hollow interior. He puts on lego bricks. He stands up. He puts on bricks. More bricks. Simon looks up. "Why do they come out of here?" asks Andrew. Simon ignores him. He builds with lego. Andrew asks, "Can they shoot out of them windows?" Simon looks up at him. Teacher asks, "What do they shoot with?" Simon says, "Guess." Teacher says, "They can't shoot guns, what did they used to shoot with?" Simon says, "Bows and arrows." He puts on bricks. "Soldiers don't live in castles now, do they?" asks Teacher. Simon says, "Only guards live there now." He puts on bricks. He puts on more bricks. Continues. Teacher asks, "Have you seen the guards in London?" Simon says, "Yes." He puts on lego bricks. He puts one back down. "That won't do," he says. He

selects another. "Mine's getting bigger than yours, Simon," says Andrew. Simon looks at Andrew and at the castle. Simon puts bricks on. He puts some more bricks on. He puts more bricks on. Continues. Teacher says, "Put some more windows in." Simon says, "I'm going to stop it up to there." Points to a certain height. "Is it going to be a tall one?" asks Teacher. "Or a small one then?" Simon says, "It's going to be a tall one." He puts on bricks. Teacher says, "You've got a bit sticking out there, haven't you?" She points to the structure. Simon looks at it. He puts on lego. "Mine's ready now, Simon," says Andrew. Simon stops. He looks at Andrew's castle. "Mine's nearly ready," says Simon. He puts more bricks on. He puts more bricks on. "What do you think Andrew's done wrong with this?" asks Teacher. Simon looks at Andrew's castle. He says, "'Cos he hasn't made no sides. The wind will blow through the cracks." "That's right," says

Teacher. "And what else would happen?"

"It would blow it away," says Simon.

"If you blow it hard, it would fall down." He indicates the collapse with

his hands. Teacher asks, "Do you think the wind would blow yours down?"

Simon says, "No it wouldn't. It's too strong." He looks across at Andrew.

He whispers in Andrew's ear. Andrew smiles. Simon smiles at him. "What's made yours so strong?" asks Teacher.

Simon says, "Bricks." "But why is it stronger than Andrew's?" she asks.

"Look at my castle," says Andrew to Simon. Simon looks at the castle.

"'Cos I made it square," says Simon.

Simon looks at Andrew who has stood on the chair. Teacher asks, "You can't pull your castle apart, can you?"

"I can't pull it to pieces," says Simon. "'Cos them are stuck on to

them." He points to the structure.

"Look," he says. "It's stronger than my hands." He puts his hands to the

structure. "Yes, it must be strong.

You can't squash it or break it,"

says Teacher. "Well, I can break it,

but I can't squash it, 'cos these are too hard." He looks at Andrew. "Do you know what, if you stick them on, it won't break up," he says to Andrew. He shows Andrew where he may have gone wrong. "Mine's stronger," says Andrew. Andrew's castle collapses. Simon sees it. He smiles. He examines his castle. He peers down the central well. He keeps looking. "You can see right down to there," he says to Teacher. "All the way down there." "And you can see my fingers." He runs his hands down the sides of the castle. He looks at it. Teacher asks, "What can you see?" "Just these," he says (referring to fingers). He looks at Andrew P. and his mother who have just come in. He smiles at Andrew. "You can do across there and do across that," he says to Andrew. He demonstrates to Andrew. "This is much stronger," he says, about his own castle. "See that there, you can see my two fingers down there," he says to Andrew. He smiles at Andrew. "I can see the shadow too," he says to Teacher.

Comment

Simon's maturity compared with Paul, (albeit 8 months), emerges in the degree of freedom of his ideas from the action and the ease of transfer. Working at his castle he is ready to consider suggestions and appears able to draw strongly on imagery. The teacher in this transcript shows greater skill in provoking thought and in extending and enabling response.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Younger Girls	1.56	2.71	0-12	8.96	8.15	0-33
				t test of correlated means	4.15	Sig. p < .01
		<u>No. of children with 0 score</u>			<u>No. of children with 0 score</u>	
		10			3	

The Structured situation again shows a significantly higher mean, wider distribution about the mean and a wider range. The number of children having a 0 score drops from 10-3. The young girl responsible for the extreme range of 33 verbalisations to the adult, is Karen, aged 39 months, 6/6 family position and daughter of a factory machinist. In the Unstructured situation Karen spoke to the adult only 2 times but scored 1 to the female child, 7 to the male, 2 to the group and 2 to self. The Structured situation is again dyadic in the House Area though a female child joins the situation later.

KAREN

Structured

Karen is in the House Area. She picks up the telephone. Teacher asks, "Who are you telephoning?" Karen says, "Dr. Raine." Teacher asks, "What do you want Dr. Raine for?" Karen answers, "The baby's poorly." Teacher says, "Well, you'll want the doctor's box tidied up before he comes." Karen says, "Hello, doctor, the baby's dead." Teacher says, "Dead - I thought it was just poorly." Karen replies, "Well, it's dead now." Karen replaces telephone. She looks at teacher and says, "I'm sick of this sleeve." She pulls at her sleeve. Teacher says, "Well, come here and I'll put that sleeve right for you." Karen goes to teacher. Teacher puts the sleeve right. Teacher says, "Are you going to make some dinner for me now?" Karen says, "Yes I will." Karen moves round the table. She picks up a plate. Teacher says, "I brought that plate, it's lovely isn't it?" Karen says, "It is." Karen points to a cup. She says, "That's your cup of tea." Teacher asks,

"Did you put me some sugar in it?"

Karen says, "Yes, I did." Teacher asks, "How many spoonful did you put in?" Karen says, "One." Teacher says, "Well, I like two in my tea."

Karen pretends to put in another spoonful of sugar. She hands the cup to teacher. She moves over to the stove. She picks up the kettle. Teacher asks, "What are you going to do now? Are you going to put more water in?" Karen says, "Yes."

Teacher says, "I like my tea strong."

Teacher asks, "Have you no spoons in this house?" Karen says, "Yes, we have some somewhere." Karen looks around her. She goes over to the dresser. She bends down. She looks into the dresser. She takes out a spoon. She carries it to the teacher. She hands it to the teacher. Teacher takes the spoon. She says, "That's a nice cup of tea. Have you any more?" Karen says, "Yes, we have." Karen picks up the kettle. She pretends to pour. Teacher says, "That's the kettle not the teapot." Karen says, "Oh dear." She puts down the kettle.

She picks up the teapot. She pretends to pour. Teacher says, "Thank you very much." Teacher asks, "What am I having to eat, Karen?" Karen says, "That." She points to object on plate. Teacher asks, "What is it?" Karen says, "Sponge pudding." Teacher says, "Oh, sponge pudding. Well, it looks very nice. Did you make it yourself?" Karen says, "Yes, I did." Karen goes over to stove. She picks up the frying pan. She picks up a spoon. She starts patting the clay in the frying pan. Teacher asks, "What's in the frying pan?" Karen says, "Meat." Teacher asks, "Are you sure it's not pancakes?" Karen says, "No, it's meat for the dinner." Teacher asks, "Did you have pancakes on Pancake Tuesday?" Karen says, "I did. Yes, we had a lot." Teacher asks, "Did your mammy toss them?" Karen says, "Yes she did." Teacher asks, "What do you put on pancakes?" Karen says, "Treacle." Teacher says, "Yes, but what else?" Karen says, "Salt." Teacher says, "Salt, are you

sure you don't mean sugar?" Karen shakes her head and says, "No." Teacher asks, "Did you put some lemon on your pancakes?" Karen shakes her head and says, "No." Karen starts patting the "meat" again. Teacher asks, "Are you going to cook that in the oven?" Karen says, "Yes." She goes over to the cooker and opens the door. She tries to put the frying pan into the oven. She pushes. She says, "I can't get it in." She bends down. She puts the frying pan on the floor. She looks into the oven. She pulls out some cups and saucers. She says to herself, "Now, what are they doing in there?" Teacher says, "I'd take them out if I were you." Karen says, "That's what I am doing." She puts the frying pan into the oven. She closes the door. She turns the knob. She turns round. She looks at teacher. She says, "It's cooking now." Teacher says to Karen, "Patricia would like you to cook something for her." Karen looks at Female Child.

Karen says, "Would you?" She smiles at Female Child. Female Child says, "Yes." Karen says, "Well, what would you like?" Female Child says, "Sausage and chips." Karen says, "All right." Karen picks up the frying pan. She pretends to stir the "meat". Teacher says, "This is just like a cafe." Karen says, "It is a cafe." Teacher asks, "Well, how much do you charge?" How much for sausage and chips?" Karen says, "Five p." Teacher says, "Well, that's very cheap. I'll come every day." Karen says, "You only pay 1p for the meat." Teacher asks, "Well, how much for the sponge pudding?" Karen says, "Do you want some?" She holds the frying pan towards teacher. Teacher says, "I thought you made sponge pudding in a bowl." Karen says, "This is a cafe. This is a cafe."

Comment

Karen is entirely absorbed by her phantasy play. The teacher responds, adding the touch of reality which the child admits and handles extremely well. Teacher presence adds significantly

to Karen's level of thinking and amount of verbalising. Karen appears verbally more mature than Paul who is 1 month older.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Older Girls	2.26	2.73	0-11	14.29	9.55	1-36
t test of correlated means				7.72	Sig. p < .01	
<u>No. of children with 0 score</u>			<u>No. of children with 0 score</u>			
10			0			

Again the Structured situation shows a significantly increased mean, a wider distribution about the mean and wider range. The number of children with 0 score drops dramatically from 10-0. Two older girls responsible for the extreme of the range are i) Debra, aged 47 months, an only child of a charge-hand engineer. She is in the Art and Creative Area: again it is a dyadic situation. ii) Diane, aged 45 months, ⁴/₄ family position and daughter of a lorry driver. She is in the Book Area and uses the observer for conversation.

Debra's verbalisation in the Unstructured situation was once to the adult and 14 times to the male child. The following is Debra with the teacher:

DEBRA

Structured

Debra enters the Art and Creative Area. Teacher says, "Do you want to sit down next to me?" Debra says, "Yes." She sits down next to the teacher. She puts an elbow on the table. She smooths her hand on the paper. She puts hands on knees. She watches the teacher. She continues. Teacher says to Debra, "Shall I write your name for you?" Debra says, "Yes." She watches the teacher. She puts both elbows on the table. She smiles at the teacher. Teacher asks, "Can you do it?" She nods her head. Teacher gives Debra a pencil. Debra writes over words. Teacher says, "What are you going to draw?" Debra says, "I don't know." She draws a shape. Teacher asks, "What is it?" Debra says, "I don't know." Teacher says, "What have you on your farm?" Debra says, "Cows." Teacher says, "Can you draw a cow?" Debra says, "Yes." Teacher asks, "What else have you got on your farm?" Debra says, "Dogs." Teacher says, "How many dogs?" Debra sits back. She looks at

teacher. She counts, "One, two, three, etc., 16." Teacher says, "What do you call them?" Debra says, "Flossie, etc." Teacher says, "That's only three dogs." Debra laughs. She says, "Yes." She turns round. She looks at another girl. She turns back. She looks at her work. Teacher says, "What else have you got on your farm?" Debra laughs. She says, "Spotted cows." Teacher says, "Spotted dogs as well?" Debra says, "Yes." Teacher says, "What do they do?" She says, "Roll in the grass." Teacher says, "Who washes them clean?" Debra says, "Daddy." Teacher says, "What with?" Debra says, "A brush." Teacher says, "Does anyone help him?" Debra says, "Jamie." Teacher asks, "Do you help mammy?" Debra says, "Yes." She looks round. She watches other children. She turns back. She looks at teacher. She says, "I like hens. I give them corn to eat." She starts to draw again. She scribbles over paper. Teacher says, "What do you wear on the farm?" Debra says, "Wellingtons."

She stops drawing. She rolls pencil in her hands. She says, "Look what I'm doing." Teacher says, "Do you have a horse?" Debra says, "Yes. We call him Nipper." Teacher asks why. Debra says, "Because he nips people." She continues rolling pencil. She puts pencil on the table. She stands up. She picks up paper. She says to teacher, "Look at this." Teacher says, "What is it?" Debra says, "It's like that." She dabs pencil on paper. She says, "This is an elephant. I've drawn an elephant." She points to its trunk. Teacher says, "Elephant's dinner goes right down there." Debra says, "Yes. It will go in there too." She scribbles over paper. She turns to the teacher. She laughs. Teacher draws for her. Debra watches her. Teacher says, "This is elephant's trunk." Debra says, "Yes." She continues watching teacher. She rubs her nose. Teacher touches Debra's nose. She says, "That's your nose." Debra holds her nose. She laughs. She draws shape

in the air. She laughs at teacher.
Teacher says, "Your nose isn't like
an elephant's." Debra says, "No."
Teacher draws for Debra. Debra
watches her. She asks, "Is that his
mouth?" She takes pencil from teacher.
She draws. She continues. She stops.
She examines her work. She laughs.
She turns to teacher. She scratches
her ear. She looks at her work.
She holds pencil with both hands. She
puts pencil down. She picks up crayon.
She scribbles on paper.

Comment

Although Debra is verbalising with the teacher the exchange of thought is somewhat limited. Conversation is stilted as the teacher does not take up the opportunities the child offers for extension and more elaborate conceptualisation. The length of utterance is, disappointingly, no greater from the teacher than from the child. An expansion of ideas, on the part of the teacher, might well have stimulated Debra into thinking more deeply and eventually offering opportunities for dialogue.

Children talking to their peers
(the Female Child, the Male Child and the Group)

To the Female Child

	<u>Unstructured</u>				<u>Structured</u>			
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>ϕ score</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>ϕ score</u>
Younger Boys	2.29	4.03	0-15	14	.67	1.17	0-4	16
	t test of correlated means 1.80				N.S.			
Older Boys	1.32	1.96	0-8	14	.55	.89	0-3	20
	t test of correlated means 2.09				N.S.			
Younger Girls	3.00	5.15	0-23	10	.43	.84	0-3	17
	t test of correlated means 2.51				Sig. p < .02			
Older Girls	7.29	7.65	0-28	8	2.56	4.65	0-18	16
	t test of correlated means 4.57				Sig. p < .01			

The Structured situation now shows a lowered mean, less distribution about the mean and a smaller range. The children talk more to each other in the Unstructured situation but the difference between the means is not significant for the boys. For the younger girls it reaches a level of .02 and for the older girls it is highly significant at .01. The girls seek out each other for verbalisation in the Unstructured situation.

Rachel has the highest count of the older girls. In the Unstructured situation her score is 2 to the adult, 28 to the female child, 2 to the male child, 8 to the group and 2 to self.

RACHEL

Unstructured

Rachel is in the doll corner with a female child in dressing-up clothes. Rachel sits down with a doll on her knee. She is mixing something in a bowl at the side of her doll on her knee. Rachel speaks to Female Child. She continues to mix, using the hair brush. Female Child brings her something imaginary and speaks to Rachel. Rachel lifts doll up. She rearranges doll on her knee. Female Child says, "Shall we put on this?" Female Adult enters with coffee on a tray. Rachel stands up. She puts doll down. Rachel says, "I think I'd like the red one please." She chooses beaker from tray. Rachel says, "Thank you." Rachel and Female Child clink beakers together. They laugh. They stand. They drink coffee. They walk slowly, drinking coffee. They walk out of corner. Rachel scans nursery. She walks back into corner. Female Child speaks to her. Rachel says, "I think we'll sit down." They sit drinking quietly for 6 seconds.

Female Child says, "I've finished."
Rachel says, "Please could you take mine as well?" She gives her beaker to Female Child to take away. Rachel returns to chair. She picks up doll. Rachel says, "There now." She puts doll on her knee. Rachel says, "There we are. There now." She loves the "baby". She shows great pleasure. She talks to the "baby", "Oh, your hat nearly fell off." She rocks the "baby". Female Child returns and says, "First she has the bottle." Rachel stands up. She walks across to another chair and sits down. She chatters to Female Child who replies. Rachel gives bottle to doll. She rocks doll. Rachel says, "There you are." She stands up. She puts bottle down. She picks up mug. Rachel talks to Female Child. Female Child asks question. Rachel says "No, she hasn't been sick yet." She puts "baby" down. Rachel says, "She can have a little snooze." Rachel leaves corner. She walks to lounge area. Male Child there. Rachel says, in menacing tones, "That's our living

room." Boys look at her. "It's our living room." Boys depart! Rachel notices coffee beaker left behind on table. She looks disgusted. She says, "Tch! I'll take it." She picks up beaker. She carries it to cupboard top, walking quickly. She begins to skip. Rachel says, "I found this" (to Female Child encountered en route). She deposits beaker. She walks back to corner. She jumps over blocks en route. Rachel says to herself, "Back to our babies." She peeps through the side of the house at the aquarium. She looks at book about fish, on display at the side of it. She looks at it. She turns pages. She continues for 8 seconds. Female Child says to Rachel, "I was looking for you and you were in here. I've been outside there." Rachel points to book on table. Rachel says, "Well, that's the nursery book, you know. It's about a fish." Rachel says, "Let's pretend this is another of our babies." She sits down. Rachel says, "And this is a hospital. It's a hospital home." Male Child is making

funny faces nearby. They laugh at Male Child. They stand up to watch him. They laugh. He hiccoughs. This makes them laugh again. He continues to fool about. They stand and laugh for 23 seconds. Rachel says to Male Child, "This is not big bairns' hospital, it's a little babies home hospital." Rachel says to Female Child, "Isn't he just silly?" Female Adult checks Male Child. Female Adult says to Rachel and Female Child, "Yes. I'd like him to be doing something quietly." Rachel returns to dolls. Rachel says, "Now, we'll have to see to this baby, won't we?" She cuddles it. Rachel says, "This was my dolly, wasn't it?" Female Child says, "That was the boy baby. No, it was our baby. We had another one. That was the boy baby. No, that was your dolly, wasn't it?" "Yes it is." Rachel puts dress on doll. Female Child says, "I think it's nearly time for your party." Rachel says, "It was my birthday. I got it for my birthday." Female Child says, "But it's your party today." Rachel says, "Oh, I've just forgotten." She

is fastening buttons on doll's dress. Female Child says, "It's your best party dress, isn't it?" Rachel says, "Yes, and it's my best party skirt, isn't it? Where's the other big girl?" She stands up. She looks around to find her friend. Rachel says, "Where is she? Oh there she is. Please will you look after my baby whilst I go to the shops?" She walks towards Female Child near the sand. Rachel says, "I'll tell her it's my birthday." She walks along to friend. Rachel says, "You know it's my birthday today?" Female Child says, "What, what, what?" Rachel explains to Female Child, "No, because I'm the big girl. Come to my party." They leave the dry sand area. They climb over block area. Rachel says, "It's really my party again." They walk to wet sand area. "Is this the cake?" "Yes, that's our cake, isn't it? Give it a good stir up." They mix sand in large bowl. Rachel says, "This is my birthday cake." Rachel pats the sand rhythmically. Rachel

says, "Let's mix it. You're not Mummy. The other one is Mummy." Female Child says, "I's the Mummy, aren't I?" Rachel says, "Yes." Small boy is playing with sand and car. Rachel says, "Now look what's happened." She has scooped his car up. Rachel says, to Male Child, "Will you get out of our party?"

In the Structured situation Rachel is being directed but the 'friend' is in evidence. Rachel does not in any way lose her identity in the controlled situation, rather she asserts herself when she 'gives up' only to return to the Manipulative Area and the adult. She verbalises almost as much with the adult as with her female friends, her score being 16 to the Adult, 18 to the Female Child, 2 to the Male Child, 7 to the Group and \emptyset to herself.

RACHEL

Structured

Rachel is in the Manipulative Area with adult and group. Female Adult says, "Let's put all the animals into your red circle." Rachel walks to the end of the table. She sits down. She opens the plastic, hinged circle and puts it down flat on the table. She

adjusts it. She stretches across the table. She picks up a toy and stands it down. Female Adult says, "What colour is this?" Rachel says, "Red." Female Adult says, "Now, you want all the animals that are red putting into there." Rachel picks up a red one. Female Adult says, "And you want all the animals that are blue." Rachel says, "No, I'm putting all these in." Female Child interferes. Rachel says, "No, I'm putting them in." Female Adult says, "No, let Sarah do her own please." Rachel says, "I'm not Sarah, I'm Rachel." Female Adult says, "Oh yes, I'm sorry." She stands a small duck in the ring. Then another one. Rachel says, "That's a ship." Female Adult says, "Yes, and what's that?" Rachel says, "That's a pelican." Female Adult says, "A pelican? Have a good look." "No, it's a rabbit." "Yes, that's right." Rachel picks up another. Female Adult says, "And what is that one? The one you've got in your hand?" Rachel replies, "It's an aeroplane." She shows it to the adult.

Female Adult says, "It's flying up into the sky, isn't it?" Rachel picks up another. Female Adult asks, "And what is that?" Rachel replies, "A cat." Female Adult asks, "Are there any more red ones?" Rachel picks up another. She looks at it and says, "It's a car. Whoops." She knocks over the toy. She picks it up again. She picks out another one. Female Adult asks, "That is a?" All the children say, "Train." Female Adult asks, "Can you see any more red ones?" Female Child says, "An elephant." Rachel says, "Elephant." She stands it up. Female Adult asks, "Any more red ones? Now have a good look." Rachel looks carefully. Rachel picks up another and says, "A van, no, it's a 'bus." Female Adult says, "Yes, it's a 'bus." She stretches across the table. She picks up two at a time. She puts them on the table. Female Adult says, "Rachel." Rachel says, "Yes, but I can't put it in." She tries carefully to make it stand. Female Adult says, "You try, try and balance it. No, if it won't work just lay it down. What about that one?"

Rachel says, "A horse." Female Adult says, "A horse? Yes, that's right." Rachel selects another, and says, "That's a boat." Female Adult says, "It's a yacht or a boat." Male Child says, "I've found a boat over there." Female Adult says, "Do you think that's all the red ones there are?" Rachel says, "Yes." Female Adult asks, "Now, shall I do mine?" Rachel watches Female Adult. "What are you going to do now?" Rachel says, "I want to do the yellow ones." She lifts up the yellow ring. She puts it over her head. She pulls it. Female Child says, "Oh, I've got a cat." "Where is it?" Female Child says, "There it is." Rachel points to it. "Have you got a train?" Female Child pushes all the toys out of the way. Rachel says, "That's smashed over 'cos I'm going to do yellow now." Female Child says, "I'm not playing with you." She selects another toy. Female Adult terminates contact. Rachel says, "That one's a rabbit." She looks at it intently. "The other time I thought that was a pelican, but it wasn't. It

isn't, it's a rabbit." She looks at it. She touches the ears. Male Child asks, "Have you got a train?" Rachel puts all yellow pieces together. Male Child interferes by mistake. Rachel says, "That's naughty." Female Child tries to help Rachel. "There you are." Rachel says, "No, I can get it myself." Female Child says, "Well, I'm not playing there." Rachel says, "I'm not." She walks to train set. Rachel says, "Let's play with the train set." Female Child says, "Yes." They bend down to play. "We're babies and we don't care, do we?" She collects a few pieces. She twizzles a turntable round. She picks up rails. She puts them together. Rachel says, "I don't really know how to play with trains." Female Child says, "I don't." Rachel says, "I do. I don't really. We like to play with these today though, don't we? We can share the parts, can't we?" "Yes." Rachel says, "'Cos you're my friend aren't you? Can't I put mine in there?" Friend tries to help. "No, I want to do it myself.

Just leave my piece in." Two girls join group. Rachel says, "You play with the other things." They ignore her suggestion. Rachel says, "I think I'll go back again." She returns to Manipulative table. Adult is in situ. "Are you going to do the yellow ones, Rachel?" Female Child says, "Rachel." Rachel ignores it. "I'm going to make shapes. What does that shape look like? What about a star?" Rachel asks, "How do you make a star?" Female Adult says, "Do you think that looks like a star in the sky?" She demonstrates. She makes a circle. They look. Female Adult asks, "And what is that?" Girls reply, "A round." Rachel says, "They call it a circle." Female Adult says, "Yes, it's a circle." She demonstrates again. "Those look like spectacles." Female Adult says, "It looks like an eight." Female Child says, "Look at mine." Female Adult says, "I'll pull it like that." She demonstrates. "Oh, it looks like a pair of glasses now." She puts them on. Everybody laughs. "You'd have to have a big face to put

those on." She puts them down. Rachel picks up a piece. She looks at female children to see what they are doing. Girl comes to speak to her. Rachel says, "Yes, but I'm going to do all different colours." She picks up some pieces. Female Child says, "Come on, I'm going to play in the kitchen." She picks up more pieces. She looks under the table. Male Child interferes with game. Rachel says, "I'm picking different things out." She stands up. She sits down. She puts shapes together. Female Child comes to Rachel and says, "Here you are, your dolly's crying." Rachel says, "I don't want him just now." Female Child asks, "Can I have him?" She leaves the area. She watches children making butterfly buns. Rachel asks, "What are you doing?" She looks at icing. "What's that?" Female Adult replies, "That's butter icing. You put it on the top like that." Female Adult demonstrates. "Do you think you can ask Mrs. C. for a fork?" Rachel continues to watch. Male Child asks, "What are you doing?" Female Adult replies, "I'm putting some

cream on the butterfly cakes." She continues to watch.

Comment

The two sequences illustrate the didactic effect of the teacher in controlling the situation and lessening the amount of conversation. Rachel is not subdued by the presence of the teacher nor does she feel a necessity to remain within the learning opportunity. She has confidence in her own seeking of experiences and her independence is repeatedly demonstrated. The teacher did not fulfil enriching and expanding conversational opportunities.

To the Male Child

	<u>Unstructured</u>				<u>Structured</u>			
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Ø score</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Ø score</u>
Younger Boys	3.71	4.98	0-21	6	2.08	3.26	0-12	11
	t test of correlated means 1.93				N.S.			
Older Boys	5.97	7.57	0-28	8	3.23	5.01	0-18	12
	t test of correlated means 1.93				N.S.			
Younger Girls	1.78	3.33	0-13	14	.56	1.56	0-7	18
	t test of correlated means 1.57				N.S.			
Older Girls	3.85	6.55	0-27	18	.79	1.65	0-9	20
	t test of correlated means 2.89				Sig. p < .01			

As to the Female Child, the Structured situation shows a smaller mean, a smaller spread about the mean, a lowered range and an increase in the number of children with a Ø score. The effect of the teacher presence is to lower the amount of verbalisation to the male child. The difference between means is significant only for the older girls, who show a significant drop in amount of verbalisation to boys when the teacher is present. Now boys are seen to be talking to boys - the sex preference is again demonstrated and it is the older boys who have the highest mean in the Unstructured situation. The older boy responsible for the highest incidence is again Simon, who has been quoted earlier. Simon verbalises almost as much (6 to the Adult, 28 to the Male Child, 2 to Self) in the

Unstructured as he did in the Structured (38 to the Adult, 4 to the Male Child, 1 to Self). He is in the Art and Creative Area with a male child.

SIMON

Unstructured

Simon is at the painting easel. He paints. He paints. He dips brush. He paints. Male Child approaches and looks at the picture. "What are you doing?" says Male Child. Simon looks at him. Simon says, "I'm painting the windows." The picture falls down. Simon says, "Oh look." Male Child asks, "How did it do that?" Simon says, "It fell down." He looks around and sees M. He steps towards her. "It's fallen down," he says to M. M. adjusts the picture. "There, it's all right now," she says. Male Child says, "I didn't do that." Simon says, "No, it fell down." Simon paints. He paints. He dips brush into pot. He paints. The paint runs down the paper. He says to the paint, "Will you stop that." "What are we doing?" he says to the Male Child and smiles. He dips the brush up and down in the paint

and smiles at the little boy. He looks up at Marilyn nearby. M. says, "Where's the door?" Simon says, "I haven't done it yet." He paints the door. The Male Child says, "Put it there," pointing to the paper. Simon paints the chimneys. Male Child says, "I've got to go up the flats." Simon paints. He ignores Male Child. Simon paints the smoke. "You don't know what I'm doing now," he says to Male Child. Male Child says, "That's the smoke." Male Child says something to Simon. Simon looks at him. "Your Mam won't see your name," he says to Simon. "Oh yes she will," says Simon. "Right over there, see? There's my name," says Simon. He points to his name on paper. "I won't paint over my name," Simon says. He paints. He paints. Male Child asks, "What are you doing now, Simon?" Simon replies, "I'm doing the cutting." Male Child says, "That's where the dogs live." Simon says, "No." He looks at the Male Child. "This is another house," he says. He paints. He dips brush. He paints. He paints. The

paint drips down. Male Child says, "Oh look, the paint's falling down." Simon says, "I'll catch it." He places brush onto the paint. "Blob, blob," he says, as he catches each drip. He turns and smiles at Male Child. "It's still running down," he says to Male Child. They both laugh. Male Child says, "Oh look, it's gone down there." "I'll just turn round," says Simon. Male Child says, "Look Simon, I'm mixing this up for you." He is stirring the orange paint for Simon. He touches Simon to draw his attention. Simon paints. He paints. He paints. Male Child says, "You're making a man with foots on." He paints. Simon looks at him. Simon says, "No, I'm making a garage." He paints. Simon says, "A garage outside." He continues to paint. He continues. Male Child says, "I'm going to do the flats." Simon does not answer. M. comes near. "Have you finished, Simon?" she asks. Simon says, "No. I've done the garage." She asks, "Where's the car then?" He

looks at her and smiles. He says, "It's inside." She asks, "Do you know what this is?" Simon says, "That's a man." "He's got his hat on, and you can't see him," he says mischievously. The Male Child says something to him. He takes Simon's hands. Simon puts both hands on the brushes. He tries to stop the Male Child from taking one. "Hey!" He relents. "You can have them now," he says, "I'm going to get you a piece of paper." He turns around and walks to get some paper. He picks up paper. He returns. He gives paper to Male Child. M. puts the paper on. Simon watches her. Male Child starts to paint. Simon watches. "I can draw, I can do a chimney," he says to Male Child. He asks Male Child, "Is that your flat?" "I'm doing my flat," says Male Child to Simon. Simon smiles at Male Child. Simon puts his hand to his mouth. Simon says, "Are you colouring it in then?" He puts his hand to his mouth. He says something to Male Child. He

asks, "Did you know that?" The paint drips down. Simon laughs with Male Child. "Brush it onto the side," says M. to Male Child. Simon smiles and laughs. Male Child asks, "Do you know what that is?" Simon says, "I don't know." Male Child says, "It's a man." Simon looks and smiles at him. He says, "I thought you were doing flats." He puts his hand to his mouth and laughs behind it. Male Child starts to paint the flat. Simon asks, "What are you doing about it?" He puts his hand to his face and laughs. He puts his other hand to his forehead and he laughs. He covers his eyes with both hands and laughs. Male Child says, "Do you know that man? He can climb so that he can get up the steps." Simon asks, "Why is he doing that?" He looks at the picture. He asks Male Child, "Do you know how to do steps?" "You do two lots of lines and you do crosses." He puts his hands to his mouth again. He smiles. He puts both hands over his eyes. He looks between his fingers. He leaves the Male Child and walks up to the water

trough. The Male Child calls to attract his attention. Simon ignores him. He takes off his apron. He carries it. He walks to Art and Creative Area. He hangs up his apron. Male Child calls, "Simon, look at me." Simon looks across at him but walks back to the water trough.

Comment

Simon talks easily as he works in the company of other boys. He is thinking as he paints and giving expression to his ideas. He is building up new relationships with people, e.g. his joke about the garage and the car - and this was to the Adult!

In the Structured situation the older boy responsible for the extreme range is David, aged 46 months, $1/2$ family position and son of a painter and decorator. His score: 9 to the Adult, 18 to the Male Child and 1 to Self, compares with that in the Unstructured: 1 to the Adult, 1 to the Female Child, 9 to the Male Child and 1 to the Group. David prefers talking to boys. Here he is in the Malleable Area:

DAVID

Structured

David is sitting at the Malleable table. He is cutting up a long piece of plasticine into small pieces.

David looks at the teacher. He says to her, "What are you doing?" She says, "I'm making another snake."

David rolls plasticine. He picks up tool. He pokes it into plasticine which teacher is rolling. He cuts plasticine with tool. He looks at Female Child. He uses tool to stab roll of plasticine. Teacher says, "He's attacking his snake again."

David pretends to attack snake with the tool. Teacher says to him, "Oh, you've killed him, David. Poor snake." David laughs. He uses tool to cut snake into two pieces. He says, "I'll make another one." He goes on cutting. Teacher says to him, "See if you can make a long snake, David."

David rolls plasticine with intensity. Teacher says, "You are going to make one this time, aren't you David?"

David nods. David stops rolling. He stands up. He picks up plasticine

snake. He pretends to attack Male Child with snake. He laughs. He puts snake down on table. He sits down. David says, "I'm going to frighten you, Gerald." David resumes rolling plasticine with intensity. Teacher says, "Your snake isn't very long, David." Male Child looks at David. He says, "Mine's bigger than yours, David." David picks up tool. He stabs plasticine snake. He says, "I killed Miss C.'s snake." Teacher says to David, "You keep attacking my snake." He picks up snake. He tears it into little pieces. He picks up the pieces. He throws them around the table. He collects pieces of plasticine. He moulds them together. He rolls plasticine with his hands. He rolls with intensity. He says to Male Child, "My snake is getting longer." He repeats to Male Child, "My snake is longer than yours. Look how long it is." David looks at Male Child. Male Child says to David, "Mine's the biggest." David goes on rolling. He looks at Male Child. He

continues to roll. He looks at Male Child. Male Child says, "I'll put it all over your face." Male Child holds snake in front of David.

David snatches at it and it breaks.

Teacher says to David, "You shouldn't snatch other people's snakes." David resumes rolling plasticine. David says, "Mine's getting bigger."

Teacher says, "Your snake is thin at one end and fat at the other end.

Make it all the same thickness." David says to Male Child, "I'm keeping on rolling, Dale." He rolls plasticine.

He continues to roll. He moves plasticine snake. David says, "Mine's still going." He rolls plasticine snake. Male Child says, "Mine's bigger than yours." Teacher says, "David's isn't as long as Dale's, is it David?"

David shakes his head. He rolls ineptly. Male Child says, "Mine's bigger than yours." David says, "No it isn't." David says to Male Child, "Go on, you make a gingerbread man." David stops rolling. He says, "I'll go and get a rolling pin for you."

He pushes his chair back. He stands up. He picks up rolling pin from floor. He gives it to Male Child. Teacher looks at David. She says to him, "You make a gingerbread man as well." David says to her, "I can't. I'll make a lady and a man." Teacher says, "Do you mean the little old man and the little old woman in the gingerbread story?" David says, "Yes and the gingerbread man." He pulls his chair up to the table. He picks up a piece of plasticine from the roll. He holds it up. He says, "Look at my big little snake." David looks at Teacher. He says to Group, "She's going to make a gingerbread man out of plasticine." David says to Male Child, "Oh, that's a silly one, isn't it?" He points at model Teacher is making. He laughs. Teacher says to David, "Get the tool that cuts out." David picks up wrong tool. Teacher says, "No. You can't cut with that one." David puts it down. He picks up correct tool. He hands it to Teacher. He watches Teacher as she cuts out gingerbread man.

He picks up tool. He takes plasticine.
He flattens it out. He cuts plasticine.
He stops cutting. He looks at Teacher.
He puts clay tool in his mouth. David
says to Male Child, "Look, she's
nearly done it." He looks at ginger-
bread man which teacher has cut out.
He waves clay tool in the air.
Teacher says to David, "Now, what does
he need?" He says, "Two eyes. An
orange and a nose." Teacher says,
"Why an orange?" David says, "'Cos."
Teacher gives gingerbread man to
David. David gives it to Male Child.
He then says, "Can I have it back,
Dale?" Male Child says, "No." David
says, "I want it back." Male Child
gives it to him. David says, "What
about the river?" Teacher says,
"You'll have to make a river out of
plasticine." David says, "Oh the head
is falling off." Teacher says, "Well
stick it back on."

Comment

The teacher does not see her role as a
conversationalist. She is supportive but does
not verbalise as she works (a good opportunity

for expressive language) and only follows the child's lead. Although boys are talking to boys there is no strong masculine identification.

Hutt comments on,

"... the marked tendency for girls and boys to interact with their own sex ... Apart from relatively brief or transient encounters with members of the opposite sex the propensity for forming like-sex pairs or groups is evident throughout the pre-school period."

(quoted from "Males and Females",

p. 126).

To the Group

	Unstructured				Structured			
	Mean	S.D.	Range	ϕ score	Mean	S.D.	Range	ϕ score
Younger Boys	.96	1.97	0-9	14	.67	1.63	0-7	19
	t test of correlated means				.55	N.S.		
Older Boys	1.26	1.53	0-6	14	.74	1.26	0-4	20
	t test of correlated means				1.48	N.S.		
Younger Girls	.48	.95	0-3	17	.48	1.08	0-4	18
	t test of correlated means				0	N.S.		
Older Girls	1.47	2.70	0-12	18	1.12	2.25	0-9	24
	t test of correlated means				.76	N.S.		

The older children are found to be addressing the group most frequently, probably by reason of their maturity, because they are more often to be found in a group situation. The girls show a higher mean than the boys but in no group is there a significant difference between means. Sarah, responsible for the extreme range in the Unstructured situation, was aged 46 months, $1/2$ family position and daughter of a Catering Officer. She addresses individual children during the sequence but directs verbalisation towards more than one child when her play is threatened. Her score is ϕ to the Adult, 23 to the Female Child, 4 to the Male Child, 12 to the Group and ϕ to Self.

SARAH

Unstructured

Sarah is playing with a group in two wooden boxes, the size of tea chests, fixed together with connectors. There is a circular way through from one box to the other, and the open wall is at one side. Sarah climbs through from one box to the other. She touches two children who are already in the second box. Two other children are jumping up and down on top of the boxes. Sarah says, "I'll have a look." She tries to get out of the box. She gets stuck half way out and falls back onto the other two.

Confusion in the box. Sarah says, "They're the witches, they're the witches." Group say, "Yes, we're the witches on the roof." Sarah says, "You two pretend you're the witches." Female Child says, "Yer." Sarah watches the girls with her thumb in her mouth. She kicks one leg up in the air to touch the top of the box. She touches the connector between the boxes. Sarah says, "Let me have a look." She crawls out of

the box. She puts her hands on her face. She screams. She goes back in the box quickly. She crosses her legs. The Female Child goes into the box and she screams. The two girls talk to each other in the box. Female Child gives Sarah a doll. Sarah says, "The witches have gone." Sarah says, "Pretend this is mine. It's mine." Female Child says, "No, I know, we could be twins and we could both have it." Sarah says, "Yes, but I want it." She comes out of the box. She looks at a Female Child wearing black hat. "Aaahh," she says. She goes back into the box. She squeezes herself into the corner. She sucks her thumb. She falls out of the box. Sarah says, "I'm dressed up already." She walks into the bedroom area. Female Child says, "Sarah, have you kept that veil for me?" Sarah says, "No." Female Child asks, "What are we going to put on?" Sarah says, "This is a crown." She points to her head. She selects a dress from the rail.

She begins to put a skirt on. She puts her left leg in. She looks at the girls to see what they choose. She puts the other leg inside and pulls up the skirt. She tucks her clothes at the waist. She stands up. She walks across to the mirror. She admires herself. She puts out her arms and twizzles around. Sarah says, "Watch me." She twizzles around again. Sarah says, "Isn't it nice?" Female Child says, "Oh yes." She rubs her nose. She touches the top of her head. She holds on to the curtain rail with one hand. She watches the other girls. "Catherine didn't get one and I didn't, did I?" She puts two hands on the rail. She swings on the rail. Sarah says, "You don't have to have two things on." Female Child replies. Sarah says, "I don't need this." Female Child replies. She dances round to the back of Female Child. "Oh, it's fastened at the back." She puts the dress straight. She tucks it in at the waist. Female Child says, "Wait 'till I put my veil on." Sarah says, "I'll hold this for

you." She picks up the doll. She looks underneath the doll's apron. Female Child takes the doll back again. Female Child moves quickly out of bedroom area to boxes. Sarah runs after Female Child. She waves her arms. Sarah says, "No, you go in after me. You're the witch." She goes in the box. She crawls out. She crawls in. The witches on the roof start to dance about again. Sarah puts her hands over her mouth. "Oh, oh, oh." She pretends to be frightened. Sarah says, "The witch is coming down the chimney." She squeals. She looks at the Female Child with the black hat on. The Female Child looks in at both of the windows in turn at Sarah and Female Child. She puts her hand on her face. She squeals. She sucks her fingers. She rubs her nose. She wiggles her feet about. Sarah says, "We're both the princesses." The witch peeps in the windows again. She squeals again. Sarah says, "Go away." The two in the box talk together.

Sarah says, "You're the wicked witch."
She kneels up. "You really are. Mmmm."
She puts her hands in her mouth. She
waves her hands. The witch speaks to
her. "We're not because we're
beautiful princesses." Female Child
says, "Go away, go away." She comes
out of the box on her knees. She
stands up. Sarah says, "Get away,
get away." She flings her arms and
shouts, "Get off our roof, get off
our roof, everybody get off our roof!"
Some boys have climbed on the roof.
Sarah says, "You're naughty, you're
little. You're little." The Male
Children retreat. Sarah comes back
inside the box. She sits down. She
holds the connector. She rotates it.
She leans to look at the other connector.
She rotates that. Female Child says,
"Hello, Geoffrey, you're my friend,
aren't you?" Sarah looks at the Male
Child who is wearing a duck hat. The
witches are back on the roof again.
Sarah says, "Get off our roof, get
off our roof, get off." Male Child
says, "Anyway, I can come up here."

Sarah says, "Get off." Male Child says, "I can't." Sarah says, "Yes you can. We're two princesses." Male Child replies. Sarah looks at him. Male Child says, "I'm off." Sarah says, "Don't come on here again." She goes back inside the box. Female Child speaks to her. She lies down on the ground. Male Child comes to look at her. Sarah says to Female Child, "You woke up and I didn't. Mmmm." She puts her hand over her mouth. Two Male Children look into the boxes. She pretends to be frightened. She leans forward. She comes out of the box. She looks at the two boys. Sarah says, "You killed us, didn't you?" She puts her hand over her mouth. She makes noises. They dance about pretending to frighten her. She kicks one boy. He lies down on the ground, pretending to be dead. The second Male Child imitates him. Sarah says, "I think I've killed him." She comes out of the box. She kicks her legs about and wiggles her fingers. He ignores her. She sucks her thumb.

Male Child comes to life again. Sarah squeals. She comes to the side of the box. Sarah says, "Get off our roof, get off our roof." She rubs the connector again. Sarah says to Male Child, "Get, get." She gives him a kick. She gives him another kick.

Comment

Sarah appears to be a confident child prepared to share her ideas with her peers. She is a leader and in the group situation verbalises on behalf of the others. She sustains the phantasy theme through action and verbalisation, her ability to do this revealing maturity as well as command of language.

Addressing the Group appears still to be a phenomenon of age in the Structured situation and the children responsible are fewer. Nevertheless we have the younger boy, responsible for the extreme of range (7) in Graeme: score 9 to the Adult, 1 to the Male Child and 7 to the Group. Graeme, aged 41 months, ³/3 family position, was the son of a skilled worker. The older girl (9) was Julia: score 10 to the Adult, 1 to the Female Child, 9 to the Male Child, 9 to the Group and 1 to Self. Julia,

aged 48 months, ²/₂ family position, was the daughter of a factory worker. Both children were in the Malleable Area of different Nurseries. The transcripts are illuminating. Though the behaviour is intrinsically the 'same' the maturity of Julia is shown in her range of ideas and subtlety of manipulation of people.

GRAEME

Structured

Graeme is sitting with a group of children. He has a piece of clay in his hand. He shows it to the teacher. He picks up a plastic rod. He cuts the clay into little pieces. He puts the rod down. He picks up a piece of clay. He rolls it in his fingers. He puts it down. He picks up another piece. He flattens it. He makes a hole in it. He puts all the pieces of clay together. He points to it. He says, "Look, there's a mice." He stands up. He looks around. He sits down again. He rubs an eye with his thumb. He watches the teacher. He looks at another boy. He points to him. He says, "Look, he's picked up that car." A Female Child reaches out

and Graeme takes hold of her arm. He pushes her arm down. He picks up a plastic rod. He picks up a piece of clay. He slices the clay with the rod. He picks up another plastic tool. He beats them on the table like drumsticks. He beats one only. He watches the teacher at the same time. He holds one tool like a dagger. He stabs the other tool with it. He makes noises. He puts both tools down. He says, "I'm making a tiger mice." The teacher says, "What is a tiger mouse?" He says, "It's got one leg up and one leg down and both arms in the air." He demonstrates. A Female Child dances in front of him. Graeme hits her with the plastic tool. He scrapes the table with the spatula. He stands up. He turns. He looks around the classroom. He watches another teacher. The teacher says, "Who wants a piece of chocolate (clay)?" Graeme shouts, "Me." He puts his hand against his mouth. He watches the teacher while she cuts the "chocolate". She offers him a piece.

He takes it. He says, "This is mine."
He says, "I've got a big piece." He holds the "chocolate" in his hand. He watches her cutting up the other pieces. He puts the "chocolate" to his mouth. He pretends to eat it. He moves his lips. He bends down. He looks under the table. He stretches up. He picks up a piece of clay. He flattens it with both fingers. He holds it out. He says, "Look what I've done." He puts the clay down. He thumps it. He calls to the teacher, "Do you know what I'm going to make?" Teacher says, "What are you going to make, Graeme?" He does not answer. He cuts across the clay. He cuts it into four pieces. He holds the tool like a dagger. He puts both hands on his knees. He watches the other children. He calls to teacher, "I'm going to make something different." Teacher says, "What are you going to make?" Graeme says, "I don't know." Teacher says, "Can you make a dog?" Graeme says, "I don't know." Teacher says, "Can you try?" He ignores her.

He takes piece of clay. He bangs it. He shapes it. He throws it across the table. He stands up. He reaches out. He picks up clay. He sits down. He manipulates clay. He says, "This is my dog." Teacher asks, "How many legs has it?" Graeme says, "Don't know." Teacher says, "Where's its tail?" He ignores her. He continues shaping clay. He continues. He stands up. He reaches across the table. He picks up clay. He says, "I want that piece." Male Child refuses it. Graeme says, "Give it to me." He grabs clay. Male Child pushes his arm. Graeme leaves go. He picks up another piece. He sits down. He manipulates clay. He picks up tool. He pushes tool into clay. Noise from other children. Graeme looks around. He continues manipulating clay. He drops tool on floor. He bends down. He picks up tool.

JULIA

Structured

Julia is at the Malleable table. She pulls off a piece of clay. She moulds the clay in her hands. She smiles. She picks up a spatula and pokes the clay. She continues to poke the clay. She says to Male Child, "You're not coming to my party." Male Child ignores Julia. She says, "Tonight I'll tell you." She squeezes the clay. She pokes the clay with her finger. She looks at Male Child. She whispers to herself. She says to Male Child, "You couldn't hear me." Male Child says, "You're not telling." She ignores him. Male Child repeats to Julia, "You're not telling me are you not?" She moulds the clay in her hands. Male Child asks, "What's that, Julia?" Julia says, "A man." She rolls a piece of clay. She shows it to the other children. She places it on the table. She squeezes the clay. She flattens it with the palm of her hand. She stops and looks at the table. She asks, "Who's got my cot? Who's spoilt my cot?" She shouts, "Brian." She says to him, "Have

you got mine?" She repeats, "Brian, have you got my cot?" He says, "What?" She says, "Have you spoilt my cot that I made?" She says, "I had it down there." She points to the table. She picks up the spatula and pokes holes. She pokes the spatula in the clay and waves it around. Julia puts the clay on the table. She cuts off a piece of clay. She gives it to the teacher. She says to the teacher, "There's some pie." She says to Female Child, "Do you want some pie?" She flattens the clay. She moulds it with her fingers. She looks at the teacher. Teacher asks her, "What kind of pie is it?" Julia says, "Lemon." She pokes her fingers in the clay. She looks at Male Child. She continues to handle the clay. Teacher says, "This pie is delicious isn't it?" Julia smiles. She continues to mould the clay. She presses her fingers in the clay. She picks up a small piece of clay. She handles it. She takes a piece from Male Child. She squeezes it. She presses the sponge on the clay. She

says, "There, it's wet now." Teacher asks, "Is it getting too stiff?" Julia says, "Yes." She rubs her hands. She looks at the teacher. She squeezes and moulds the clay. She picks another piece off the table. She rolls it in a ball. She places it on the table and continues to roll it in a ball. She looks at the teacher. She rolls the clay. She stops. She rolls the clay on the table. She throws the ball of clay on the table. She watches it roll along. She smiles. She mutters to herself. She picks up a piece of clay. She manipulates it in both hands. She stops and looks at Female Child. She picks up a spatula. She cuts off pieces of clay. She turns the clay round. She cuts off more pieces. She continues. Male Child touches her and says, "Eee, look." Julia selects another piece of clay. She says to Male Child, "What is it?" She leans over to Male Child. She asks, "What is it, Brian?" He replies, "A monster." Julia puts the clay on

the table. She punches the clay very gently. She moulds the clay. She continues. She says, "Here's some cake." She cuts off a piece. She says to the teacher, "Here's some cake." She gives some to Male Child. Teacher says, "This is delicious cake, Julia." She asks Julia, "What kind is it?" Julia replies, "It's chocolate." She stops and fiddles with her sleeve. She presses the clay on the table. She pokes it with her fingers. She picks up the spatula and uses it to poke holes. She presses her palm on the clay. She nips the clay with her fingers. She picks up the clay from the table. She squeezes it. She continues. She stops and looks around. She watches the teacher. She selects another piece of clay. She flattens it on the table. She stands up the clay. She says, "Look at my Wendy house." Teacher says, "Oh, that's nice, Julia." Julia picks up a tiny piece of clay. She moulds it in her hands. She says, "This is the baby." She puts it in

the "Wendy house". She says, "The baby's in the house." She puts a flat piece of clay on top. She says, "Oh look, it's fallen down." She picks up the piece of clay and tries to place it on the top. Teacher says, "It's too thin to stand up, Julia." Julia continues to manipulate the model. She stops and watches the teacher. Teacher says to Julia, "Would you like a piece of my cake?" Julia smiles and replies, "Yes." She accepts the piece of clay. Julia pretends to eat it. Julia says, "Can I have some more?" Teacher says, "Would you like a big piece or a small piece?" She takes the piece of clay. She pretends to eat it. She says to teacher, "Brian wants some." She moulds a piece of clay. She puts it in the model 'Wendy house'. She says, "I'm making a roof." She picks up some more clay. She presses her palm on it. She says, "I want a roof on the 'Wendy house' like this." Teacher says, "Did you put the cake in the 'Wendy house'?" Julia says, "Yes." She puts a piece of clay

on top of her model. She presses it with her hand. She says, "Look, I've made a Wendy house, Brian." She touches it with her fingers. She looks at the teacher. She cuts off another piece of clay. She moulds and squeezes it. She says, "This is the man." She puts it in the model 'Wendy house'.

Comment

Julia uses verbalisation to establish herself and her ideas with the children. She is at ease and responds to opportunity of intercourse, speaking freely with adult, individual and the group of children. She is the mouthpiece for Brian. The six months of age added to the sex difference produces mature qualities of behaviour, showing marked developmental tendencies.

Children talking to Self

The phenomenon of self directed verbalisation shows an interesting trend.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Younger Boys	1.46	2.04	0-6	1.71	3.21	0-14
	t test of correlated means			.34	N.S.	
	<u>No. of children with 0 score</u>			<u>No. of children with 0 score</u>		
	11			15		

The mean is higher in the Structured situation, though not significantly so. It would not be expected that the younger boys would talk more to themselves in the Structured situation and the number of children with 0 score increases. The explanation probably lies in the high range score of John who was with the teacher, in the Book Area. John's score is only with the teacher (13) and himself (14). His total score was 1 to the teacher in the Unstructured situation. After a listening and conversing period John picks up a book and 'reads'. The observer did not, unfortunately, move near enough to record his words but these were spoken audibly. John, aged 36 months, had been in school for only 1 month. His family position was $2/2$, his father

a factory manager and his mother a teacher. He had learned the purpose of reading. The behaviour sequence reads very typically of a three year old male child, but one who is showing interest, albeit rudimentary, in the world of books.

JOHN

Structured

John stands by adult in Book Corner. He looks at her. He looks at the book she holds. He listens as she reads. He scans her face. He looks down at the book. He glances around him. He looks back at her. He looks down at the book. He points to a picture. He says, "That's a basket." Again he points, "That's a dog." He is asked how many dogs. "Three," he answers. "How many cats?" the adult asks. He says wrongly, "Ten." "There are four," he is told. "Four," he repeats. He looks around. He lifts his hand to his hair. He rubs his hair. He moves his feet. He moves nearer to adult. He edges out another boy. The other child stands near him. He watches the other child intently. He pushes the adult with

his knee. He listens as she continues reading. He is asked what colour an orange is. He replies, "Yellow." "Orange," he is told. He repeats, "Orange." Adult asks, "Do you like oranges?" "Yes," he replies. "Do you like apples?" he is asked. He replies, "Yes." He volunteers, "I had an apple." Adult asks, "When?" He answers, "On Saturday." "Did you eat it all?" "I ate it all," he replies. "Pips and all?" He smiles, "Yes." He continues to listen as she reads. He reaches over and turns a page. She hands him the book. He turns the pages. He walks to a bench. He sits down. He continues to turn the pages of the book and "read" it for $2\frac{1}{2}$ minutes. He puts the book by his side. He gets up. He walks back to the teacher. He joins the group. He stands on tiptoes. He peers over the shoulder of the nearest child. He stops. He turns and looks across the room. He turns back. He listens. He listens quietly for 20 seconds. He wriggles nearer. He pushes himself

nearer. He stops. He listens for 40 seconds. He shuffles his feet. He moves next to the teacher. He looks at the other children. He continues to gaze at group for 10 seconds. He looks down at the book. He verbalises without much sound. He smiles. He touches the teacher. He looks around. He rubs his cheek. He continues to rub his cheek for 10 seconds. He scratches his head. He gazes about him. He suddenly pushes through the group. He goes back to the bench. He stoops over the bench. He rests both his hands on the bench. He bends down. He kneels by the bench. He picks up a book. He flips through it for 5 seconds. He half rises. He drops the book. He picks it up. He turns. He walks over to the book shelf. He pauses. He looks at the shelf. He clumsily pushes the book on the shelf. His hand moves to one book. He hesitates for 10 seconds. He begins to extract a book. He pushes it back. He takes out a book. He

puts it to his mouth. He rubs his head with it. He looks about him. He smiles. He moves away from the book shelf. He bends down. He sits on the carpet. He turns over on his side. He stretches out. He turns over on his stomach. He puts the book on the carpet. He opens it. He turns the pages.

Comment

This is a 'typical' behaviour sequence for a three year old male child with minimum verbalisation. John responds to adult presence but the stimulation was such that it was not likely to expand his thinking.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Older Boys	3.32	4.25	0-18	.90	1.37	0-7
t test of correlated means 3.39				Sig. p < .01		
<u>No. of children with \bar{x} score</u>		<u>No. of children with \bar{x} score</u>				
10		15				

In the Structured situation, with the older boys the mean is significantly smaller, likewise the spread around the mean. The range also is less and the group of children with \emptyset score increased. The child, Mark, aged 44 months, $1/2$ family position and son of a factory worker, was responsible for the extreme range in the Unstructured situation. His score, \emptyset with the Adult, 2 with the Female Child, 6 with the Male Child and 18 to Self, is well distributed compared with the Structured situation, 20 to the Adult and 1 to Self. The transcript shows Mark in the Manipulative Area, absorbed in his construction, but able to accept ideas and to cross-verbalise with other children.

MARK

Unstructured

Mark sits in the Manipulative Area. He sits unoccupied. He watches a Male Child. He continues. He says, "I'm going to make a helicopter." He picks up a blue bar of Systema material with his right hand. He picks up a yellow junction with his left hand. He pushes the blue bar into the junction. He holds the model in his left hand. He continues. He picks

up another blue bar with his right hand. He pushes it into the junction. He picks up another blue bar with his right hand. He pushes it into the junction. Mark picks up a red bar with his right hand. He pushes it into the junction. He holds the model in his left hand. He looks at it. He says, "One more." He picks up a green bar with his right hand. He pushes it into the junction. He holds the model in his left hand. He looks at it. He says, "I have made a helicopter." He holds the green bar in his right hand. He puts the model on the table. He spins it vigorously. He continues. He continues. He takes off the green bar with his right hand. He puts down the bar on the table. He stands up. He holds the model in his left hand. He kneels down on the floor. He spins the model on the floor with his left hand. He continues. He continues. He says, "This goes very fast." Mark verbalises the numbers one to ten. He continues. He continues.

He stops spinning. He looks at a Male Child. He verbalises the numbers eleven to thirty. He continues. He continues. He continues. He continues. He says to himself, "This is a helicopter." He says, "This helicopter can fly." Male Child says to him, "Do you have to make it like that?" Mark looks at him. He does not answer. He stands up. He holds the model in his right hand. He sits down on a chair. He puts the model down on the table. A Female Child says to him, "I want you to be a baby." Mark looks at her. "I do not want to," he says. He says, "You can't make one of these." She looks at him. She says to him, "Yes I can." He stands up. He picks up the model in his left hand. He lies down on the floor. He spins the model vigorously on the floor. He continues. He continues. He kneels on the floor. He says, "I'll make a fast one." Mark spins the model vigorously on the floor. He continues. He continues. He says to a Male Child, "Mine can go fast."

He continues to spin. He continues. He says to Male Child, "Can you make yours do this?" He watches the Male Child spin his model. Mark says, "Good boy." They spin their models on the floor. They continue. They continue. Mark stops spinning. He says to Male Child, "Mine has broken," when a blue bar falls off. He picks it up with his right hand. He pushes it into the junction. He holds the model in his right hand. He says, "Oh dear," as two blue bars fall off. He looks at the model. He says, "Mine's broken again." He looks at the bars. He picks up one of them with his left hand. He pushes it into the junction. He looks at the other bar. He picks it up with his right hand. He pushes it into the junction. He holds the model in his left hand. He looks at it. Mark says, "I have only half of it on," when the other two bars fall off. He looks at Male Child. He says, "Give me another big blue one." The Male Child does not answer. Mark picks up the red bar

with his right hand. He pushes it into the junction. He picks up the blue bar with his left hand. He pushes it into the junction. He says, "I have made my helicopter again." He smiles. He spins the model vigorously on the floor. He continues. He continues. He stops spinning. He picks up the model in his right hand. He smiles. He stands up. He watches the Male Child. He stands by the chair. He sits down.

Comment

The sequence shows Mark quite able to accept intervention and some 'pollution' of his ideas but he continues to be absorbed in his own thinking. There are at least two instances of failure of communication.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Younger Girls	.83	1.27	0-5	.39	.58	0-2
	t test of correlated means 1.65			N.S.		
	<u>No. of children with \bar{p} score</u>			<u>No. of children with \bar{p} score</u>		
	13			15		

The young girls give very little evidence of talking to Self. The mean in the Structured situation falls but the difference is not significant. The number of children making no score increases slightly from 13-15 in the Structured situation.

	<u>Unstructured</u>			<u>Structured</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Older Girls	1.26	2.27	0-9	.65	1.41	0-7
	t test of correlated means 1.68			N.S.		
	<u>No. of children with 0 score</u>			<u>No. of children with 0 score</u>		
	20			23		

Comment

The older girls surprisingly show more evidence of talking to Self than the younger girls. This may be because the older girls are talking very much more in every situation and certain of these girls carry the highest scores. The group has the highest number of children making 0 score and this rises for the Structured situation, 20-23. The child, Lynn, responsible for the extreme range, 44 months old, 2/2 family position and daughter of a railway official, was in the Book Area "reading" occasionally to herself but in contact with a male child.

As the instances were so scattered the sequences are not submitted.

Children talking to the Adult

A more detailed analysis of the category Child-Adult is worthy of notice.

Table 5

What effect is the structured adult presence having in the amount of verbalisation to the adult

	<u>Unstructured</u>					<u>Structured</u>				
	All Children	YB	OB	YG	OG	All Children	YB	OB	YG	OG
<u>INFORMATION PROCESSING</u>										
Confirms	28	3	10	4	11	200	34	43	60	63
Converses	30	1	14	3	12	56	20	14	10	12
Inquires	26	8	5	2	11	103	31	36	9	27
Informs	104	21	34	22	27	733	98	202	110	323
Role-play	11	3	4	0	4	30	4	4	1	21
<u>REINFORCEMENT TECHNIQUE</u>										
Negative R.	8	2	4	0	2	25	1	10	6	8
Positive R.	11	0	7	1	3	36	12	7	4	13
<u>CONTROL TECHNIQUE</u>										
Suggests	5	1	3	0	1	16	4	5	2	5
Requests	23	7	6	4	6	47	16	13	4	14
		46	87	36	77		220	334	206	486
		133		113			554		692	
	246	246				1246	1246			

The distribution of the children's verbalisation to the adult is shown in Table 5. There is an increase in each category in the Structured situation and this is dramatic in the Confirms and Informs categories. The teacher promotes the exchange of information and her presence prompts the children to increased

questioning. The Rank order of categories in the two situations shows a positive correlation ($r = .88$, Sig. $p < .01$) suggesting that the exchange of verbalisation between the two situations is one of degree of quantity rather than quality, when the teacher is the main recipient. When, however, the order of the children's total verbalisation (Table 3) is compared with that to the teacher the correlation is low. In the Unstructured $R = .25$ and Structured $R = .32$, suggesting that aspects of verbalisation to the teacher are not significantly correlated to aspects of total verbalisation.

Verbalisation by the Adult

Interest is now centred on the adult, on the amount of verbalisation by her, and the various categories. (Table 6). When she becomes the central figure it is undoubtedly in the Structured situation when she is dominating that she verbalises most. Her presence in the Unstructured being incidental, lowers the raw score, but it is of interest that the Rank order of categories in both situations is highly correlated: $R = .96$, Sig. $p < .01$. There is, therefore, a high consistency in her verbalising procedures whether incidental or structured. The difference of amount of verbalisation in the two situations is highly significant, $\chi^2 48.58$, $p < .01$ level. Sex and age differences amongst the children are not significant, indicating that the adult is not verbalising significantly more with older than younger or with boys rather than girls.

Table 6

Verbalisation by the Adult

What different effect is the teacher having
in the Structured situation?

	<u>Unstructured</u>					<u>Structured</u>				
	All Children	YB	OB	YG	OG	All Children	YB	OB	YG	OG
<u>INFORMATION PROCESSING</u>										
Confirms	25	5	10	2	8	71	13	17	10	31
Converses	11	0	4	5	2	52	9	5	16	22
Inquires	81	14	22	23	22	552	115	146	145	146
Informs	35	8	7	4	16	328	58	101	59	110
Role-play	4	0	0	0	4	38	2	12	5	19
<u>REINFORCEMENT TECHNIQUE</u>										
Negative R.	0	0	0	0	0	10	6	3	0	1
Positive R.	35	3	17	4	11	166	22	35	44	65
<u>CONTROL TECHNIQUE</u>										
Suggests	43	0	11	16	16	548	74	125	158	191
Requests	31	6	12	3	10	190	40	50	57	43
		36	83	57	89		339	494	494	628
		119		146			833		1122	
	265	265				1955	1955			

Information Processing

Over the four main categories of information processing and excluding role-play, the adult again is verbalising significantly more in the Structured situation, χ^2 18.97, Sig. $p < .01$. Sex differences are not significant in either situation but age differences are highly significant, χ^2 14.67, Sig. $p < .01$, in the Structured. The adult is verbalising more with older than younger children and more with older girls, χ^2 12.46, Sig. $p < .01$, than older boys.

Her most favoured approach, Inquiring, the Socratic Method, is documented by Caldwell (1971) who found an increase in this type of verbalisation with the increasing age of the child (1-4 years). With our telescoped age range we are not able to confirm Caldwell though the raw score in each situation is slightly higher for older children.

It might have been expected that the teacher's questions would have been 'enabling' ones, i.e. those which would facilitate the testing of alternatives, anticipation of consequence and realisation of cause and effect.

The teacher's task through questioning might be thought of as helping the child become more responsive to cognitive aspects of environment. Thus she would be likely to strengthen the child's apprehension of his world in categorical terms.

A 'code' for 'enabling' questions: those

- a) effecting value judgements;
- b) projecting from the immediate;
- c) moving towards logical reasoning -
'cause and effect',

was applied to the whole range of teacher's questions. (See examples overleaf).

Nursery B

Simon at Manipulative Table. Male Child is building a castle.

T.: Is that the window?

Simon: They climb in there and they go down there. (Conversation ensues between Simon and Male Child)

T.: What do they shoot with?

Simon: Guns.

T.: What did they used to shoot with?

Simon: Bows and arrows.

b { T.: Soldiers don't live in castles now, do they?

Simon: Only guards live there now.

T.: Have you seen the guards in London?

Simon: Yes.

a { T.: Is it going to be a tall one or a small one?

Simon: It's going to be a tall one. (More building)

a { T.: What do you think Andrew has done wrong with this, Simon?

Simon: 'Cos he hasn't made no sides. The wind will blow through the cracks.

b { T.: And what else would happen?

Simon: It would blow away.

c { T.: Do you think the wind would blow yours
down, Simon?

Simon: No it wouldn't. It's too strong.

T.: What made yours so strong?

Simon: Bricks.

c { T.: But why is it stronger than Andrew's?

Simon: 'Cos I made it square. (Conversation
between children about walls as
Andrew's castle collapses)

T.: What can you see?

Simon: Just these. (Looks at his fingers)

Nursery E

Lynn, building in the Large Apparatus and Blocks Area. A Female Child is with her.

T.: What are you building?

Lynn: A house.

T.: Where is the door? (No verbal response but child continues building)

T.: Where is that door? (No verbal response but child continues building)

c { T.: Why have you left the space? (No verbal response, child continues building, but eventually says,)

Lynn: To put your feet.

T.: Is that your chair?

Lynn: This is where us sit for dinner.
(Female Child and Lynn 'play' house.
House changes into a train)

T.: Did you go on the train on Friday when we had a holiday? (No verbal response but child continues building)

b { T.: What is that going to be now?
Lynn: A little house. (Picks up blocks)

T.: Filling in?

Lynn: Yes, filling in to put guns on.

c { T.: Why have you got a gun?
Lynn: So that you can kill somebody.

b { T.: Why do you want to do that?
Lynn: In case somebody chases us.
T.: Who is going to chase you?
Lynn: Somebody in here. (Child continues to play and selects a piece of wood shaped like a gun)
T.: Have you put the gun in? (Child sits on blocks)
Lynn: Yes.
T.: Where are you going?
Lynn: Blackpool.
b { T.: What are you going to do when you get to Blackpool?
Lynn: We're going on the swings.
b { T.: What else?
Lynn: A roundabout.
b { T.: Anything else?
Lynn: A ball. (She climbs down and picks up a plank)
T.: Is that another part of your building?
(Child ignores T. No verbal response)

Nursery F

Daren in the Block Area.

b { T.: What are you going to do?
Daren: Build a boat.

T.: Have you been on a boat?

Daren: Yes.

T.: When did you go on a boat?

Daren: On the beach.

a { T.: Was it nice? (Child smiles and nods)
Daren: We went on a picnic.

T.: Did you have a picnic on the boat?

Daren: No, we went in a car.

a { T.: A long way?
Daren: Yes.

T.: Was the water warm? (Child looks puzzled)

T.: Was the sea warm?

Daren: I can swim.

a { T.: A long way? (Child shakes his head)
Daren: My Daddy can swim. (Long sequence of physical movement with blocks. A Male Child helps)

T.: Is James helping you?

Daren: Yes, he's helping me.

T.: What are you making now?

Daren: We're making a boat.

T.: Are you making the front of the boat?

Daren: Yes, we're making the front of the boat.

T.: Has it got propellers? (He looks at T.)

Daren: Yes, it's got 'prellors. (Daren offers information about new shoes)

T.: Did Nancy buy them?

Daren: No.

T.: Did Daddy buy them?

Daren: No.

T.: Is it your birthday?

Daren: Yes.

T.: When? (He thinks. Shakes his head)

Daren: On Saturday. (Child plays)

T.: Have you finished your boat? (He nods)

Such 'enabling' questions were found to represent only 13.04% of all questions asked by the teacher. Other questions were either of the YES/NO or one word 'memory' answer type. Attribute questions and the "What is this?" were also used. None of these types of questions, however, stimulate language or dialogue.

Role-Play

It is of interest that the adult is not found verbalising in role-play to any group other than that of the older girls and here only four instances in the Unstructured situation. In the Structured there are instances to all groups.

Behaviour Controls

Negative and Positive Reinforcement

The adult showed no instances of negative reinforcement in the Unstructured situation and few in the Structured. This category had the lowest raw score of all categories and shows in the Structured situation the boys receiving nine instances to one for the girls. Positive reinforcement is distributed over the four groups with more in the Structured than the Unstructured situation. Our findings confirm

Caldwell (1971), who found reassuring confirmation of adult effort to shape a child's verbal and cognitive environment regardless of age or the child's own level of emission.

Control Techniques

It is apparent from the raw score that the adult has a favoured technique of control through verbalisation. She Suggests rather than Requests. Differences are significant, χ^2 8.86, $p < .01$ in both situations. Sex differences are also significant in both situations: in Unstructured χ^2 7.97, $p < .01$ and Structured χ^2 25.63, $p < .01$, but not age differences.

The adults appear to prefer Suggesting with its gentle, inspirational control, rather than the Requesting and more directing control. Here there may be some element of identification and manipulation, giving the children the opportunity to 'do something' - the idea emanating from the prestigious adult. Caldwell (1971) too found the adults preferring this control technique and Labelle and Rust (1973) found the teacher using personal motivation for the control of performances rather than coercive

methods. A second feature of the Labelle study was that control was seen to be almost exclusively in the hands of the teacher. The proportion of control episodes for children was 4.1 and teachers 9.1. While our study is not directly comparable, as we are concerned only with verbalised mechanisms, nevertheless the teacher can be seen to be exerting a strong control in a most positive way.

Table 7

To whom does the adult address her verbalisation?

	<u>Unstructured</u>				<u>Structured</u>			
	<u>Indiv.</u>		<u>Group</u>		<u>Indiv.</u>		<u>Group</u>	
	B	G	B	G	B	G	B	G
<u>INFORMATION PROCESSING</u>								
Confirms	15	10	--	--	29	40	1	1
Converses	4	7	--	--	13	35	1	3
Inquires	32	40	4	5	240	358	21	33
Informs	15	18	--	2	137	142	22	27
Role Play	--	4	--	--	10	24	4	--
<u>REINFORCEMENT TECHNIQUE</u>								
Negative R.	--	--	--	--	9	1	--	--
Positive R.	20	14	--	1	55	103	2	6
<u>CONTROL TECHNIQUE</u>								
Suggests	8	30	3	2	185	331	14	18
Requests	17	11	1	2	81	90	9	10

Adult to Boys and Girls as individuals

Boys and Girls as a group of boys/girls

Table 7 shows the distribution of the adults' verbalisation to individual children and to groups. Here there is evidence of the small verbal interaction with the group, the vast majority being to the individual child. Caldwell said,

"... individualisation of teaching is one of the cardinal tenets of the curriculum in these nursery groups."

While we would not use the word curriculum in this context we would expect the teacher to be more concerned to address the individual child rather than the group. Nevertheless, it is of interest that the adult is found addressing groups of children as her treatment of the group could strengthen its cohesion and promote within the children the feeling of 'group mindedness'. Nursery school teachers are conscious of the part they can play in promoting feelings of co-operation among children. The increase of verbalisation to the group in the Structured situation tends to confirm Caldwell, who found the adult using 'inquiring' and 'informing' to older children and in group situations. While the teacher in the Caldwell study had a tendency to structure a group setting

increasingly as the children were older, our methodology suggests that as the teacher was recorded interacting with the central figure other children joined the occasion and a group was formed.

Discussion

This analysis of the children's behaviour which was accompanied by verbalisation to the teacher (Table 4), shows an increase in amount in the structured presence of the adult. Shields (1972) found that 'domination by the adult' tended to reduce the linguistic output of the children. Our structured situations, however, were seen by our teachers as occasions for didactic intercourse which explains the increase in verbalisation, particularly in the information processing skills of Confirming, Inquiring and Informing. Our findings thus confirm Connelly and Smith (1972). We can attribute to teacher presence an increase in every category when the teacher is recognised to be in control of the situation (Table 5).

A second major effect of teacher presence is a redistribution of the amount of verbalisation by the children over the categories with increase in Confirming, Inquiring and Informing: all stressing the didactic nature of her role and the way she perceives it. The age factor was highly significant in Confirming ($p < .01$), as in the categories of Negative Reinforcement and Suggesting ($p < .05$). These categories of

verbalisation are highlighted by the significance of the age factor in the presence of the teacher. It is likely that these are more sophisticated verbalisation techniques acquired both by reason of motivation and the influence of the teacher consciously promoting these with the older children. In Conversing and Informing it is the sex factor which becomes significant. The teacher's presence stimulates the boys conversationally ($p < .01$) and the girls in the handling of information ($p < .01$).

A third major effect is the sheer amount of verbalisation which the teacher draws towards herself in the Structured situation but the order of distributions, i.e. to whom the children talk, of total amounts in both situations are highly correlated. In the verbalisation to the adult her structured presence brings an increase in all categories but again there is high correlation over the categories with the Unstructured situation. Her presence thus increases quantity but the qualities (categories) remain largely unaltered. The teacher's own verbalisation to the children shows an increase in each category and overall, sex and age differences are not significant. This alters,

however, when the Information Processing categories only are analysed when age differences become significant ($p < .01$). Older children and the teacher appear to be reinforcing one another. This is a natural situation, we speak more to those to speak more to us, but it may be not completely educational. If the teacher is made aware of this tendency she could consciously increase the amount of her verbalisation to the younger children. The two most favoured categories of the teacher, Inquiring and Suggesting, are as might have been expected. The asking of questions, however, can be shown to have different degrees of effect and techniques likely to promote cognitive development need to be emphasised. Teachers again, when aware of the distribution of quality of questioning, can be helped to work more advantageously within this category of verbalisation. Her use of Suggesting rather than Requesting emphasises a control technique entirely characteristic of English Nursery schools - identification by the teacher with the child - and this applies to younger and older children. However, the significant sex difference ($p < .01$) is seen with the girls being more in receipt of this form of control than the boys.

How far the adults maximise the opportunity to increase and extend verbalisation could be an index to their role as educators. Blank and Soloman (1968) found that 15 minutes of programmed adult interaction increased the I.Q. scores of their small groups of children. If Nursery teachers wish to resist the formality of programmed interaction (Quigley, 1971) then they might be seen to appear more able to exploit the spontaneous verbalisation of the children and to extend and deepen thought processes. The Quigley report showed that Nursery teachers were conscious of the need to enrich language but appeared to rely on spontaneous action and opportunity rather than planned intervention with previously prepared material. Good teaching was seen to be a matter of inspiration. Many would agree. Teaching situations are person oriented, interest must be centred on the learning material and the teacher's skill in manipulating and enriching the dialogue can do much to develop cognitive awareness. The transcripts of this second study, however, do not appear to show a high degree of teaching skill nor a substantial difference in quality of utterance on the part of the teacher. This may have been

because of the nature of the recording - all verbalisations were received by the observer and spoken into the microphone and they may, in transference, have lost some of their substance. Observers, however, were agreed that they reported as closely to the original as was humanly possible. For detailed analysis of quality of language utterance radio microphones would be essential.

The increase in verbalisation to the adult between the two situations (4:1) is balanced by the decrease of verbalisation to peers. The children talked more to each other, including themselves in the Unstructured situation (2:1) with boys talking to boys and girls to girls (Hutt, 1972). Verbalisation to the Group was small and this would be expected as group formations are not characteristic of Nursery school life where the children are only learning to co-operate. The age trend is seen to be upheld with the older children talking more to the Group in each situation.

Talking to self shows a proportion of 2:1 between the two situations, with boys talking more to themselves than girls. This might be explained by the greater socialisation

drive of the girls, seeking a social outlet for their verbalisation. A possible developmental explanation is confused by the older children talking more to themselves than the younger in the Unstructured situation. A comparison with Shields shows a greater proportion of children talking to self, 50%, as against 10% in Unstructured situations.

The appearance of Piaget's (1926) 'The Language and Thought of the Child', outlining the two functions of speech egocentric and socialised, helped focus attention on the importance of the child's self talk, revealing, Piaget stated, psychological immaturity. His claim for a high percentage of egocentric speech, 38%, as against 62% of socialised, characteristic in the years 3-5, promoted studies which were not always validatory. Vygotsky seriously challenged Piaget's 'function' of egocentric speech using the term 'inner speech' describing the one (inner) as the key to the other (outer) and the 'disappearance' of egocentric speech claimed by Piaget, as only 'illusory'. Vygotsky believed that egocentric speech was an instrument of thought developing into the primary controller of thought and behaviour. Subsequent studies, the

recent work of Chomsky and development of psycholinguistics uphold the Vygotsky challenge. Nevertheless it is admitted that there is a high degree of egocentricism in the verbalisation of young children. Our count of 'speech to self' in completely natural situations shows a proportion of 2:1 between Unstructured and Structured situations for both boys and girls though the developmental trend is not clear. The amount of 'speech to self' is considerably lower than the 40% claimed by McCarthy (1963) reviewing studies carried out in the '30s. It is possible that over controlling design structure affected these earlier findings.

Educational Implications

The samples of transcripts have revealed children using words in a very matter-of-fact way to convey information, though hardly ever to ask for it, to express their phantasy though this was seldom stimulated, and to communicate their presence. There were few instances of trying out new words, of creativity or in making play with words, though Debra revealed a nicety when she explained Nipper's name.

The presence of the teacher increased the amount of verbalisation by the children, particularly in the Information Processing of Confirming and Informing: she drew the verbalisations towards herself again with a preponderance of information processing and thus emphasised her role as a processor of information. It might be, however, that in confirming and informing a teacher should be conscious of the necessity to extend language usage (Cazden, 1965) in a variety of ways, since a number of studies (Krausen, 1972; Tough, 1972) in this country have found that the main social class difference between pre-school children in the cognitive field is in language skill.

A teacher should think with the children, involving herself with their problems and understanding their own particular way of coming to terms with their world. In answering their questions she should demonstrate her appreciation of the amount of information they need in order to probe more deeply, and, by her intonation, encourage the inquiry. This is a most difficult task involving recognition of each child's struggle to conceptualise with accompanying efforts to reason. All, moreover, needs to be clothed in a style which is at once supporting but also extending.

Simon is building a castle

He puts more bricks on. He looks up at Teacher. He says, "It's going to be a big one." He stops. He looks down inside the structure. He says, "It's dark down there." "You've got to have a light to go down there," says Simon. He talks. He talks. He smiles at Teacher. "Is that the window?" asks Teacher. "They climb in there and they go down there." He points to the window and the hollow interior. He puts on lego bricks. He stands up. He puts on

bricks. He puts on more bricks. He looks up. "Why do they come out of here?" asks Andrew. But Simon ignores him. He builds with lego. Andrew asks, "Can they shoot out of them windows?" Simon looks up at him. "What do they shoot with?" asks Teacher. "Guess," says Simon. "They can't shoot guns, what did they used to shoot with?" asks Teacher. "Bows and arrows," says Simon. He puts on bricks. "Soldiers don't live in castles now, do they?" asks Teacher. "Only guards live there now," says Simon. He puts on bricks. He puts on some more bricks. He continues. "Have you seen the guards in London?" asks Teacher. "Yes," says Simon.

Unfortunately the teacher does not continue to enlarge on the opportunity Simon has provided.

Cause and effect in the children's thinking should be highlighted and reinforced through the use of words. Generalisations need to be made within the children's learning so that the processes which help conceptualisation are verbalised and overheard. And with this

verbalisation the teacher needs to ensure that the children are truly listening, i.e. receiving the message. Children have to learn that what is being said to them adds considerably to what they have said, needs to be 'turned over' in their minds and thought about. Only then does real communication begin.

Karen is in the House Area. She picks up the telephone. Teacher asks, "Who are you telephoning?" Karen says, "Dr. Raine." Teacher asks, "What do you want Dr. Raine for?" Karen answers, "The baby's poorly." Teacher says, "Well, you'll want the doctor's box tidied up before he comes." Karen says, "Hello, doctor, the baby's dead." Teacher says, "Dead, I thought it was just poorly." Karen replies, "Well, it's dead now." Karen replaces telephone. And the communication, too, dies!

Listening is so important and it is a sad fact that so many children fail to listen simply because the message can lose its importance when it is not finely tuned into the core of thinking. The transcripts showed few examples of this quality of communication and too many

of what Shields has described as attempts to seek information about information which the child dismisses as unnecessary to the development of his idea.

Paul looks at Teacher. She says to him, "Pick up this clay and make something." She says, "Can you make a rabbit?" He nods his head. He picks up clay. He says, "I don't think I can make a rabbit." Teacher says, "Make a ball of clay first." She puts clay in his hands. She takes hold of his hands. She manipulates his hands on the clay. He stops. He looks at clay. He sniffs. Teacher says, "You try now." He says, "I can't." She says, "Go on, have a try." He says, "No, I can't." She says, "Can't you think of anything to make?" He says, "No, I can't make anything." She says, "I thought you were good at making things." He says, "No, I'm not." He picks up plasticine. He bangs it on table. He pulls it. Teacher says, "Are you tired?" He says, "No." He continues banging plasticine.

Teacher says, "Did you sleep well?"

Paul says, "Yes." She says, "Have you a bed to yourself?" He says,

"No." He bangs plasticine again.

Teacher says, "Do you sleep with your brother?" He says, "Yes."

She says, "Does mummy tell you a story?" He says, "Mummy and daddy

tell me stories." She says, "What story do you like best?" He stops

playing with clay. He looks at

her. He says, "I like all of

them." A cold dismissal by the child brings communication to an

end.

Probably expertise in extending thought most clearly distinguishes the teacher from other adults, but all who inhabit the child's world need consciously to refine a style of communication which recognises how concepts are formed but does not degenerate into an over-didactic approach. The art of 'hearing' the children, translating the message in terms of the young learner and responding appropriately is not easily acquired. Much more stress should be laid upon understanding

of children's use of language in communication in education for teaching so that the teacher's style may become an adequate model for other adults in the Nursery. Research, too, is needed to help teachers to become conscious of the need to analyse verbal interaction - 'who initiated the communication' and 'how many communications were upheld' or 'how relevant were the replies' and 'is the content of the exchange being enlarged'. Such analysis will show the differences in qualities of communication and the teacher could become more aware of the expert nature of her language role.

It has been suggested that the method of recording, in some cases, may have reduced the quality of the teacher's verbalisation. Yet it remains a fact that not all adults realise how children respond to use of words and how vital it is that they hear speech containing a richness of expression and delectable choice of vocabulary, some with onomatopoeic utterance. Fortunately the use of a wide range of literature with the children in 'story time' provides a suitable source but too often the teacher can fail to identify with the author, reducing the

experience to an unworthy level. Likewise a teacher may fail in her choice of language to respond to the quality of picture in a picture book.

Kim is in the Book Corner with the teacher. They are looking at a picture book together.

Teacher says, "What do you do on here?" Kim says, "Fly." She continues to listen. Teacher asks, "What are they?" Kim replies, "Clouds." Teacher says, "That's right, Kim." She asks, "What colour are the clouds?" Kim answers, "White." Teacher says, "The grass is ... ?" Kim replies, "Green." Kim looks out of the window. She shouts excitedly, "Look, there's some grass." Teacher says, "The clouds are up and the grass is ... ?" Kim says, "Down." Teacher says, "The umbrella is ... ?" Kim says, "Up." Teacher says, "The aeroplane is ... ?" Kim says, "It's up in the sky." Kim continues to watch the Teacher. She listens intently to the Teacher. Teacher asks, "What are these strange things?" Kim

replies, "Fish." Teacher says, "Where are they?" Kim replies, "In the water." Kim stands up and looks at the picture. She sits down and continues to listen. She looks out of the window. She watches Keith.

Here the teacher fails to use discriminatory language or to seize the opportunity offered by the child when she relates the story to the outside world, "Look! Here's some grass."

Controlled questioning can serve as a restriction on speech and the quality of expectation of the adult, her cultural attitudes to speech have been found to have an effect on the linguistic ability of children. (Snow, 1971). Interplay between the children's competence and adult attitude and expectation can effect complexity and length of utterance.

Tamsin says to Female Child, "He's a squeaky Teddy." She bounces the bear on her knee. Teacher says, "Aren't the crocuses growing beautifully?" Tamsin says, "We have daffodils at home." Teacher says, "My daffodils are growing very

slowly." Tamsin says, "We have bluebells in my garden." Teacher says, "I like bluebells too. Are your bluebells in flower yet?" Tamsin says, "No, not yet." She holds up her teddy to see the school garden. Tamsin says, "Are bluebells white or blue?" Teacher says, "Mostly blue, but sometimes you have white ones." Both children look out of the window. Tamsin says, "There are ladders out there." Teacher says, "They are new. We have to find a place to store them." Tamsin jumps off the window seat. She stands up. She picks up a string of beads. She puts blue beads round Teacher's neck. Teacher says, "Thanks, Tamsin. These beads would match your dress." Tamsin says, "It isn't really a dress." Teacher says, "Really? What is it?" Tamsin says, "It's a pinafore dress." Tamsin lifts up her skirt and says, "I have blue tights to match, and underneath pink panties. And I have navy blue shoes." Teacher says, "Oh yes. And you have Rupert Bear on your T-shirt." Tamsin points to the picture on her

T-shirt. She says, "And there are birds and a blue sky." Teacher points to T-shirt and says, "Who's this?" Tamsin says, "That's Badger. And that's a ball."

There is exchange of thought and feeling in the encounter.

Constraints in an educative setting should be minimal. "Language lift" through the teacher's use of model, well-formed sentences including both syntactic and semantic structures at a level higher than the child is using, should be the child's prerogative of hearing. Use of quality books, poetry and song should form an important part of the daily programme so that children can hear 'the ring o' words' and take it unto themselves through participation and interest. Research on short term effects of story telling on children's vocabulary is being carried out by Lomax at Strathclyde University. At Durham differences in vocabulary after 'questioning' and 'extending' a story session are being examined. Nursery teachers should be alert to the children's adoption of new vocabulary and creative use of words. Using language creatively is a normal stage of

development in control of expression and a means by which individuality and creativity is fostered. Puns, coining of expressions, ludicrous chants are ways children explore techniques of expression. Teachers can enter into such fun, can introduce new word games, invent spontaneous jingles thus extending the horizon of creativity in language. Unfortunately the transcripts do not contain an example of this particular use of language.

A cumulative account of vocabulary usage should form an important part of each child's school record. The range and depth of vocabulary can be monitored particularly after teachers have purposefully introduced 'word' or 'talking' experiences. Standardised tests, such as the English Picture Vocabulary Test, supply useful indications of a child's listening vocabulary. The use of recording machines makes record keeping possible with minimum effort. Underlying however, must be recognition of the potency of the drive in the early childhood period to acquire language, the means adopted by the child and the most effective ways of giving support and guidance. Ideally children's language should be evaluated in terms of his progress towards the norms for his social

environments, home and school, the latter showing concern for use of words not only as an indicator of what has been learned but also as creative expression.

The essential experience for all children is

"... of the adult who is leader and provocateur, an active participant in building up new attitudes in the child, who encourages new interests in what is happening around him, who will set up in the nursery an environment which first engages the interest of all and then invites each child to explore, to question, to solve problems, to learn to use language as a means of learning, who recognises and uses every opportunity to help the child extend his thinking."

(Tough, 1973. p. 75. Education in the Early Years, Chazan, M. The Language of Young Children.)

Latterly there has been growing feeling among Nursery teachers of the need to structure language opportunity. The evidence is beginning to be documented and disseminated. There is information from the Slough Experiment and from the West Riding Project. These teaching situations were with groups of children. Marion Blank, progressing from her work with disadvantaged children, now recognises the 'underfunctioning child' and advocates a one-

to-one situation where the educative element is communication through language usage (B.B.C. Broadcast, March 1976, State of Play).

Criticism of the amount of teacher time involved on behalf of a single child is met with the assertion that success in promoting the young child's cognitive abilities at the appropriate stage is time well spent and also a guarantee of the possibility of continuing progress.

Unfortunately, traditional methods die hard.

It may be some time before English teachers are convinced of the weaknesses in the unstructured approach. It is some time since Lewis stated:

"Language is central to the development of the child's intelligence ... we need to be bold and confident in the planning of language instruction, rather than, as the tendency is, to maintain that the teacher's role is to observe, to wait on the processes of maturation, rather than to anticipate and actively to intervene and promote emergence."

(Lewis, G., Language and the Intellectual Development of Children. Paper read to the Education Section of the British Association, 1969).

The most hopeful development promoting a change of teacher attitude is through In-Service Courses and the Schools' Council Research Project (Tough). Teachers should begin to

receive help in developing new, well delineated techniques that will be likely to overcome the obstacles (and these are very real) in promoting communicative skills with children. The fact that critical training has emphasised this development to some degree is not challenged. Young teachers may be aware of theoretical emphasis but are at a disadvantage in the practical situation.

THE THIRD STUDY

THE STAMP BEHAVIOUR STUDY TECHNIQUE

It was decided to incorporate the Stamp Behaviour Study Technique (B.S.T.) after meeting Dr. Isla Stamp personally and realising that the essence of the technique was its emphasis on the observation of children. It appeared to be a uniquely complementary instrument to the first and second studies as it was designed particularly for the description of the behaviours of children aged from three to five years. The approach to the compilation of the Behaviour Study Technique had been thorough: an exploratory study compared teachers' and psychologists' use of open-ended and multiple choice questionnaires. Teachers were invited to amend the descriptive statements in order to clarify meanings and remove ambiguities. A second study used the revised statements and the codings were adjusted for use with three and four year old children and judged by independent assessors. Finally the evidence was tested using a design incorporating 349 four-five year old children and 228 three year olds, described by 14 volunteer teachers. Hypotheses, centred on the percentage distribution of the four main categories, were confirmed. Follow up studies are at present being undertaken.

In controlling observation, the technique seeks to eliminate facile value judgments, guiding teachers in their observations and promoting insightful guidance into the everyday behaviour of the children in the Nursery. Originally intended as a method of helping teachers make more detailed and relevant assessments of children's behaviour (for which a Teacher's Guide is available), the technique is accompanied by a coding system which may be used to evaluate behaviour, thus providing a diagnostic tool. The value to teachers of having a simplified and time-saving system of recording behaviour cannot be over-estimated as the record is available for discussion at all times. Moreover, the organisation of the categories of behaviour can be supportive in helping teachers to observe more closely and so become more alert to problems. Teachers are in the front line of referral, occupying a unique position which could be used effectively for seeking specialised help for children in need. Closer co-operation between the child guidance team and the teacher is a useful goal and the study technique provides a framework for liaison. The coding, Dr. Stamp believes, involves evaluation and

interpretation and should be used only by, or under the supervision of, psychologists and psychiatrists.

The behaviours the study technique seeks to describe can be seen to cover four Main Areas:

AREA I ATTITUDES TO SELF AND OTHERS

A Relationship with others

This covers aspects of the child's relationships with others, both adults and children, and includes behaviours such as need for company, withdrawal, the ability to play, etc.

B Self concept

The child's idea of a separate identity and its reflection in liking to be called by his name, etc. Reactions to both success and failure.

C Demands of others

The ability of the child to adapt himself to the demands of others, manifested in co-operative behaviour or retaliation, etc.

D Expression of demands on others

The extent of the child's wish for others to obey his demands and later the ability to postpone gratification.

AREA II EXPRESSION OF NEGATIVE FEELING

E Coping with frustration

Manoeuvres of the child in dealing with frustrating situations, e.g. seeking help, a substitute, or withdrawal.

F Coping with stress

Different modes of tolerating stress, e.g. seeking comfort, crying, managing on own, etc.

G Coping with realistic fears

The acknowledgement and expression of the child's fears and ways of dealing with them.

H Expression of anxiety

Presence of disturbing factors as seen in habits such as thumb-sucking, whirling, etc.

AREA III USE OF POWERS

I Communication

The degree to which the child is able to communicate with others and the methods he uses.

J Abilities and skills

The extent to which a child performs to his capacity and how skilled he is relevant to his peers.

AREA IV INTEGRATION OF HOME AND
KINDERGARTEN LIFE

K Psycho/physical health

The stability of the child's eating, sleeping, and toilet habits. Any disturbances in these established patterns.

L General behaviour outside school

The extent to which the child's school behaviour correlates with his parents' reports. Reflection on his adjustment to pre-school.

Scoring

Item scores are added to give a total in each of the four areas (using score cards) and the trends towards positive and negative mental health as follows:-

- 4(++) if the trend seems to be decidedly towards positive mental health;
- 3(+) if the trend seems to be probably towards positive mental health;
- 2(-) if the trend seems probably negative (away from mental health);
- 1(--) if the trend seems decidedly negative.

The child may be scored from the Multiple Choice questionnaire evolved from a descriptive statement of the 'normal' behaviour of the young child as follows:-

A score of 75% in a particular Area is regarded as favourable progress in that Area.

Favourable in all Areas is assumed to indicate that the child is making 'satisfactory' progress - S.

Unfavourable in one Area indicates that progress is 'doubtful' - D.

Unfavourable in two or three Areas indicates a probable need for 'investigation' - I.

Unfavourable in all Areas indicates that 'referral' is advisable for investigation and treatment - R.

Thus 'over-all' rating places each child in one of the four categories, S, D, I, R (satisfactory, doubtful, investigation, referral).

It was hypothesised that the distribution of subjects into the four overall categories would show 50% in the Satisfactory group, 25% in the Doubtful group, 20% in the Investigate and 5% in the Refer group. This would be true

of children in any one pre-school centre as well as the subjects in a number of centres.

Procedure

The Headteachers of the seven Nursery schools were shown the record outline and asked if they found the descriptive items suitable. All declared that it was the most comprehensive and most 'sensible' description of the likely behaviours of pre-school children they had ever seen. They were enthusiastic about the use of the technique. It was arranged that they would observe the 16 children in the Nursery over a period of four-six weeks and complete the record on behalf of each child during a final two week period. It was considered that these lengths of time were adequate and all the Headteachers returned the completed records as arranged.

Results

Table 1

Comparison of Headteachers' Rating and Stamp Hypothesis

	Satisfactory	Doubtful	Investigate	Refer
No. of children	51	20	38	3
Headteachers' Rating %	45.54%	17.86%	33.93%	2.68%
Stamp Hypothesis	50%	25%	20%	5%

The category of Doubtful is lower than the hypothesised 25%, suggesting that a smaller number of children are failing in only one Area but the higher percentage for Investigate means that more children are failing in two or three Areas. A smaller percentage - failing in all four Areas - suggests the normality of the sample. The Headteachers appeared more perceptive about the actual behaviour of the children and tended to assess the fourth category - Integration of Home and School - as Satisfactory for the majority of the children.

A closer analysis of the incidence of failure within categories supports this suggestion.

Table 2
Percentage Failure of Children
within the Categories

	<u>Attitude to Self and Others</u>	<u>Expression of Negative Feeling</u>	<u>Use of Powers</u>	<u>Integration of Home and School</u>
No. of children	41	39	26	12
%	36.51	34.82	23.21	10.71

It could be argued that the period of observation would be likely to heighten the Headteachers' awareness of the children's behaviours as they were taking place within school. The building up of home and school integration, of necessity, must take place over a sustained period ideally beginning before the entry of children into school and upheld during the school life of the child by a number of strategies. Nursery schools are being criticised for failing to adjust their traditional methods of obtaining co-operation (mother, or mother substitute, bringing child into school and collecting him, Headteacher being available, a reliance on deeply shared concern) and the low percentage of failure in this category could suggest some complacency in this Area. The twelve children who failed in this category were distributed over six Nurseries. Six children, including twins, clinging and demanding at home, presented different behaviour in the Nurseries. Two were easier to manage in school than at home, four were demanding at home and school and two were occasionally upset at home and school. Undoubtedly as the academic year progressed, behaviour changes would take place and it would

be hoped that greater consultation between home and school would help stabilise each child's behaviour. However, none of the Nurseries operated any degree of parental involvement within their programme. It might have been helpful and possibly educative if the mothers had had the opportunity to observe their children, to note discrepancies in the behaviour and to realise how differently each child behaves. Such adult education might well be seen to be part of the role of the Nursery school.

"Parents can begin to see the differential rates of growth of other children in the group, not in terms of a competitive movement but as a perfectly normal process. The teacher is able to ease the pressure exerted by anxious or ambitious parents on their children and is able to encourage less self-assured parents in their role as educators of their children."

(Poulton and James, 1975).

The distribution of socio-economic class in the sample was reasonably normal (Table 3).

Table 3

Distribution of Children by Socio-Economic Class

I	II	III	IV	V
13	23	54	18	4

Each of the Areas - Satisfactory and Doubtful - contained children of all classes, Investigate classes I-IV and Refer I and III.

Table 4

Distribution of Socio-Economic Class among Areas

	Satisfactory	Doubtful	Investigate	Refer
Class I	8	2	2	1
" II	9	3	11	0
" III	21	11	20	2
" IV	10	3	5	0
" V	3	1	0	0

Such distribution suggests that socio-economic class played little part in the judgment either of behaviours or home and school integration.

CORRELATING THE THREE OBSERVATIONAL TECHNIQUES

The Ecology Study

A.P.P.R.O.A.C.H.

Stamp Behaviour Study Technique

Consideration of the three techniques sharing the common basis of 'the way of studying behaviour while leaving it alone' (Wright, 1960), reveals the problem of degree of subjectivity. While the Ecology Study and the A.P.P.R.O.A.C.H. can be described as largely objective, the Stamp Behaviour Study Technique is highly subjective, the teacher choosing from a multiple choice description the phrase that most nearly describes how she personally is judging the behaviour of the child. Such subjective statements, however, form an important part of observational study. Education is fundamentally a matter of personal interaction, of opinions, beliefs, and observations.

"There are degrees of knowing what is guessed, what is supposed, what is inferred, and what is known for certain. But nothing is more convincing than what we have actually observed or believe we have directly observed with our own eyes and ears."

(Perkins, G. A discussion on School Phobia. Eisenberg, L. Amer. Jnl. Psychiatry 114, No. 8, p. 712).

It was decided to select items having common areas from the three techniques and to correlate these in order to ascertain where correlations between objective and subjective judgments might be found.

Items from the Stamp Behaviour Study
Technique

a Relationships with others

This is the first Area of Stamp and includes the headings of Self Concept, Demands of others, Expression of Demands on others.

b Use of Powers

This is the third Area including Communication and Abilities and Skills.

c Expression of Negative Feeling

This is the second Area including Coping with Frustration, Coping with Stress and Coping with Realistic Fears.

d The Over-all Stamp Assessment

The four designations, Satisfactory, Doubtful, Investigate and Refer were each given an index figure.

e Co-operation and Demands on Peers

This was a sub-section of a.

f Co-operation and Demands on Adults

This, also, was a sub-section of a.

g The English Picture Vocabulary Test

The test had been administered to all the children during the investigation.

(see Appendix, p. 487)

Items from the Ecology Study

h 1 Minute Stabilities

Each child's score for 1 minute stabilities.

i 4 Minute Stabilities

Each child's score for 4 minute stabilities.

j Number of Areas used

Each child's score for overall use of the 10 Areas of the Nursery school.

Items from A.P.P.R.O.A.C.H.

k Speech Utterances

The number of each child's speech utterances in the Unstructured and Structured situations.

l Speech Utterances in Category of Reinforcement Technique

A sub-section of k.

m Speech Utterances in talking to Peers

A sub-section of k.

n Speech Utterances in talking to Adults

A sub-section of k.

o Speech Utterances in Category of Information Processing

A sub-section of k.

The fifteen variables were calculated using the Pearson Product Moment Method of Correlation (see Matrix Table).

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
a		<u>.63</u>	<u>.56</u>	<u>.77</u>	<u>.82</u>	<u>.80</u>	.18	-.04	.03	-.09	.12	.19	.16	-.03	.02
b	<u>.63</u>		<u>.52</u>	<u>.66</u>	<u>.51</u>	<u>.42</u>	<u>.28</u>	.02	.16	-.09	.17	<u>.26</u>	.19	.03	.09
c	<u>.56</u>	<u>.52</u>		<u>.75</u>	<u>.40</u>	<u>.44</u>	.12	-.10	-.01	.03	<u>.23</u>	<u>.26</u>	.17	.10	.16
d	<u>.77</u>	<u>.66</u>	<u>.75</u>		<u>.63</u>	<u>.55</u>	.15	-.03	.09	.03	.21	<u>.24</u>	.19	.06	.14
e	<u>.82</u>	<u>.51</u>	<u>.40</u>	<u>.63</u>		<u>.55</u>	.11	.04	.09	-.02	.07	.17	.13	-.01	-.02
f	<u>.80</u>	<u>.42</u>	<u>.44</u>	<u>.55</u>	<u>.55</u>		.06	-.13	-.14	-.07	.06	.11	.10	-.04	.01
g	.18	<u>.28</u>	.12	.15	.11	.06		-.10	.03	-.06	.07	.01	.02	.10	.08
h	-.04	.01	-.10	-.03	.04	-.13	-.10		<u>.80</u>	<u>.31</u>	.01	.08	.18	-.20	-.16
i	.02	.16	-.01	.09	.09	-.14	.03	<u>.80</u>		.16	.04	.08	.17	-.12	-.09
j	-.09	-.09	.03	.03	-.03	-.07	-.06	<u>.31</u>	.16		.02	.02	.09	-.07	-.05
k	.12	.17	<u>.23</u>	.21	.07	.06	.07	.01	.04	.02		<u>.67</u>	<u>.73</u>	<u>.65</u>	<u>.84</u>
l	.19	<u>.26</u>	<u>.26</u>	<u>.24</u>	.17	.11	.01	.08	.08	.02	<u>.68</u>		<u>.66</u>	<u>.23</u>	<u>.34</u>
m	.16	.19	.17	.19	.13	.10	.02	.18	.17	.09	<u>.73</u>	<u>.66</u>		.01	<u>.37</u>
n	-.03	.03	.10	.06	-.07	-.04	.11	-.20	-.12	-.07	<u>.65</u>	<u>.23</u>	.01		<u>.84</u>
o	.02	.09	.16	.14	-.02	.01	.08	-.16	-.09	-.05	<u>.84</u>	<u>.34</u>	<u>.36</u>	<u>.84</u>	

— sig. <.01

Results

1. The matrix shows the high correlation ($p < .01$) among the items of each observational technique, indicating the stability within each and justifying the use of parts. Two exceptions occur. The first is between 4 Minute Stabilities (i) and Number of Areas used (j) in the Ecology Study. The lack of correlation would probably be caused by those children having a high number of 4 Minute Stabilities (i.e. they were within one Area during the whole of an observational period) being those who confined their time within a smaller range of the whole Nursery. For example, the twin boys from Nursery G, were very stable scoring a high proportion of 4 Minute Stabilities, but they tended to use only part of the Nursery. The second may be seen within the A.P.P.R.O.A.C.H. items, talking to peers (m) and talking to adults (n). It might have been expected that these items would, within the same observational technique, have correlated highly. However, the low correlation may be due to summing the utterance scores from both the Unstructured and Structured situations. In the latter the teacher drew

verbalisation towards herself but there were many cases where children who had been talking freely with their peers in the Unstructured situation were much more restrained in the presence of the teacher. On the other hand, younger children who scored much less than the older children in the Unstructured situation, were drawn by the teacher into a high score of utterances.

2. Correlating across the techniques, we find high correlation ($p < .01$) between STAMP Use of Powers (b) and the English Picture Vocabulary Test (g). The latter test, well standardised, measures the construct 'listening vocabulary'. The teacher's subjective judgment re. language power and a child's skill judged in relation to that of his peers, is supported by the standardised objective test of 'listening vocabulary'.

3. There is high correlation ($p < .01$) between STAMP Use of Powers (b) and the Reinforcement Techniques (1), a sub-category of the total number of speech utterances from A.P.P.R.O.A.C.H. This suggests that the teachers may be more aware of children who verbalise in this way, that they are more conscious of behaviour that

carries reinforcing language. Certainly such behaviour forces attention from the teacher and unconsciously she may be using this index almost exclusively.

4. As if to further the argument there is high correlation between STAMP Expression of Negative Feeling (c) and Speech Utterances (k) ($p < .01$), with its sub-category Reinforcement Techniques (l) ($p < .01$) from A.P.P.R.O.A.C.H. The behaviours within STAMP may not necessarily be accompanied by verbalisation but the high correlation suggests that children use language or a vocal equivalent to give expression to feelings of frustration, anxiety and fear and once again the teachers are very conscious of this.

5. The Stamp Overall Assessment (d) has a high correlation ($p < .01$) also with Reinforcement Techniques (l). This suggests that the children who are judged Satisfactory or Doubtful (i.e. failing in only one Area) are those who use reinforcement techniques in their verbalisation and are those children for whom the teachers feel least need of outside help. In some, as yet, unpublished work using observational techniques in the Nursery school (Ashdan) and

inquiring specifically into patterns of teacher interaction, there is some indication that teachers interact most with those children who reinforce their, the teachers', behaviour. It may be that eventually there will be found some confirmation between these studies.

Discussion

The three observational techniques may be seen to be, on the whole, complementary rather than duplicatory. To ascertain how ecology affects behaviour would seem to be basic to enquiry and to look more closely at the individuals within the ecological Areas is to complete knowledge of both background and human behavioural idiosyncrasy. It will be remembered that this study isolated verbal technique from A.P.P.R.O.A.C.H. but the Code is comprehensive of all aspects of behaviour. It would have presented an alternative design of research to have included the full range of behavioural items from A.P.P.R.O.A.C.H. but this, wisely or not, was rejected in favour of inclusion of the Stamp Behaviour Study Technique. The emphasis within the methodology was on participation, teachers seconded to the University becoming research workers within the schools. The decision to include school based teachers giving subjective judgments was intended to enrich the participatory nature of the research.

The need for objective appraisal of children's behaviour is becoming more apparent within the contemporary climate of economic

justification. Nursery schools must reveal the nature of their work in relation to psychological knowledge, must demonstrate greater expertise in awareness of individual differences and in order to do this must build a programme of complementary ways of 'knowing' that have an objective basis. For too long Nursery education has relied on the effect of a potentially enriching background without enquiring into the enriching potential and to subjective assessments of children that have had little substantive basis. The time is here for more rigorous investigatory procedure, more detailed record of such behaviour and the development of increased reliability of teacher judgments.

This research design has demonstrated how such a programme could be compiled using techniques well suited to the teacher who could, in turn, use only selected items in order to provide reliable answers to different questions, "To what extent does a particular Area within the Nursery promote concentration?", "Do some teachers unconsciously interact only with certain children?", "Who are the children who need to be stimulated towards verbalisation?" Such questions answered can give directive and function to teacher behaviour for the benefit of children.

Appendix

The English Picture Vocabulary Test was administered to the children during the period of the Ecology Study and the marking of the Stamp Behaviour Study Technique. The test was conducted in the manner suggested in the Manual. The results showed a mean of $\bar{M} = 110.09$ and a standard deviation of $s = 10.86$, indicating a reasonably high level of 'listening vocabulary' over all the Nurseries. The test has been found to correlate highly with group Intelligence scores.

EDUCATIONAL IMPLICATIONS OF THE ENQUIRY

Since the study was undertaken in an attempt to look closely at what was happening in Nursery Schools and through the implementation of techniques to show how these could be adopted, in part or in whole, by teachers who were concerned about the qualities of behaviour and interaction, it is important to draw together some of the implications of the findings. Three main headings suggest themselves:

- 1) The need for predictive and reliable assessment of environment and children's progress.
- 2) The need for new ways to promote interaction with the adult.
- 3) The need to adjust the traditional programme.

1. The Need for Predictive and Reliable Assessment of the Children's Progress

In this harsh world of educational priority and economic stringency the Nursery schools find themselves open to inquiry. Their assumptions and values, heretofore protected by reason of their exclusive but small contribution to State education, are challenged when a new epoch under-pinned by sociological issues, is demanding

wider provision of care and education for young children. The social issue is a dual one, being not merely to increase the intellectual skills of future generations but the enabling of entire families to function in a more effective and satisfying manner. In its efforts to justify its existence and to stake a claim for recognition within tightening economic outlay, Nursery schools must now be heard to be more precise in their statement of goals and more carefully calculating in their delineation of techniques measuring progress towards those goals.

Thus it would seem likely that assessments would have greater reliability and accuracy and become more predictive. The cautious use of standardised assessment material has been demonstrated and the role of experimental findings discussed. The methodology is sufficiently flexible to allow for rapid thrusts and slower periods of development: it is ongoing and unlikely to be subjected to criticism of 'labelling' a child. The exclusively subjective methods of assessment fail to match up to modern demands. New methods of investigation, leaving aside assumptions and hypotheses, may be seen to be more able to look closely at the

situations and their inherent difficulties. Data gathering procedures which can be undertaken without affecting the everyday programme would seem to be essential if the true nature of the difficulties are to be exposed, and such procedures, if shared by teachers and research workers, are perhaps more likely to open up areas of concern. The 'open' research pioneered in this country by sociologist Brian Jackson, and characterised by ecological record, seems to be particularly suitable. The first study has revealed many of the weaknesses of such methodology but it has also shown how teachers can 'measure' the effectiveness of their provision, can learn what use the children make of it and the qualities of behaviour which seem characteristic. They can manipulate Areas and minimise sex differences as well as moderating behaviour patterns. They can build an objective profile of behaviour which will carry a predictive element. The quality and standard of provision can thus be constantly under surveillance. The ecology technique has been demonstrated to be well within the practice of teachers and the reasoning over use of Areas well within their intellectual capacity (What perhaps is more difficult is to convince teachers of the necessity

of change of attitude towards the educational function of Nursery education.) The quality of use a child is making of such provision can be monitored at the same time and individual learning structured. The necessity for careful record keeping on each child's action is clearly revealed. Thus at any time a child's behaviour profile can be read and the goals, so essential to education, kept constantly in mind. Tough has described these as:

"the processes by which skills and knowledge are transmitted ... the development of attitudes, values and qualities of mind by which the individual becomes a viable and acceptable member of the community."

(Tough, 1973)

Teachers' roles, too, will need to be altered. There will need to be more emphasis on observation and recording, more understanding of the variety, breadth and limitations of young children's abilities, more insight into group dynamics and ways of effecting these.

2. The Need for New Ways to Promote Interaction

The first and second studies have shown the powerful effect of teacher presence, revealing the need for positive interaction. That children seek such interaction has been demonstrated. The point is further emphasised in the Oxford Survey (Bruner) where children are seen to spend

about 30% of their time 'cruising' in an effort to gain attention from the adult. First, all adults need to become aware of their effect: to use themselves more thoroughly and efficiently in promoting learning situations and to discover ever-developing ways of promoting interaction. The term 'adults' would include all those of mature years who operate within the focus of the child, since they all have greater maturity, more practised ways of expressing feeling and knowledge and a measure of resources. The school should actively explore co-operative action by parents and devise programmes of involvement and support since the adult/child ratio needs to be improved. This would in no way threaten the professional "the teacher" - seen always as the expert capable of disseminating her expertise and manipulating group interaction for the benefit of its members. Schools should become places where adults concerned for the young congregate and use their energies and resources on behalf of the children. Teachers could experiment on frequencies and lengths of interaction in respect of differing groups or individual children. The second study has shown that adults interact more with older children who seek them

out. Teaching strategies should ensure that all children receive the amount of interaction which would be likely to be most educative and most conducive to learning. Better ways of involving other adults could constantly be sought. Adult/child overall ratio should be manipulated for different parts of the daily programme. The goal of all interaction would be seen to be an increase in the child's level of functioning so that the way to future academic progress could be made more smooth. Thus the goal would be developmental in nature and the ridiculous charge that Nursery education has 'failed' answered in developmental terms. If wrong questions have been asked in the past, new questions must be put in their place and the means of answering these reliably and succinctly sought. The teacher/adult must see herself more accurately as a keen instrument of positive change, of increased function on the part of the child.

"The essential experience is of the adult who is leader and provocateur, an active participant in building up new attitudes in the child, who encourages new interests in what is happening around him, who will set up in the nursery an environment which first engages the interest of all and then invites each child to explore, to question, to solve problems, to use language as a means of learning,

who recognises and uses every opportunity to help the child extend his thinking."

(Tough, Education in the Early Years.

Ed. Chazan, M. University of Swansea, 1973).

3. The Need to Adjust the Traditional Programme

Previously, the hall-mark of Nursery school procedure has been the intuitive approach. In providing a background of rich provision of learning opportunity, teachers claimed an intuitive knowledge of when to intervene, preferring usually to allow the child to take the initiative. The case for positive interaction has been made together with that for meeting the individual needs of the child. Marion Blank has brought the two together in her suggestion of 'one-to-one' periods in the timetable. The teacher will no longer be available to all children all of her time but will withdraw on behalf of underfunctioning children. The implication of this change in the programme is to highlight observational procedure, diagnosis and remedial action within the programme on behalf of an individual child. It admits also a rightful place for 'teaching' but the teaching would be within the skills deemed appropriate for the child's stage of development. The teaching medium, whether words or elemental

material, would become the means of realising basic change in the way the child responded and his responses would be recorded. What would be likely to be truly educational would be the teacher's judgment of how, when, and what, on behalf of the child, and her carrying out the experience alongside the child. Such effect would be likely to be more than temporary and would contain within it the seeds for future learning.

The teacher might also adjust her programme on behalf of the group, in the establishment of short-term objectives providing a new range of experiences in a safe but exciting environment. Such objectives lend themselves to short description with a clearly defined end in view. The path to that end can be compiled as it develops, as in "flow charts" forming a record of the content of the experience. Thus long-term goals are made explicit through practical short-term objectives which may be contemporary or seasonal. Direction by the adult would be inevitable thus increasing the variety of qualities of interaction.

Further Research

It has been suggested that language development may be a crucial issue in a child's ability to come to terms with his world. The work of Moore (1967) has documented the close relationship between language skill and intelligence. Further research moving away from vocabulary count and measure of sentence length in different situations and entering more into the field of verbal interaction analyses is needed. The use of radio microphones should enable the whole of a central figure's vocabulary to be recorded in order to analyse communicative exchange but difficulties would remain if the natural situation of free movement were to be preserved. The one-to-one (Blank) situation is much more of a laboratory setting as is the exchange between teacher and child in the current research work of Ashdan. Knowledge, however, of how well different children from differing backgrounds sustain communication, even if it is required in a less natural situation, will be welcomed. This would need to be accompanied by careful analyses of a range of strategies deliberately employed by the teachers. Following studies should be encouraged in an attempt to measure their predictive value.

Further research to substantiate the range of techniques to promote language usage, presently being explored by the Schools' Council Project, will be needed. An ecology type survey might establish which techniques are best suited to which situations with the accompanying activity and material, for language must not be segregated from the total child response in the early years of childhood.

New methods of inquiry based on observational techniques are needed to overcome some of the weaknesses of open research. It seems probable that no single method will be suitable to meet the challenge of 'naturalistic' inquiry but rather that a 'gestalt' of methods be planned to meet the particular demand and the particular situations. If teachers are involved in outlining the area of concern, then they will be likely to appreciate what part they can play in 'opening up' the problems and what must be left to the research worker. Together they can form a team, or body of research workers, and enlightenment on the usefulness of research findings to the practical situation could ensue. Thus, the traditional cleavage between research worker and practitioner might close.

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