CO-OPERATION   IN   INFANT   PEERS

BY

Zita   Dickman

Submitted in partial fulfilment
of the requirements for the degree of
Master of Arts,
in the
Department of Psychology
University of Natal
1983

Durban
1983

PREFACE

The experimental work described in this thesis was carried out in the Department of Psychology, University of Natal, Durban, from January 1980 to December 1983, under the supervision of Dr. P.M. Clark.

These studies represent original work by the author and have not been submitted in any form to another University. Where use was made of the work of others it has been duly acknowledged in the text.

ACKNOWLEDGMENTS

ABSTRACT

Throughout the world, infants and toddlers are spending less time with
mothers and more time with peers than ever before, mainly in different
kinds of day care.   This changing pattern of child care may affect
the early development of social competence which is seen as important
for social, emotional and intellectual growth.   It would therefore be
valuable to know in what way different aspects of social competence
are influenced by mothers and by peers.

The degree of compliance shown by infants and their ability to
co-operate in tasks and games have been found to be important indices
of social competence.   This study observed 48 infants in dyadic
interaction, first with their mothers (Situation 1) and then with a
familiar peer (Situation 2), as they engaged in a co-operative game.
The aim was to assess differences, similarities and possible continuities
between the mother-infant and peer systems in children of four age
groups (AGs) :   AG1 - 37 to 61 weeks;   AG2 - 62 to 86 weeks;   AG3 -
87 to 111 weeks;   AG4 - 112 to 136 weeks.   Recording was by videotape.
Analysis involved the coding of 56 behaviours in three broad areas :
mothers' teaching behaviours, children's behaviours with mothers, and
peer behaviours.   The group was composed of singletons (N=34) and
twins (N=14).   Singletons were observed over all four age groups,
twins over AG1 and AG2 only, and sexes were analysed separately over
AG3 and AG4.   Behaviours were also compared over both Situations.
Reliability was calculated in three ways, giving means of intra- and
inter-observer agreement of .92, .82 and .87.

Meaningful groups of behaviours were analysed with two-tailed tests
of significance.   Univariate analysis with multiple independent
variables were used for singletons' behaviours over all age groups.
Behaviours showing significant differences were analysed for trend
and for differences between age groups.   Manovas were used for all
other comparisons.   Correlations were examined between selected
behaviours.

Differences in mothers' teaching strategies over the age groups were
found.   Two behaviours which did not show age-related or situation-

related differences are discussed, as well as different reactions to these behaviours by mothers and peers. Findings from research with singletons were confirmed.

Differences were found between the behaviours of mothers of singletons and mothers of twins, which suggest that the mothers of twins are not as skilled as mothers of singletons in playing with one child in a dyadic situation. Findings by Savic (1980) are confirmed that twins find the peer situation less stimulating than singletons do, and that twins are more advanced than singletons are in social competence.

Sex differences were found suggesting that boys are involved in more active experiences, whereas girls are associated with more passive ones.

Analysis of sequences of behaviours suggested that this method was more suitable than analysis of discrete interactions for the observation of complex behaviours such as engagement. It also showed that game-playing did not have the same characteristics in the mother-infant and the peer situations, and comparisons with other research findings are made.

No indication was found that the skills taught by mothers were carried over entirely without modification to the peer situation, but other suggestions of possible continuities are discussed.

Children's game-playing behaviours were found to be extensions of their own creativity as apparently elicited by experience with peers. The effect on this creativity of the existence and the quality of peer friendships is discussed.

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CHAPTER 1

1.1 INTRODUCTION

Social behaviour is difficult to define, but it is not difficult to observe. It covers the simplest partner-oriented behaviour by an infant, for example smiling, to more complicated skills such as becoming involved in a co-operative relationship with a partner, either as an initiator or a responder.

For co-operation to occur, individuals must recognise one another's intentions and actively adjust to them. They need to understand that what they do can affect the actions of the partner, what the probabilities are that certain actions will result in certain reactions, and how to manage these action-reaction patterns so that they can achieve their aims (Bronson, 1974a; Wright, 1980).

Is it possible to teach this skill to young infants? Compared to the wealth of information which has been collected on the socio-emotional attachment of the infant to his caretaker, very little is known about how mothers teach their infants a task. In studies reported by Hubley & Trevarthen (1979), Johnson & Breckenridge (1981) and Kay (1977), the tasks could be carried out independently by one person. The first aim of this study is to observe teaching strategies that mothers use to teach infants and toddlers a game for which co-operation is essential.

In recent years, much attention has been given to the nature of infants' and toddlers' social encounters with peers. Co-operative activities have been examined when they were observed, but they made up a very small proportion of the behaviours seen (Bronson, 1975; Eckerman & Stein, 277). A second aim of this study, therefore, is to observe behaviours in infant and toddler peers in a context where play requires co-operation.

A central issue in much of early peer interaction research has been whether peer relations grow out of infants' relations with their mothers, or whether it is an autonomous system. However, very few studies looked at the two systems side by side. In the two studies examined (Vandell, 1977; Vandell & Wilson, 1982), the dyads were observed in free play situations. In the first study, when subjects were observed daily at home over a 6 month period, intersystem effects were found. In the second study, when subjects were seen in a laboratory once at 6 months and once at 9 months, no intersystem effects were seen. Children did different things with mothers and with peers, although the same toys were present throughout. A third aim of the present study is to examine the intersystem relationships of the two systems within the same co-operative game.

It was anticipated that there would be age-related differences in all behaviours observed. For example, mothers are likely to be more accepting of non-compliance in 8-month old than in 2-year old children. Similarly, children are likely to play a more active part in interactions as they get older. For example, they are expected to vocalise more.

Since mothers are more skilful social partners than infants are, it was also anticipated that there would be differences in the amount of interactive behaviour in the mother-infant and the peer situations. More interaction was expected in the former, and more solitary behaviour in the latter.

1.2   RATIONALE FOR STUDYING INFANT DEVELOPMENT

The study of infant development is important because of the belief
that what happens in early life plays an important part in shaping
adult personality, although as yet there is no agreement on how this
occurs.   In order to understand ourselves, we need to know how our
young learn about their environment, how they alter it, and how they
adapt to change (Bruner, 1972).   We need to try to predict associations
between childhood and adult features because it would help us to
understand individual differences and their causes, and it may enable
parents to choose the particular infant care practices which will
encourage the kind of personality they want for their child
(Schaffer, 1977b).

Many studies have attempted to tease out the characteristics of
caretakers or caretaking practices which may affect children's
behaviour with other social partners or at school (Ainsworth et al,1971;
Baumrind, 1967; Escalona, 1973; Heatherington & McIntyre, 1975; Matas
et al, 1978; Stayton et al, 1971; White et al, 1977).   Early studies
in the 1930s and 1940s found no evidence to suggest that specific
practices, such as early weaning or harsh toilet training, had a
psychological effect which manifests itself in later years (Schaffer, 1977b).
Relationships with mothers have been found to correlate with cognitive
abilities of children (Clarke-Stewart, 1973; Elardo et al, 1975; Walberg
& Marjoribanks, 1973), but not all agree with these findings (Richards,
1971).   Researchers have not all agreed either on how the educational
level and social class of mothers have affected their relationships with
their children (Kagan & Tulkin, 1971; Minton et al, 1971; Snow et al, 1976;
Tulkin & Kagan, 1972; Wachs et al, 1971; White, 1978).   Parents'
relationships with children of opposite sex have been examined (Goldberg
& Lewis, 1974; Gordon, 1974; Kagan, 1974; Lamb, 1977a; Minton et al, 1971;
Werner, 1969).   Most of these studies found sex differences in children's
behaviour and in parents' caretaking behaviour, but it is not clear
whether these differences are due to nature or nurture.

Much of the research in this area has looked for continuity in
development.   Although there appears to be minimal evidence for direct
continuity, Kessen et al (1970) suggest that it appeals to our 'common-

sense'. The Piagetian theory of stages of development also encourages the idea that competence in the tasks of one stage of development will mean greater competence in the tasks of the next stage. From the results of tests, however, it appears to be impossible to predict from the first two years of life even to middle childhood, let alone to adulthood (McCall et al, 1972). The first two years of life appear to be particularly full of developmental change. This is found physically, for example research shows that newborns who were easy to arouse and who had low thresholds to stimulation tended to be passive and quiet in the preschool period, whereas the reverse was found for newborns who were difficult to arouse with high thresholds to stimulation (Sameroff, 1975). Rapid behavioural change during this period has also been reported. For example, White (1978) reported that children in the 18-21 month range became much more directive. Rheingold (1973) discussed reports by mothers of 16-18 month olds who changed suddenly from docile to more controlling. Trevarthen & Hubley (1978) found a change in communication which takes place about 40 weeks after birth, well before speech begins. They report that the infant appears to accept people in a new way.

Sameroff (1975) points out that continuity in development is unlikely because each stage is conceptualised as being qualitatively different, and therefore moving from one stage to another may make the adaptations of the first stage obsolete if they are not needed in the second stage. Also, people with completely different early histories not only achieve the stage transitions, but do not show much evidence of these differences in subsequent stages.

It is therefore possible that the inability of research to find the critical links in the developmental causal chain leading from antecedents to consequents is due to the fact that there is no such causal chain in developmental areas which can be readily observed, and that development largely proceeds through a sequence of regular restructurings of relations within and between the organism and its environment.

Although it is generally agreed that inherent capacities are not necessarily predetermined and that infants require a stimulating environment to realise their potential (Schaffer, 1977b), it is therefore likely that it is not of first importance that children should have particular kinds of stimulation at particular ages, but rather that

experiences are valuable to them only when they are related to their ability to assimilate them. For example, as a stage is not reached at the same age by all children, giving all same-age children in a creche the same experiences at the same time probably means that not all of them can utilise those experiences in the same way.

To assess when children are 'ready' for a particular experience, there needs to be an active involvement between them and the caretaker (Schaffer, 1977b). The stage of the child and the 'match' of the stimulation offered appears to be of first importance (Hunt et al, 1976). In other words, the mother's ability to understand the stage of her infant appears to affect whether or not she provides an environment which is conducive to learning. This ability has been examined by researchers such as Ainsworth et al (1971) who used a sensitivity-insensitivity scale to assess this ability of mothers to get in touch with their infants. They found that sensitive mothers' responses are temporally contingent on the baby's signals, and similar findings have been reported by McCall et al (1972) and Messer (1978).

These findings also confirm what is now widely agreed - that a child brings his* own temperament to the interaction with parents and with others (Lamb, 1977b;Lamb, 1978), and that environmental events cannot be imposed on the child in the absence of a highly active contribution by the child (Piaget, 1970). Sameroff (1975) asserts that a difficult temperament in a child appears to become a problem only if the parents are unable to adjust to it. He argues that although individual differences may have roots in physical causes, conditions such as anoxia at birth, prematurity and other perinatal complications have been found to be consistently related to later physical and psychological development only when combined with persistently poor environmental circumstances. He asserts that research shows that 'ten times more children had problems related to the effects of poor early environment than to the effects of perinatal stress' (p.274).

This suggests that certain models of development are likely to be

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*The masculine pronoun will be used in general references to a child so that the feminine pronoun can be used for the mother. This will avoid the 'his/her' alternative, which is felt to be clumsy and distracting.

ineffective in explaining the effects of early experience. The main-
effect model, for example, is the typical nature-nurture argument
(Sameroff, 1975). As discussed, unless the environmental context is
also specified, few predictions can be made about developmental outcomes
based on physical causes. Similarly, parental characteristics taken
alone are not effective predictors of developmental outcomes, since
parents appear to dovetail their behaviour to that of their infants
(Eckerman & Stein, 1982; Schaffer, 1977b). The interaction model takes
account of both parental and child characteristics, but ignores the fact
that neither constitution nor environment are necessarily constant over
time (Sameroff, 1975). The transactional model, however, attempts to
take all factors into account. It sees interaction as a process,
because with each interaction, the actor and the responder are changed
(Papousek, 1977; Youniss, 1980). As Schaffer (1977b) puts it (p.30), 'Both
parent and child operate within a system of mutuality where the behaviour
of one produces effects on the other that in turn modify the behaviour of
the first'. According to this model, the child has an inborn regulating
system which helps him to adapt to his environment, except in extreme
cases of deviant development such as serious organic damage, or if there
is a highly disorganised caretaking setting throughout development. In
order to understand developmental processes there would need to be a
continuous assessment of the interactions between the child and his
environment. It is therefore not appropriate to look at a set of traits
in one or both partners, but at differences in mother-infant relationships
between dyads, or at changes in a relationship with age or with treatment
(Hinde, 1977). In this way it may be possible to determine how the
child is helped or hindered in his adaptation as both he and his
surroundings change. For example, Clarke-Stewart (1973) was able to
show that between ages 9 months and 14 months, maternal attention
influenced the child's attachment, while from 14 months to 18 months,
the child's attachment was influencing maternal attention. According
to Kagan (1979) infants younger than 7 months and older than 10 months
look longer at non-social events and display longer attentiveness to
human speech than infants between 7 and 10 months.

Although there are unlikely, therefore, to be direct continuities in
stages of development, there may be such continuities in the growth of
the child's self-concept. This means that parents who cannot cope with
a child with a difficult temperament could label him as 'difficult' and

their relationship with him could reflect this feeling.   Similarly, a
child who does not achieve highly in an early stage could learn, through
feedback from his caretaker, that he is 'unsatisfactory'.   Once the
child incorporates this labelling into his self-image, it may persist
even in later stages when he may be ahead of other children of his age
(Grusec & Redler, 1980; Hunt et al, 1976; Sameroff, 1975; Yarrow et al,
1972).   Followers of the psychoanalytical school have always believed
that with effective child-rearing practices, the child will have
gratifying experiences in early childhood which will enable him to pass
through the phases of growth successfully without fixations which can
continue to affect his behaviour in adulthood.   Research over the last
decade appears to show that infants who were securely attached showed
more positive affect and enthusiasm in problem-solving situations at 24
months (Matas et al, 1978); that they were more socially competent with
peers in preschool (Waters et al, 1979; Lieberman, 1977); and that they
were able to engage more easily with novel social partners (Easterbrooks
& Lamb, 1979).

There is still divided opinion on the long-term importance of this issue.
For example, Yarrow et al (1972) believe that marked trauma and extreme
deprivation can have significant effects on adult behaviour. Schaffer
(1977b) on the other hand, does not believe that even drastic early
experiences necessarily result in unchangeable patterns of behaviour,
or that they affect mental growth.   The mother-infant relationship which
was seen as an essential precursor to emotional health (Bowlby, 1969) is
no longer seen by many researchers as a prototype of a satisfying
relationship without which the child cannot establish satisfying
emotional relationships with others when they are older (Lamb, 1978b;
Lewis et al, 1975; Schaffer, 1977a).   In spite of these disagreements,
however, it is generally accepted that caretaking in a fairly stable
social framework such as the family is most likely to result in
comparatively stable development (Escalona, 1973), that inherent
capacities are not necessarily pre-determined, and that an infant
requires a stimulating environment to realise his potential (Schaffer,
1977b). What constitutes a 'stimulating' environment for all children
is not yet clear.

1.3 RATIONALE FOR STUDYING HOW MOTHERS TEACH THEIR INFANTS

It is important to know how adults teach children in our culture. In primitive cultures, children learn values and skills which are obviously needed for survival, for example, hunting. In our culture, the skills children learn from adults at home and even at school are not so clearly related to survival. Specific teaching expertise is needed to keep their attention and to motivate them to perfect their abilities and have enough confidence in themselves to develop new skills which they cannot clearly see the use of (Kagan, 1971). According to Bruner (1972), our world is changing faster than the adults can transmit their understanding of the changes. It could therefore become increasingly difficult for adults to teach children at all, since adults may not be able to predict the future. What they have to teach may therefore become ineffective by the time it is brought into use in a rapidly changing world. It may therefore become important for the young to teach the younger. It has been seen that the mother-infant relationship may have an effect on the child's cognitive growth. If adults stop teaching children, it is important to know if there are vital components of parental teaching that may fall by the wayside.

1.3.1 Effect of environment on learning

Environment is seen as affecting learning from the first months of life. Kagan (1972) concludes from research that certain cognitive processes are largely controlled by maturation. Infants appear to acquire schemata of events at approximately 2 months of age. Schemata are stimulus-response associations with a particular expectation of outcome. We know relatively little about what makes a child attend to one stimulus rather than to another in the formation of these early schemata (Hutt, 1973). The original interest may be predisposed, for example by temperament, or it may be encouraged by the amount of variety and responsivity in the environment (Yarrow et al, 1975). This early variety of experience could contribute largely to individual differences, some of which start from approximately 6 to 8 months when, because of the development of different abilities such as crawling, children become more difficult to control and therefore start experiencing a variety of different parental coping mechanisms (Bronson, 1974a;White et al, 1977). White et al (1977) concluded that these different experiences result in

different structures involving language learning, curiosity, problem-solving skills, social skills and attachment development. They found (p.120) 'indicators of future trends in several fundamental areas in the second year of life', while Wachs et al (1971) found that differences in intellectual functioning at 3 years had precursors in earlier differences observed as early as 7 months.

After the first schemata have been acquired, the infant will devote larger spans of attention to events that are moderately different from the schemata, rather than to events that are either totally familiar or completely novel (Harnick, 1978; Jennings, 1975; Piaget, 1970). A child will manipulate an object as a way of discovering what behaviour to expect from it, and what can be done with or to it. Actions which he has tried out on other objects are tried out, such as pushing, pulling or sucking. These are what Piaget calls 'secondary circular reactions', and if results are the same, the object is 'assimilated with the old schemata'. If they are different, he repeats the action until it gives rise to a new 'schema'.

At about 11 months of age, the 'tertiary circular reaction' is seen. The child will now perform an interesting behaviour in many different ways to see how the outcomes differ. For example, he will hit several things with a spoon to see how they differ. He actively creates situations which will produce different effects, rather than producing them by chance. The differences or the changes in the stimulus pattern appear to interest him. Newson (1979) found that for children to continue playing with an object, the actual physical skill required needs to be not too difficult, and the result needs to be immediately satisfying, so that the child can see that the action has paid off.

After repeating the action many times, it no longer appears to be of interest and it ceases. According to Howe (1975), this could be due to habituation, a 'decrease in responsiveness that follows from the repeated presentation of a stimulus' (p.62) which could be caused by the arousal of boredom which is seen by Berlyne (1960) as a drive which is aroused when external stimuli are excessively scarce or excessively monotonous. There is a lack of novelty, of surprise, of uncertainty and of complexity. Boredom is particularly likely when a stimulus lacks short-term novelty,

that is, when it is repeated many times in immediate succession.

It is, however, possible to keep actions interesting for longer if they can be accompanied by a contingent environmental event, for example if a light comes on each time the action is performed (Berlyne, 1960). If the stimuli are produced by the infants themselves, this can also defer habituation (Nuttin, 1973; Trevarthen & Hubley, 1978), and infants will engage in a number of separate behaviours that have in common the effect of making interesting sounds or sights last (Piaget, 1970). Possibly the very act of responding or even just functioning is a source of pleasure (Nuttin, 1973). Such a feeling of pleasure can encourage the repetition of the act that preceded it; in other words, it can act as a reinforcement, either internal or external. However, it is sometimes difficult to know what pleasurable or rewarding effect, if any, a specific object or event has, especially when it is an internal reinforcement. For example, from research it appears that children prefer to repeat (or find reinforcing) acts which have resulted in a change in the object acted on. That is, as already mentioned, they prefer to be the direct cause of the change in the object (Howe, 1975). It is not clear, however, whether the reinforcing stimulus is the change or the production of the event.

1.3.2 The effect of novelty on learning

It is generally agreed that the curiosity of young children and the attention they give to novelty is an important learning tool. They actively seek variety in experience and in play, which Newson (1979, p.12) sees as '.. the ideal setting or jumping-off point for creative thinking and imaginative invention'. Berlyne (1960) sees it as being the basis of much of the 'creative activity on which science, art and entertainment depend' (p.137). Murphy (1972) too notes that underlying creativity there appears to be a playful dimension not unlike the games of early childhood. Several researchers have found that the opportunity to investigate a novel toy interested infants of 10 and 12 months sufficiently for them to explore and remain in strange rooms on their own for several minutes when they did not do so for familiar toys (Corter et al, 1972; Rheingold, 1969; Ross et al, 1972).

Kagan (1971) agrees with Gibson (1969) that this interest in novelty may be a response to uncertainty or anxiety. When faced with a new game, a child is likely to work hard as long as he cannot predict his performance. When he is no longer surprised by it, he begins to get tired of it.

These findings are useful for the teaching of children. If, as suggested by Fraser (1966), motivation is aroused primarily by the stimulus in the environment, then by changing the stimulus, that is, introducing a novel game, motivation can be re-aroused when it flags and the activity will once again be reinforcing. Thus one of the skills of teaching lies in providing changing stimuli which are challenging enough to be motivating.

1.3.3   Effects of reinforcement on learning

As already mentioned, according to Nuttin (1973), besides the stimulus change explanation of the reinforcement phenomenon, there may be an event production explanation. When an event occurs to alter the frequency of an action, information is acquired. That event is a reinforcement and acts as a signal pointing to a response that is interesting at that time. In this way, a successful outcome such as a light which is contingent on bar-pressing, or somebody saying 'right', interrupts an ongoing stream of behaviour to focus on the one thing that merited the reinforcement. It has no direct learning effect in itself (Estes, 1970). It merely alerts the subject, and raises his level of attention. Thereafter, the responses related to the increased attention level tend to be better preserved. The reinforcement sets up a problem in prediction (Kagan, 1971). A child will continue with a behaviour until he understands the relationship between his actions and the reinforcement. If the reinforcement is a sensory pleasure such as taste or jogging on a knee, the child may want to experience it again and again. Otherwise he may stop the behaviour as soon as he understands what he is being reinforced for, not because he is necessarily tired of the reinforcement so that it does not motivate him any longer, but because he has satisfied his curiosity about what controls the occurrence of the reinforcement. This could explain why intermittent reinforcement is so successful.

Newson (1977) cautions about assuming the meaning of reinforcement
signals from their physical form alone.   Infants are repeatedly
involved in structured forms of interactions, which are governed by the
understanding of the more skilled partner.   These interactions promote
shared understandings which enable infants in the second six months of
life to respond to shared conceptions of reference, to share jokes and
the meanings of actions.   However, these meanings can often be
understood only by the partners themselves because of their shared
history.   Gewirtz (1971) points out that whatever stimuli caretakers
provide contingent with functional reinforcement to a young child, they
will subsequently function as social reinforcement for him.   For
example, for some children, verbal approval may operate as a strong
reinforcement for behaviour, whereas nods or smiles may not.   Unless
the individual established reward pattern is carefully understood,
this may be a confounding factor in research studying the reactions of
infants, for example, with strange adults (Bronson, 1978).   Landau
(1977) studied infants at home for a whole day, and suggests that
infants may smile less at strange adults not necessarily because they
do not recognise them, but because the strangers do not know the
particular strategy the child is used to.   At each age level, in each
environment, she found that mothers knew how to make their infants smile,
using a number of different channels of communication.   Trevarthen
(pers. com.) pointed out that a child may recognize that an unknown
adult is a stranger and may know intuitively that they will not
understand each other.

It would be very helpful in a practical sense to know if any particular
type of reinforcer can influence a particular kind of behaviour.   If
we agree with the already mentioned Gibsonian view that the 'reduction
of uncertainty' is a reinforcer, then almost anything could be a
reinforcer because the particular forms of the stimuli required to
bring about such reduction of uncertainty alter considerably with age
differences as well.   As Howe (1975) puts it, the same event may be
reinforcing in different ways at different ages.   For example, tone
and touch, presented by anyone, appears to reinforce behaviour in a
newborn infant.   At 3 months, to be reinforcing, the same events must
be performed by the mother (Wahler, 1967a). Also, it is not always clear
that the stimulus deliberately paired with the event is what is

actually doing the reinforcing. For example, when a mother reinforces an action of an infant by smiling, verbalising and a generally encouraging tone, what may be even more reinforcing is the continued attention of the mother and the infant's own experience of understanding of the new shared meanings established with his mother (Pawlby, 1977).

1.3.4 Mothers' teaching strategies

As already discussed, the different stages of development appear to influence what methods of teaching will be effective, and research reports suggest that mothers appear to know what methods their infants will respond to (Hubley & Trevarthen, 1979; Kaye, 1977). For example, mothers generally used instruction only with infants over 8 months of age, and younger infants very seldom responded to instruction. When reports described how mothers demonstrated so that infants could observe and imitate, findings were not clear. Some studies refer to imitation of body movement or facial expression; others discuss imitation of an action on a toy, and still others report on teaching an actual task (Hubley & Trevarthen, 1979; Kaye, 1977; Pawlby, 1977; Sheridan, 1977).

Greenbaum & Landau (1979) found that mothers appear to use different strategies of demonstrating or instructing, and increase the use of the method which brings the required response from the children. Kaye (1977) found that when teaching 6 month-olds to reach for a toy, the basic strategy adopted by mothers was to demonstrate the task over and over, alternating with pauses in which the infants could make their own attempts. Mothers also used shaping, hand tugging, pointing and shaking of the toy. Hay & Murray (1982) found that modelling of an action was not sufficient to induce infants to perform that action. Explicit 'prompting for imitation' and/or game-like pacing of modelled actions were required, and Kaye (1977) notes that infants appear to control the timing of mothers' demonstrations, their frequency, onset and duration.

1.3.5 Attention

The attention that is given to events appears to be crucial to learning

(Howe, 1975; Kagan & Lewis, 1965; White, 1971), and this is tied in with the state of arousal of the young infant. Howe (1975) points out that while, in the newborn, behavioural state can show large fluctuations over periods of as little as ten minutes, the general arousal level still remains important in the older infant. Maternal strategies are needed to maintain it. For example, Wells (1975) describes a mother's teaching of a 15 month-old infant by attracting his attention first by repeating key words until he is focussing on the task and on her.

1.3.6 Game-playing

Another successful strategy to provide a focus of attention is game-playing. Mothers often carry out everyday caretaking tasks in a game-like manner from the time the infant is born, for example, actively rocking and bouncing, and changing the pitch of the voice. Crawley et al (1978) found qualitative changes in maternal game-playing styles over different ages. With younger children, maternal games involved simple stimulation. With older infants, the games had a conventional pattern that allowed the infant to learn a motoric role, but they all appeared to be chosen to stimulate positive affect responses. According to Bruner (1977), learning appears to occur best in a playful ambience. He believes that when things become too 'serious' and intention-bound, communication regresses to the level of demand and counter-demand. However, Mueller & Lucas (1975) see play as not being primarily for the acquisition of skills, but for establishing and maintaining social relations. Possibly both these competencies are encouraged. According to Murphy (1972), when an infant is given many of these game-playing experiences, he will initiate new patterns at approximately 10 months, such as throwing toys out of a high chair to be retrieved by the care-taker again and again, and often gives indications of pleasure, such as smiling or triumphant crowing.

1.3.7 Levels of intellectual functioning

Competence in both social skills and skills with objects may not be related to age as much as to the growth of intellectual functioning. Uzgiris (1977) suggests that children should have experiences in infancy to help them go through four levels of intellectual functioning, and sees

novelty in the form of games as having a function in some levels.

The first level, on which simple unitary actions occur, may find novelty useful because it produces attention from others.

On the second level, differentiated actions appear. There is an attempt to repeat known occurrences by imitation. Therefore there needs to be regularities in the environment so that simple actions can be recognised and serve as goals.

On the third level, actions appear which are regulated by differentiated feedback. There is more trial and error, while infants judge which of a series of actions needs to be altered after failure of a previous attempt to reach a goal, which may be to create novel rather than familiar occurrences. There therefore needs to be a variety of events and objects in the environment, and a minimum of interference or direction.

By the middle of the second year, the fourth level of intellectual functioning may be observed. This involves 'anticipatory regulation of actions', therefore goals are reached without much trial and error. Verbal stimulation is needed to impose a pattern on the activities. For example, when an adult says 'Thank you' for a range of different actions, this imposes a conventional pattern on them. Social interactions with an attentive adult are therefore crucial for this level.

Although these levels are based on a stage concept rather than on an age concept, Uzgiris places the third level as often occurring at the beginning of the second year. This conceptualisation ties in with other findings. Researchers have observed that, besides following the child's current interest, parents often encourage or discourage interest in the areas they see as more or less important (Hubley & Trevarthen, 1979; Jennings, 1975), and Escalona (1973) found that from 5.5 to 13.5 months, the larger proportion of all adult-initiated social contacts are of the kind that divert the infant from what he is doing. She reports that the more a young toddler is intruded upon in this way, the more his next action is a response to the intrusion rather than a self-initiated action. She suggested that during the second year, therefore, in the social sphere at least, many initiations by others may decrease spontaneous, self-directed behaviour by the child.

1.3.8 Concept of dialogue

In considering the processes underlying the formation of social relationships, Schaffer (1977a) sees the infant's major achievement as being the attainment of the concept of dialogue, which involves the ideas of reciprocity and intentionality. Reciprocity is at first imposed by the mother, who constantly monitors the infant's behaviour so that she can relate her actions to suit the capacities of the infant (Krige, 1977). Each act made by the infant is construed by the adult 'as a meaningful signal in the light of the given situational context and of the immediately preceding signals which have been directed towards the baby' (Newson, 1978, p.41). She makes 'sense' of the baby's actions, whatever they are. Therefore, interactive sequences start with the infant's behaviour, which the mother joins, structuring an interaction or dialogue. She reduces the difference between her skill and the infant's lack of skill by exaggerating, repeating and slowing down her actions, imposing turn-taking sequences, and encouraging the infant by imitation and by reinforcing his imitations of her actions. Intentionality is difficult to define, but infants show when they are aware of anticipated goals, for example by pointing as a request for things, and by co-operative acts like giving and taking, particularly at 9 to 10 months (Trevarthen & Hubley, 1978).

Schaffer (1977a) considers that infants learn the reciprocal and inter-changeable nature of dialogue, with its rules, only at the end of the first year. Newson (1975) found that active participation in face-to-face conversational episodes is possible at a much earlier age, when infants take part in dialogue-like exchanges with caretakers, listening seemingly attentively and responding with animated gestures. Papousek (1977) found that the child's pleasure in such exchanges appeared to be related to successful prediction that an event is going to occur, or that his own activity will elicit a relevant event. Such responses to a child's early actions and rewards for his early game initiations are seen by Murphy (1972) as being required for the development of some aspects of social competence, such as goal-directedness.

Therefore, as already discussed, although it has not been found that the first bond is the prototype of all subsequent relations, it appears

possible that early caretaker-infant relationships create an environment which can help or hinder young children in becoming socially competent, whether or not they are socially-oriented by predisposition.

1.3.9   Social competence

Being people-oriented and being socially competent can both be seen as aspects of social interest, but they are not the same (Jennings, 1975). Being people-oriented may be a temperamental predisposition (Washburn, 1974).   Being socially competent, however, appears to be linked to practical behaviour which may be the result of many interpersonal experiences such as getting feedback and learning to achieve personal goals, which Weinstein (1969) argues is one of the important components of the interpersonal skills which make everyday encounters successful. For example, in order to interact with others, a young child needs to learn to relate his own behaviour to that of a social partner, both in form and in timing (Eckerman & Stein, 1982).   If the partner is not attending, the initiator needs to know how to gain his attention effectively, otherwise he will fail to interact.   Even with 3.5 to 5.5 year-olds, Mueller (1972) found that the partner's attention was a powerful predictor of response.   Weinstein (1969) sees such inter-personal skills as being central to the socialisation process.   Lewis & Feiring (1979) suggest that they may be necessary for survival, and certainly for well-being.

Bruner (1972) argues that the relatively long period of immaturity in humans allows for the channeling of behaviour development towards forms adapted to the rapidly changing cultural environment.   For this, young children need a long, pressure-free period of practice through playful activity in a familiar atmosphere with emotional reassurance and lack of danger.   In contrast, Scarr-Salapatek (1976) sees human infancy as a period in which the same patterns of sensorimotor achievements tend to be realized regardless of variation in environmental conditions.   These arguments may both be valid for different aspects of development.   For example, all children talk by the time they are 5 years old, and it may therefore be assumed that all environments affect language development in the same way.   However, there are wide individual differences in rate of language development, and social competence is much more difficult to

assess. It is also not so clear how long it takes to develop, since some people acquire it only to a limited degree in childhood.

It is also difficult to assess to what extent failure to develop in one domain affects development in another domain. For example, children who do not hear well in early infancy may eventually achieve normal hearing ability, but may have poor speech development because they were unable to hear the sounds around them from early infancy. Uzgiris (1977) points out that 'experience' is merely the presence of environmental conditions that create the opportunity for the occurrence of particular activities. It still requires that the individual construes those conditions as opportunities for these activities. Not only may the same conditions be construed differently by different individuals, but the same individual may construe them as offering different opportunities at different periods of development. This therefore suggests further that a global description of 'environment', for example by socio-economic status, does not explain how much the child is exposed to opportunities to learn what he is capable of learning at any particular stage.

This means that the infant's rate of development and types of capacities at one stage may affect his environment and the kind of opportunities for experience that are made available to him subsequently (Sameroff, 1975). For example, it is possible that early social competence may enable a child to develop other social skills which he would not be able to do if he were excluded from peer friendships due to his lack of social competence. Lamb (1981) thus argues that it is most likely that the avoidant child behaves avoidantly when first introduced to peers, and this affects their impression of him and therefore their later behaviour toward him. This in turn would affect his experience of social inter-action, and colour his motivation to engage in further social experiences. As already discussed, early experiences apparently are the bases of early 'schemata' which are then the core of what will be noted in the environment (Jennings, 1975).

Children who achieve competence in social skills early in life appear to have an advantage when they start going to school as well. Heathers (1955) suggests that a socially confident child might be expected to engage in more social play and to be more assertive than an insecure child.

O'Malley (1977) found that teachers and parents rate competence in social skills, together with emotional stability and goal directedness, as being more likely to lead to school and life success than variables such as IQ and high aptitudes. This is understandable, because children who are rejected by their peers could find school to be an 'aversive venue' and academic performance might suffer because of social rather than cognitive problems (Rubin & Ross, 1982).

Although, as discussed earlier, there is little agreement on the long-term effects of the mother-infant relationship, it is possible that the quality of this relationship may have short-term effects which can affect the child's entry into peer society, and thereafter his social experiences.

As concluded by Lamb (1977a), it therefore appears to be important to explore how both the content and the structure of early parent-infant interaction affects children's behaviour as they move from the family into the wider world.

1.4 RATIONALE FOR STUDYING PEER RELATIONSHIPS AND POSSIBLE CONTINUITIES FROM MOTHER-INFANT RELATIONSHIPS

As already discussed, the caretaker-infant relationship is of prime interest, but the importance of peer relationships is now generally accepted. In our society, people are involved with peers at least from school-going age, and thereafter throughout life. Closeness to some peer(s) and acceptance by one's peers are important factors in the well-being of the individual (Yarrow, 1975). The need to study early peer relationships has become more pressing because early peer association has become more common over the last decade, as increasing numbers of very young children are brought up with same-age peers in day nurseries and residential nurseries throughout the world (Hay, Pedersen & Nash, 1982; Vincze, 1971). The effect of this social change is not yet clearly understood. From an evolutionary perspective, for some centuries children appear to have been selected for an ability to become integrated into a multi-age group. By the protection afforded by older children, and by learning cultural rules of behaviour from them, the infant was helped to integrate smoothly into society (Konner, 1975). It is not yet clear what the cost may be to our children to have them spend so much time with children of their own age, rather than with non-peer children. Comparisons of kibbutz-reared and home-reared children have found important psychological differences (Bettelheim, 1969; Regev et al, 1980) which suggest that the constant presence of peers has a bearing on the expression of affect in children.

Until the late 1960s there was not much research in peer-oriented social behaviour in young children at all. In the 1930s, interest in this area was shown by researchers such as Piaget and Parten, but this work was not immediately followed up. Children were considered to be egocentric, and it was therefore assumed that they could not have relationships with peers who would be equally egocentric. Studies of infant social behaviour was seen to be meaningful only in relation to interaction with the caretaker, and, as mentioned before, this relationship was considered to be the prototype for all future social relationships (Suomi, 1979) particularly by the psychoanalytic school of thought (Lewis & Feiring, 1979).

According to Schaffer (1977b) and Rubin & Ross (1982), for nearly four

decades, therefore, research in child development was mainly focussed
on the attitudes of mothers and on education.   In the early years of
research into the social capacities of children, it was felt that social
relationships can only be formed after the acquisition of language, so
researchers studied children who were old enough to speak.   Over the
last decade, however, writers began suggesting that an ability to
participate in interpersonal behaviour and to become aware of the intent
of others were necessary precursors to the acquisition of language
(Bruner, 1977; Dore, 1973; McNamara, 1972; Mueller, 1972).   Observation
and research showed that children do appear to have the capacity for
social relationships from an early age, possibly even from birth
(Garvey & Hogan, 1973; Newson, 1975; Rheingold et al, 1976; Rosenthal,
1982; Stayton et al, 1971).

Researchers therefore began observing very young infants in social
situations.   Studies have looked at peer interactions in different
varieties of daycare groups (Field, 1979; Holmberg,1980; Musatti &Panni,1981).
Determinants of early peer interaction have been observed in laboratories
(Eckerman & Whatley, 1977; Jacobson, 1981; Vandell et al, 1980) and at
home (Becker, 1977; Dunn & Kendrick, 1979).   They found that early social
relationships are rich and varied and are not necessarily patterned on
the mother-infant relationship (Fogel, 1979; Lewis et al, 1975).   On
the contrary, they appear to develop differently and often concurrently,
but not necessarily completely independently of each other (Lewis et al,
1975).   For example, studies have shown that children become increasingly
social with each other between their first and second birthdays
(Eckerman et al, 1975; Lewis et al, 1975).   However, it is not clear
whether these changes are attributable to peer acquaintance or whether
they reflect general developmental gains in social ability, gains
that may refer more directly to experience with parents and other adults
(Mueller & Brenner, 1977).   For example, Vandell (1977) found that
fathers who frequently used positive affect with sons had sons who
frequently used positive affect with peers;   mothers who frequently
exchanged objects with sons had sons who did the same with peers.
In a later study, Vandell (1980) found other similarities.   For example,
infants who frequently vocalised and smiled to mothers also frequently
vocalised and smiled to peers.   Escalona (1973) reported that the more
an infant is shown things and given information, the more will he

himself show things and give information.   This pattern was also
observed, though at lower levels of frequency, for the initiation of
reciprocal games.   Although some behaviours in Vandell's studies were
more frequent with peers than with parents at 6 months, it is therefore
most unlikely that basic social expectations and styles developed in
interaction with parents do not influence the child's behaviour in
interaction with peers (Lamb, 1981).

The mother-infant and peer systems are basically dissimilar, however,
for several reasons :

  Mueller & Vandell (1978) point out that 'purely on the basis of
  relative affordances' in Gibsonian terms, it must be concluded
  that parent-infant engagement will occur earlier than infant-
  peer engagement, because from the first months of the infant's
  life, mothers can position themselves for maximum effectiveness
  as social partners where the infant can clearly see them, whereas
  infant peers cannot do this.

  From the age of one month, infants do not appear to behave in
  the same way with mothers and with peers (Fogel, 1979; Mueller
  & Vandell, 1978).   For example, typically, by the second year,
  infants turn to parents for conversation and to peers for physical
  activities (Rubenstein & Howes, 1979; Vandell, 1977).   Lewis et
  al (1975) found the differences so pervasive that they concluded
  that the two kinds of development were non-overlapping.

  In the mother-infant system, one partner is always more skilled.
  Mothers almost always do the initiating, while the children do the
  terminating (Mueller & Vandell, 1978).   More interaction and
  behaviour is seen in mother-infant situations (Vandell, 1977) than
  in peer situations.   However, Lamb (1978c) suggests that peers
  may carry out a different function by acting as models, and by
  forcing infants to take a proportionately more active role in
  the relationship.

  The stimulus properties of peers differ in many ways from those of
  older children and adults (Eckerman et al, 1975).   As Rheingold
  & Eckerman (1975) point out, 'their activity is often faster paced,

and their voices are higher in pitch' (p.295). Compared to adults, they are more similar to the infant himself in appearance and actions. It is felt that this similarity helps infants to learn how they differ from adults and to acquire the concept of 'personhood' (Youniss, 1980).

Rubin (1980) points out that parents often make communication too easy for their children by interpreting and satisfying the child's wishes on the basis of incomplete utterances. Children, however, 'do not allow their peers the luxury of being cryptic' (p.14). They also correct the idea the child may have gained from the mother-infant relationship that his every wish will always be granted. Rubin considers this function of peer relationship to be crucial.

Adults are helpful in teaching children the existing system, but they are generally not ready to re-define their system in collaboration with children. Although they may modify, in the end they expect children to conform. Youniss (1980) describes this as reciprocity by complement. One person is in charge of the interaction, and the other person must act in accordance with demands if he wants acceptance or approval. Expressing opinions will therefore be seen as being a risky procedure. With peers, however, children find that a system can be created with another person. Youniss refers to this as direct reciprocity. Each child is free to contribute the same acts. For example, if one is aggressive, the other can be too. After a time, this becomes meaningless, so the peers begin to use direct reciprocity co-operatively rather than unilaterally, since this is the only way the relationship can grow. This means that when the children have different viewpoints, they listen to each other in turn. Positions are maintained, while concessions are given. The fact that consent is voluntary and that co-operation is essential leads to the creation of mutual under-standing and intimacy. According to Youniss, Sullivan and Piaget saw the psychologically healthy and morally mature personality as deriving from relationships of co-operation rather than from relationships of unilateral authority, and he also asserts that

because each member of the peer dyad can express his own opinion, the first original idea comes with the co-operative relationship.

Youniss points out that socialisation does not occur only through parents, or even only through adults. The social relationships of the child change constantly in form and function as his development changes, but the social network that is built up is an essential part of life from birth. This network includes parents, other adults, siblings, other children and peers. The functions of these relationships no doubt overlap to some degree. As Mueller (1979, p.191) puts it, 'Caregivers don't only give care, and peers don't only play'. However, play predominates among peers. Therefore the study of only parent-child relationships may be relevant if only protective and nurturant functions are considered. If play and exploration are also seen as important needs in the infant's life, however, then other social objects should be considered more appropriate in filling these needs (Dunn & Kendrick, 1979; Lewis et al, 1975). As Lamb (1981) suggests, the establishment of relationships with peers is probably of special importance.

Weinstein (1969) stresses that the division of labour between parents and peers in the early socialization process is very important. He sees basic capacities like empathy and personality orientations conducive to effective interpersonal control as coming primarily from parents. The refinement of these orientations, however, and the ability to use them effectively are more likely to come from interaction with peers. As previously discussed, Vandell (1977) found that children repeat with peers behaviour that they experienced with their parents. Escalona (1973), in a study of two children from birth to two years, reports similar findings among peers; that is, the child does to a peer what has been done to him by another peer. It was found that a given modality tends to appear in the output about three months after the child has begun to discriminate the input. A child learns tactics from peers by observing what they do to him and to other children, and he can then experiment with these behaviours for himself and try to control the results. He has less freedom to experiment in this way with parents 'who exercise fate control over him' (Weinstein, 1969, p.773). Possibly these new social skills are then used in sustaining interaction with parents, so that the relationships complement each other although they do not substitute for each other (Rubin, 1980; Vandell, 1977).

Through peers, and especially through friends, children learn how to
handle intimacy and how to achieve mutual understanding, and Wright
(1980) found that the variable which most consistently distinguished the
most competent from the least competent children was their ability to
affect others in socially acceptable ways.   These achievements appear
to be the key to interpersonal adjustment, not just in childhood, but
throughout later life (Rubin, 1980; Wahler, 1967b; Youniss, 1980).
According to Renshaw & Asher (1982), longitudinal research suggests
that low status in a peer group is predictive of problems in later life
adjustment.   Children with such low status appeared to have less
social knowledge and less effective social interaction strategies than
children with high status, who were able to engage in co-operative play
and social conversation in familiar as well as in unfamiliar groups.
These skills were able to be taught to children with low status, and
four out of six studies found that the children then gained in socio-
metric status.   The view that social skill is learned is also suggested
by the work of Reisinger (1978) and also of Furman et al (1979).   The
latter found that when isolate schoolchildren had dyadic social contact
with younger children, their activity in their classrooms increased,
and their rates of peer interaction became almost twice as high as
before.   These findings suggest that low peer status and isolation
could be contributed to by social deficits, and point to the importance
of children learning these skills before moving out into large groups,
for example in schools.

There is some disagreement as to the part played by older siblings in
an infant's social development.   Vandell & Wilson (1982) found that
second-born infants who had an older pre-school sibling were significantly
less skilled with peers than were first-born infants.   Yet Rubin (1980)
found that, of the children who do not have peer friends, those who
have older siblings or older friends are more likely to initiate social
interaction with peers.   He concluded that they appeared to have
absorbed the concept of a distinctive set of activities that can be
engaged in with social partners other than adults.

Thus it is not clear whether peers are critical for a child's social
development, but without them, the nature of that development will be
different (Lewis & Rosenblum, 1979).   One example of such a difference

is that they may not experience physical contact play. For peer play
to be most effective in contributing to social competence, it seems that
it needs to include such contact play (Parry, 1972). Mears (1978)
refers to Russian research showing that children unhappy in social play
were often unable to master the basic physical acts, and suggests that
infants who gain self-confidence in the physical environment have made
vital progress towards social role readiness. Blurton-Jones (1967)
even suggests that 3 year-olds without prior playmates may already be
too late to start enjoying the social rough and tumble play patterns
encountered in nursery schools. There may be other ways in which
peers contribute unique experiences.

In mother-infant dyads, Trevarthen (1977) has observed the awareness of
shared experience at 8 or 9 months, and clear co-operation in play at
10 to 12 months, when the infant looked to the mother for instructions
and then complied. Since the 1930s, very few studies have reported
play-like behaviour between peers in the first year of life (Eckerman
et al, 1975; Vince, 1971). Parten (1932) reported that co-operative
relationships were only observed in children of approximately 3 years
old. Since then, co-operative play involving turn-taking sequences of
meaningfully related behaviour has been observed during the second year
of life with increasing frequency (Eckerman & Whatley, 1977). However,
it is still not frequent behaviour by 2 years, and some dyads do not
play co-operatively at all. Those that do, however, appear to show
considerable skill, and their play behaviours can be assessed in terms
of 'structure of play episodes', turntaking, imitative, complementary
and reciprocal relationships. Mueller & Lucas (1975) have proposed a
developmental progression in that order.

The length of experience with peers was found by Mueller & Brenner (1977)
to affect some aspects of play. They found that, with prior experience
with peers, 3 year-old infant dyads were involved in longer sequences
of interaction, but the rate of initiation and response remained the
same as dyads with no peer experience. They also found that infants
need 4 months of peer experience before they can sustain an interaction
to a 'game', and they see sustained games as the last major achievement
of infant peer social development. More recently, and after this
present study was started, Howes (1980) evolved a scale which is

sensitive to length of experience with peers rather than to the age of the child. The scale has five levels reflecting increasing complexity in the use of an object or activity, and increasing complexity of social exchanges. When used for toddlers from 18 months to 22 months, it was able to show that children with peer experience of 1 to 6 months engaged in significantly more Level 1 play, and those with more peer experience engaged in significantly more Level 3, 4 and 5 play. There was no significant relationship with age. The importance of peer experience may be tied in with a finding by Bronson (1975) that the ability to initiate signals appears earlier than the ability to respond to them in such a way as to sustain prosocial interaction.

To play games, children must communicate their intention to play, or they must understand their partner's intention to do so. They must determine and convey the content and roles of the game, and must regulate the alternations of turns, that is, they must signal the partner to act while they wait (Ross, 1982). Garvey (1974) observed 3.5 to 5.5 year-olds playing games, and noted that all features of the second turn had to be identical in rhythm to the first, except that the second player could substitute some component. Asymmetrical play was not encouraged. She suggested that a satisfying feature of social play, which both partners can share, is the feature of control. When there is ritual play, the control is precise and knowledge of its success is immediate. In addition, both partners enjoy the satisfaction at the same time, since each is instrumental in eliciting and maintaining the responsive behaviour of the other.

Eckerman & Stein (1982) see four essential characteristics of co-operative play (Table 1). They point out that co-operative play takes multiple forms during the first 2 years of life. It does not appear to be re-enactments of specific games learned with more skilful partners, but mainly new games generated by the children themselves. This shows considerable skill in a 2 year-old, and ties in with Youniss' (1980) suggestion that early co-operative behaviour could bring out the infants' creativity.

The study of peers may therefore be particularly valuable in teasing out the skills that the infant brings to a social encounter from those that

are brought by the more skilled partner. As suggested by Eckerman (1979), whatever interaction is seen between infant peers, and whatever skills are implied, can be attributed to the infants themselves. Looking at play with the same toy by mother-infant dyads and by peer dyads may show whether such skills used with peers may have originally been taught by mothers, or whether they appear to develop independently.

TABLE 1 :   FOUR ESSENTIAL CHARACTERISTICS OF CO-OPERATIVE
            PLAY (Eckerman & Stein, 1982)

1. The engagement of both members of the dyad with one
    another.

2. A meaningful relationship between the behaviours of
    the two members, such that each member appears to be
    responding to the other's actions, and both appear
    to be about a jointly understood and agreed-upon
    endeavour.

    Meaningful relationships are seen as :

    a) Actor-audience ones;

    b) Imitative ones;

    c) Complementary ones - the actors do different
        things;

    d) Reciprocal ones - each actor does the same thing

        i) concurrently, or
        ii) in turn-taking fashion;

3. An affectively neutral or positive tone to the encounter;

4. The apparent engagement in the interchange for its own
    sake.

1.5   ISSUES IN THE OBSERVATION OF SOCIAL BEHAVIOUR

1.5.1   Observation of social interaction

The term 'social interaction' implies that individuals influence each
other's behaviour (Rubin, 1980).   In the research situation, therefore,
actions need to be studied to understand how they are put to use in a
social context.   Shotter (1978) refers to this as the hermeneutical
approach, and argues that when we study people, we do so from an
'insider's' point of view.   Instead of trying to prove 'intention',
for example, we need to refer to our own knowledge, within a particular
frame of reference or within our culture, of what is involved in having
an intention.   For example, when we see a mother look at her child,
lean back in her chair, drop her head back, then whip it forward until
it almost touches her knees, at the same time saying, 'There you are!',
we recognise that her intention is to play a game with her child.   If
her child is fretting at the time, we recognise that she is playing a
game to distract him and cheer him up.   When a child looks at an
inattentive peer and vocalises or shakes a toy a few times, we recognise
that his intention is to attract the peer's attention.   Dunn & Kendrick
(1979) point out that acts carried out by an 18 month-old are generally
seen without difficulty as intentional, but when they are carried out by
an 8 month-old, it is generally felt not justifiable to assume
intentionality.   Trevarthen (pers. com.) agrees that infants should
be treated from birth both practically and theoretically as persons.

Therefore one cannot study social interaction by looking at the
individual's discrete actions only.   The effects of behaviours and their
context also need to be examined.   In this study, it was decided not
to adopt a system of analysis devised for a different type of research
or to construct one a priori which would specify all the behaviours to
be observed.   Rather, as suggested by Cairns (1979), it was decided
to 'discover' a system of analysis from the observations made.   This
was felt to be particularly necessary for the analysis of co-operative
behaviour because there was no way of knowing what forms it would take
in this particular context.   There is always a danger in ex post facto
research that effects observed are caused by some unidentified uncon-
trolled variable (Roscoe, 1975).   This system of analysis is therefore

suitable for hypothesis generating, and not for hypothesis testing.
Unless there are expected outcomes for specific behaviours based on
previous research, therefore, results will be examined for possible
alternative interpretations, but they will not be evaluated (Keppel,
1973).

According to Bronson (1975) and others, shared social interaction and
co-operation does occur in infants around contingent or role alternating
behaviours, and it does increase with age, but it is still a rare and
brief occurrence.   In this study, an attempt was made to avoid this
problem found in free play situations.   A structured research situation
was planned whereby the chance of interaction was maximised.

1.5.2   Setting and observer effects

In selecting a setting for this research, the advantages and disadvantages
of both a home setting and a research setting were considered.

a)   Several studies appear to suggest that an infant's behaviour in a
     given social encounter cannot be assumed to be indicative of his
     general social development since he may respond in many ways to
     the same person in different settings (Ispa, 1977; Jaffe & Feldstein,
     1970; Lewis & Rosenblum, 1979; Rheingold & Eckerman, 1975).   For
     example, there appear to be more peer contacts in a familiar setting
     (Becker, 1977; Mueller & Vandell, 1978).   However, a home environment
     is still more familiar for the child that lives there than for the
     visitor.   A laboratory setting, on the other hand, is equally
     unfamiliar to both peers.   Also, according to Ross et al (1972),
     children appear to become accustomed to a new setting within five
     minutes and show little distress if they are not left alone with
     strangers.

b)   In the home setting, the observer must be visible, and there is no
     control over variables such as the presence of objects that can be
     played with, or interruptions.   In the laboratory, there is more
     control and the observations can be made unobtrusively.

c) Recording is difficult in the home, where it generally has to be done manually or with a hand-held camera. In a laboratory, videotape recordings can be made, which allow multiple scans and 'help human observers to transcend their normal attentional and perceptual limitations' (Cairns, 1979, p.214).

d) Bronfenbrenner (1974) points out that laboratory settings can still have ecological validity if the 'significant others' in a child's life are brought into the laboratory with him and are engaged in activities that bear meaningful relation to their roles. Rosenblum & Plimpton (1979) found this to be the case in monkey studies as well, and argue that leaving adults out of the environment may distort peer interaction research. Other research studies have also reported that the adult-infant system and the infant-peer system do affect each other (Field, 1979; Jacklin & Maccoby, 1978).

Parke (1979) points out that attention also needs to be paid to the variations in the degree of 'naturalness' of the setting, and the immediate stimulus field, as well as the social agents involved. The setting can be on a continuum from very unlike a home setting to similar to a home setting. The immediate stimulus field, if it is in the form of a particular toy or toys, would be the same in the home or in the laboratory. The main participants can also be along the continuum of naturalness in the degree of familiarity and the kind of behaviour asked for.

e) A problem with any observed behaviour is a 'social desirability' set. For example, Baumrind (1967) found that fewer instances of extreme behaviour, such as spankings and hugs, occurred with an observer present than would otherwise have occurred. In home environments, parents appear to be able to bias observations of their children by manipulating them to appear socially undesirable, but not by manipulating their behaviour in a socially desirable direction (Lobitz & Johnson, 1975). Ainsworth et al (1971) found cross-situational validity in a longitudinal study of attachment patterns when infants who behaved differently toward their mothers in the strange situation also behaved differently at home. They also found that infants in strange situations behaved differently

depending on the degree of sensitivity and consistency of their mothers. It is not clear how much these can be affected by a laboratory situation. It does, however, appear to be important to put mothers at ease in a laboratory setting (Yarrow, 1967). Lytton (1980) concluded that a laboratory setting may underestimate the amount of interaction the infants are capable of, and may change the normal level of interaction in the mother-child dyad, but it is unlikely to change the rank orders much.

A laboratory setting was decided on because of the advantages in recording and control. By having four identical visits and combining the results, it was expected to overcome unfamiliarity effects.

1.5.3 Familiarity

As discussed, it does appear that familiarity may lead to an earlier development of social behaviour between partners. Whereas it was generally believed that social contacts between young peers grew through a common focus on 'non-social' objects (Mueller & Lucas, 1975), other research has shown that familiar peers showed social behaviour before they were able to manipulate objects (Dickman, 1979; Dunn & Kendrick, 1979; Hay et al, 1982; Vandell et al, 1980) and as early as 5 months of age (Vincze, 1971). Familiar peers were found to display greater peer interaction abilities than unfamiliar peers when observed in the same unfamiliar setting at the age of 1 year, and unfamiliar peers showed more social behaviour as they became more familiar (Field, 1979).

Musatti & Panni (1981) found that daily familiarity did not reduce the young child's interest in his peers in a day nursery. This interest was focussed on social behaviour rather than on play with objects. They concluded that the knowledge and understanding of his peers' actions, gained by mingling with them daily, seem to increase both knowledge and pleasure experienced by each child. Bronson (1974b) also stresses the importance of understanding peers in the development of social interaction. She points out that consistent contingencies are important for social interaction, and unfamiliar peers provide each

other with feedback that is too delayed and variable.   Whereas
familiar infants may develop social schemes that work with each other,
unfamiliar peers may not know what response is expected and needed to
maintain an interaction.   For example, game initiations may not be
recognised as such.

Other findings were contradictory, however.   Vandell et al (1980)
found that 6, 9 and 12 month-old pairs of peers showed hardly any
increase in social acts with familiarity.   Jacobson (1981) found that
long social interactions were more frequent in sessions with unfamiliar
peers, whereas an earlier study found that although unfamiliar toddlers
could just as often elicit single responses to their social initiations
as familiar toddlers, the latter could more often sustain the inter-
change (Mueller & Brenner, 1977).

Bronson (1981) argues that it is more likely that peer social behaviour
is more affected by qualitative differences in the mother-infant
relationship and by individual temperament than by degree of familiarity
with a peer.

The position is therefore not clear.   However, to control for this
variable as much as possible, and based on most of the research results,
it was decided to use only familiar peers in the present study,
hypothesizing that the most complex behaviour possible would be observed,
as suggested by Lewis et al (1975).   Familiarity was also expected to
decrease distress and the inactive, unoccupied behaviours noted in
earlier studies (Doyle & Connolly, 1980).

In this study, a non-twin dyad was deemed to be familiar if they had
played together as a dyad at least once a week for at least 3 months.

1.5.4   Twins

Twins differ from other familiar peers in several important respects.

At the very least, twins share the familial characteristics of siblings,
if not the apparently shared genetic characteristics of identical twins.
Siblings and birth order have been shown by several researchers to

affect social abilities.   For example, as already mentioned, Lewis
et al (1975) found that the more children in an infant's family,
the less social the child.

Twins are also much more familiar with each other than singleton peers
are who live with different families.   Having each other as constant
companions, it may not be considered essential for them to have other
playmates.   Also, parents may feel it is not essential to give as
much time to twins as to singletons, for the same reason.   At best,
the adult's attention is usually shared between twins (Clark, 1980).
According to White et al (1979), some of the most important differences
in childrearing practices were judged to be in the distinctive pattern
of response to the overtures of babies.   This pattern would be affected
by having two babies to care for at the same time.

This lack of comparable dyadic interaction with an adult could also be
associated with the striking differences in language ability found by
all researchers between singletons and twins (Mittler, 1971; Savic, 1980).
For many years it was believed that twins developed a special language
for themselves.   More recent studies suggest that this 'language' is
a degraded form of the normal speech of the environment (Sheridan, 1976).
Since the most constant companion understands and uses the same
'language', there may be no motivation for twins to improve their
verbal proficiency as singletons must do if they want to be understood.
Savic (1980) suggests that twins may remain fixed in a transitional
stage of language learning, which singletons pass through more quickly.
According to Scheinfeld (1973), this twin 'language' may have advanta-
geous side-effects, since it may enable twins to achieve communication
before singletons do.   This could result in earlier experience in
social interaction.

The differences found in the language development of twins and singletons
may also have other bases in the 'twin situation'.   From birth,
interactions that twins have with adults are generally triadic ones.
This is a difficult form of interaction to master, and twins become
skilled at it far earlier than singletons do (Savic, 1980).   To avoid
being excluded from an interaction, twins learn to react quickly to a
message if they want to respond, and they use short, efficient

utterances. Their skill in entering conversations appears to make
them more sociable and more spontaneous than singletons. Because there
is always a responder available, twins pass through the stage of
egocentric speech more quickly than singletons do, and they show a
greater capacity for co-operative games than for solitary games. On
the other hand, because there is always an alternate responder, twins
are not obligated to respond to an adult's message, and as a result
they may vocalise less than singletons do. It is therefore possible,
as Savic suggests, that twins are not, as a group, retarded in language
development, but that they develop in different directions to start with,
to cope with the demands of the 'twin situation'.

For example, Mittler (1971) points out that the achievement of
differentiation is more urgent for twins than for singletons, since
they are more often treated as a pair than as two individuals.
According to Scheinfeld (1973), research has shown that when children
were asked their names at 24 months, the proportion of twins who did
not know their names was 50% higher than singletons. It is probably
more difficult for twins than for singletons to achieve early differ-
entiation because they are more often disadvantaged at birth, and it
would therefore take them longer to pass through the early developmental
stages. Yet they appear to master the 'I' indicator in speech more
quickly than singletons do.

Differentiation is sometimes imposed on twins by their parents,
particularly in the case of MZ twins. Allen et al (1976) point out
that studies have shown that MZ twins reared apart have shown greater
similarities in abilities and in life style preferences than MZ twins
reared together. They suggest that, to differentiate between the
twins, parents may accentuate constitutional differences based on
differences in intra-uterine and birth experiences. Soon after birth,
therefore, one twin may become 'the athlete' while the other may become
'the dreamer'. It is not clear how these labels and comparisons
between the progress of the twins may affect the development of interests
and skills.

Research has shown that, when both mothers and peers are available,
singletons appear to prefer peers (Eckerman et al, 1975; Lewis et al,

1975; Rubenstein & Howes, 1976). It was suggested that this may be due to the interest in novelty, since the peers in the studies were novel stimuli whereas the mother was not. In twin studies, it has been found that twins seek to interact with any new partner, adult or peer, although the other twin is available (Savic, 1980). This may indicate that the twin partner does not provide the stimulation and the novelty that a familiar peer appears to provide for a singleton. Therefore twins may not show the same free-play behaviours that singletons do, in a laboratory for example. Twins may find it more stimulating to examine the environment itself, since they can always play with their twin partner at home.

Furthermore, if it is accepted that the developmental pattern for twins may be different, rather than slower, than the pattern for singletons, it does not appear to be useful to compare them on one or two aspects only. A comparison of several behaviours is more likely to show up differences rather than deficits. The comparable learning and play situations in the present study are expected to maximise the possibility of such a comparison.

1.5.5   Size of group

As early as 1933, Parten reported that preschool children appear to play most frequently in groups of two. Since then, other researchers have come to the same conclusion, particularly for children under 2 years old (Bronson, 1975). Vandell & Mueller (1977) suggest that a dyad may help an infant to focus on the behaviour of a social partner and so may assist in bringing about an increase in social behaviour and in interaction sequences. Numerous social partners may distract the infant from the attention needed to maintain interaction.

1.5.6   Age of subjects

The ages 00:32:00 to 02:35:00* were chosen because this range ties in with the age range used by the author in a previous study of twins (Dickman, 1979), thus allowing comparison at some future time.

* This form of notation refers to years, weeks and days.

In the strict sense, a peer is an equal in any respect. For example, Lewis & Rosenblum (1975) see peers as any persons of whatever age who share an activity. For example, a child and an adult in the same choir are peers in that situation. However, in developmental terms, peers are people who are similar in age. They are presumed to be equally skilled, so that one does not take on a parental function (Yarrow, 1975). However, equality in age does not presume equality in development.

Writers such as Kessen et al (1970) and Wohlwill (1973) have queried the rationality of using age as a variable in behaviour research. Wohlwill argues that in developmental analysis, the relationship is not of behaviour to age, but of behaviour to events, and that this is related to age only to the extent that time is needed for this relationship to occur. Kessen agrees, and points out that possibly individual differences call for the consideration of other variables, such as the child's prior history. While largely accepting this point of view, it was impossible to match subjects for this study in this way because there were not many familiar peers available, especially in the younger range. Also, several writers have more recently reported similarities in infants' social and cognitive behaviour at approximately 9 months of age. Trevarthen & Hubley (1978) noted that at 9 months, the infant begins to observe the effects of his growing manipulatory skills; he appears to enjoy the power of exercising control over objects. They furthermore suggest that at approximately 10 months, the infant's learning is affected by intellectual development which occurs at that time.

It was therefore decided to pair children by age, and if the difference in age was within 20% of the younger partner's age, the pair was accepted as peers. The choice of this proportion was a relatively arbitrary one. Because of the rapid developmental changes in infancy already discussed, it was important for the difference to be as small as possible. The proportion of 20% was based on the age difference of the first few subjects who volunteered. Only one set of peers was subsequently unable to take part because of this criterion, and the difference in their ages was almost 50%.

1.5.7   Individual and environmental differences

As already discussed, individual and environmental differences can
both affect the abilities of infants to take part in co-operative
activities.   It is highly likely that the child's own temperament
and his early experiences result in different degrees of social
competence.   As discussed earlier, research has shown that even
identical twins are treated differently by parents from an early
age (Allen et al, 1976).

By using subjects whose mothers were friendly enough with each other
to encourage the children to play together at least once a week, or
subjects who chose to play with each other at day nurseries, it was
hoped to minimise these differences as much as possible.   It was
also considered important to devise a new activity to minimise the
effects of earlier learning and so to reduce as much as possible the
impact of environmental differences on performance.

1.5.8   Level of maturation and experience with peers

These issues are not easy to separate.   As already discussed, it does
appear that experience with peers increases a child's ability to
interact at a more complex level.   Therefore, although level of
maturity was not a factor in choosing subjects for this study, it
was felt that comparative equality could be assumed if the peers in
each dyad had the same minimum amount of experience with each other.

1.5.9   Sex differences

As mentioned before, overall early sex differences have been found in
several studies (Edwards & Lewis, 1979; Werner, 1969).   Goldberg
& Lewis (1974) assert that, although they are rare, these differences
can appear in the first year of life, and it is therefore most
important to consider sex as a variable in any infant study.   Studies
have also shown that children behave differently with peers of

different sexes (Jacklin & Maccoby, 1978). However, a more recent study by Rubin (1980) found little evidence of sex preference before the age of 2 years.

In this study, the sex of peers was not one of the criteria for selection of subjects. Sex differences were therefore not one of the major issues, but will be examined wherever possible.

1.5.10   Choice of toy

The choice of a toy for this study was based on several considerations.

a)   As previously discussed, leaving situations unstructured can result in a high frequency of behaviours which are not the object of the study, while the wanted ones may not appear at all.

b)   Several studies have reported that large toys which can be shared foster toddler interaction (Rubenstein & Howes, 1979; Vandell et al, 1980), particularly when there are no small objects present (Mueller, 1979).

c)   The absence of duplicate play materials has been found to encourage playing together (Eckerman & Whatley, 1977).

d)   According to Sheridan (1976), children enjoy simultaneous noise and tactile sensation, especially at 9 to 10 months. As already discussed, contingent change in the environment, in the form of the operation of a light, was also felt to be enjoyable to infants and toddlers.

e)   It was felt to be important to devise a new task, so that there would be no confounding previous experience with it.

f)   Initiating engagement with a peer has been found to be a low-level activity for very young infants (Schaffer, 1977a). It was desirable therefore to provide some common constraints for engagement that would help them to 'orchestrate' interaction (Garvey, 1974), and maximise the chance of the required behaviour

All these considerations appeared to be satisfied by using the game
devised for this study (see 'Apparatus' p.44).   The situation was
structured to elicit co-operative play.   There was only one toy,
which was large and which had to be shared.   To be used, the toy
had to be manipulated, and there was auditory and visual stimulation.
All the children had equal experience with the game.   The children
were not simply required to 'play together', but were given a specific
game to play.   The problem of limited communication skills was
therefore considered to be controlled as much as possible.

CHAPTER 2

2.1 PURPOSE OF THIS STUDY

The purpose of this study is to observe the development of
co-operation in infancy by :

1. Observing how mothers teach a co-operative game to their
    young infants;

2. Observing how the same infants play the same game with peers;

3. Exploring the similarities and/or differences in the infants'
    behaviour with these two different partners.

The following general hypotheses were discussed in the Introduction:

A. Age-related differences were anticipated in all behaviours;
    that is, differences which appear to relate to the physical
    or intellectual development of the children were expected.

B. More interaction was expected in the mother-infant dyad
    situation than in the peer dyad situation, since mothers are
    more skilful social partners.

Based on Savic's work with twins already discussed (Savic, 1980), and
a previous study by the author (Dickman, 1979), two further hypotheses
were formulated :

C (a) That twins do not find as much stimulation in each
       other's company as singletons do, and

  (b) that twins are more socially skilled than singletons are.

Furthermore,

D. Based on research results and on the above three sets of
    hypotheses, specific predictions for selected behaviours
    were formulated after the behaviour categories were decided
    on.   These specific outcomes are detailed in Table 5 (p. 52)

2.2 SUBJECTS

The singleton subjects were obtained by asking for volunteers from
mothers' groups and creches.   The only criteria were :

a)   The children had to have at least 3 months' experience of
     playing together as a dyad at least once a week.   Children
     who were at the same creche also had to meet this criterion.

b)   The ages of each member of the dyad had to be between 8 and
     32 months.

c)   The difference between the ages had to be within 20% of the
     younger child's age.

d)   The children and their mothers had to visit the University
     Developmental Laboratory four times for approximately half
     an hour each.   The visits were to be approximately a week
     apart.

A similar request for volunteers was made to the Twin Society.   As
mentioned before, it was hoped to compare the development of co-
operation in twins and singleton familiar peers over the full age
range.

All volunteers who met the criteria were accepted.   In the event,
very few singleton familiar peers in the younger age groups presented
themselves, and twins made up 50% of those groups, but there were only
one pair of twins each in Age Groups 3 and 4 (Table 2).

The subjects therefore formed groups of three or four.   The singleton
subject groups (SG) consisted of two children and two mothers, and the
twin subject groups (SG) consisted of two children and one mother.
For identification on the videotape recording, the older of similar-
looking twins wore a bow on each shoulder.

All but one pair of mothers made their own arrangements to get to the
laboratory, and 61% accepted a small reimbursement for their petrol
outlay.   Of the 41 mothers involved, 6 worked full-time and 2 part-time;

9 had not completed school, 17 had matriculated, and 15 had studied
further, obtaining diplomas or degrees. No-one dropped out.

The first two SGs were pilot groups, with whom we tested the procedure.
They do not appear in Table 2.

TABLE 2 : COMPOSITION OF AGE GROUPS			
AGE GROUP	SG	TWINS (T) SINGLETONS (S)	MEAN AGE AT FIRST VISIT
1	1	T	00:37:02
	2	S	00:42:00
00:37:00*	3	T	00:50:05
to	4	S	00:42:06
01:09:00	5	T	00:39:02
2	6	T	01:25:00
	7	T	01:25:00
01:10:00	8	S	01:20:05
to	9	S	01:11:02
01:34:06	10	S	01:34:06
3	11	S	01:51:03
	+12	S	02:07:01
01:35:00	+13	T	02:07:05
to	14	S	01:46:00
02:07:06	15	S	01:48:00
	16	S	01:51:05
4	17	S	02:10:02
	+18	S	02:16:00
02:08:00	19	S	02:14:00
to	+20	S	02:20:06
02:32:00	21	S	02:30:02
	22	S	02:27:00
	23	S	02:22:06
	+24	T	02:08:00

* Throughout the text, the notation used for the ages of subjects
 is years : weeks : days.

+ These SGs were excluded from the Discrete Analysis.
 (see pp. 69 and 73)

2.3 METHOD

2.3.1 Apparatus

The Toy :   The Toy was designed as a table-top 'see-saw' Game,
in such a way that when one side was pressed down, it locked in that
position, only unlocking when the other side was pressed down
(Plate 1).   Therefore, the game could only be played if each partner
pushed down his side in turn-taking fashion, and these would be
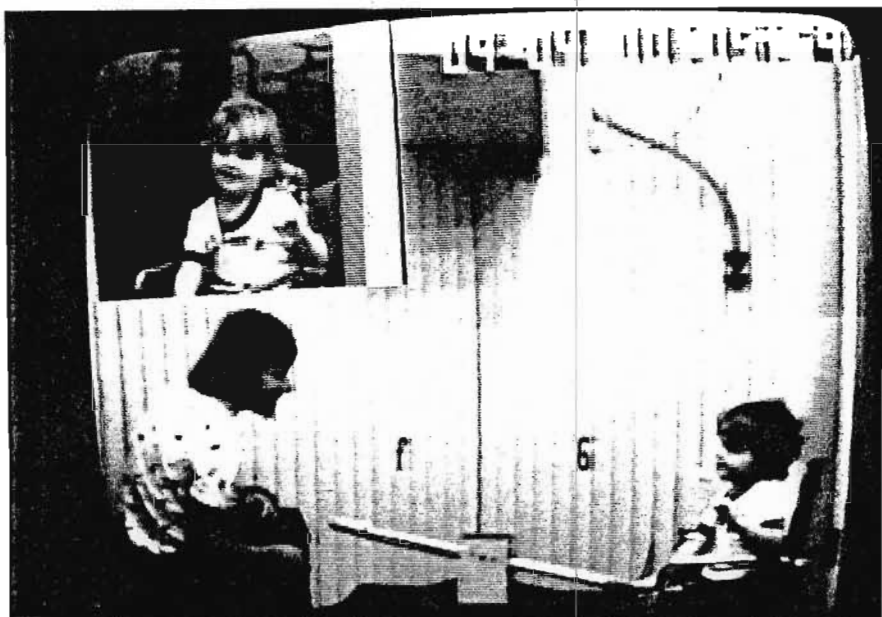discrete responses which could be readily measured.

Plate 1 : The Toy

The pushing down action was considered to be motivating tactile
sensation (Nuttin, 1973).   As the side went down, a noise was
produced which was clearly audible but not frighteningly loud. This
provided a contingent auditory stimulus.   A small red light situated
on the top surface of the Toy came on when one side of the Toy was
pressed down, and went off when the other side was pressed down.
This provided a contingent visual stimulus.   These stimuli were
produced as a direct result of the child's action on the Toy, and
were considered to be motivating (Howe, 1975).

Each arm of the Toy terminated in a handle.   Since chromatic colours appear to be more arousing to young children than non-chromatic ones, one handle was painted red and the other orange, while the bar connecting them was painted yellow.   The centre portion of the Toy containing the mechanism, and the table, were painted blue in an attempt to discourage interest in them (Rivoire & Ridd, 1966).

To 'find out whether the Toy was of interest to young infants, it was taken to a creche and placed on the floor.   Videotape recordings were made of the children as they investigated it.   It was found that the children's manipulations of the Toy were invariably cut short when infants sat down on one arm of the Toy, or lay down on top of it.   It was therefore decided that the participants in the study would be restrained in a chair and placed so that they could not reach more than the handle.

This Toy will be referred to throughout as the Toy or the Game, to distinguish it from any other toys or games discussed.   Pushing down the handle will be referred to as Play.

Recording Equipment: Recording was on videotape and was controlled by a technician from remote electronic controls in an observation room, separated from the laboratory by a one-way mirror.   Four cameras are positioned in the laboratory itself.

2.3.2 Setting

The Playroom of the Developmental Unit is 4 m x 4.4 m.   There are two doors. One leads to the observation room, which is separated from the Playroom by a one-way mirror, as already mentioned, and which contains the remote electronic controls for the cameras.   The other door leads to an adjoining waiting-room.   The Playroom is emptier than a normal home setting, but it is carpeted, and two armchairs placed along one wall remained in the room throughout.   Additional furniture was brought in as needed (See Procedure p. 46).

It was felt that ecological validity would be satisfied, since each
child would visit the laboratory with his mother, a familiar peer, and
the peer's mother who was also usually familiar.   The child would
furthermore be playing a game with his mother and with his friend,
both of which situations could be seen as being 'normal'.

2.3.3   Procedure

As mentioned previously, two subject groups (SGs) were seen first, and
constituted a pilot study. Different playroom lay-outs were tried,
as well as several time periods.   It was found that after 2.5 minutes
with the Toy, the children became very restless.

When the mothers arranged their first visit, they were told they would
be photographed with the children.   They were asked to choose a time
when their child was not expected to be hungry or sleepy.   In some
cases, appointments were changed because children's sleeping times
changed.

When the mothers came for the first time, the author endeavoured to
set them at ease by talking to them in the waiting-room about the long-
term aims of the study, and about the one-way mirror.   Steps were also
taken to minimize observation effects by asking the mothers to behave
as naturally as possible, by stressing the child as the focus of
attention, by explaining that there is no 'normal' time for co-operation
of this nature to occur, and that the child's behaviour could not be
'wrong' whatever he did.

The group then entered the playroom, where they were photographed for
5 minutes while the mothers sat on chairs reading magazines and the
children played with a selection of toys.   Thereafter the group returned
to the waiting-room and the toys were removed.   This portion of the
visit was not analysed in the current study and is not discussed
further.

In the waiting-room, the children were restrained with infant harnesses
in low infant chairs, one red and one blue.   The author attended all

sessions, explained the procedure to the mothers and demonstrated
the Game, which had four rules :

that both partners remain in their places, unless the
mother had to move for the child's safety;

that a pushing down turn-taking pattern be used;

at a moderate rate;

and that the hand be taken off the handle between turns.

Then the Toy was positioned in the playroom in such a way that the
cameras would photograph one partner in profile and the other partner
full-face in inset (Plate 1, p. 44).   This design remained constant
so that the same position was always associated with the full-face
picture.

For the mother-infant sessions, a stool was positioned at one end of
the Toy for the mother to sit on.   The child in his chair was
positioned at the other end, so that he could reach the handle
comfortably.   Since all other toys were removed, and the Toy was
placed in the same position each time, it was hoped to provide an
environmental stimulus, that is, an identifiable context in which co-
operative play is encouraged (Strain et al, 1976).   One mother then
taught the Game to her child for 2.5 minutes, while the second mother
sat in front of her harnessed child in the waiting-room, playing a
'posting' game.   This consisted of a jar, slotted like a money-box in
its metal lid, and a large number of flat round brightly coloured
counters which are commonly used in children's games.   The 'game'
consisted of the child 'posting' the counters into the jar.   When
twins were being photographed, the mother taught one child in the
playroom, while the other child was played with in the waiting-room,
either by the author or by a familiar adult brought by the mother.
The door of the waiting-room was left open.   Depending on what side
of the Toy the child was sitting, he could look into the waiting-room
either by looking straight ahead, or by looking over his shoulder.
This was done to allow the twin in the waiting-room to see his
mother, and generally to minimise the stress of an unfamiliar environ-
ment for all.   This period constitutes SITUATION 1 of the study.

When both children had completed a teaching session with their mothers, they both played with the posting game for a few minutes. The stool was removed from the laboratory, and the children were then positioned one at each end of the Toy. The mothers returned to the waiting-room, leaving the door open. They stood within view and chatted as normally as possible, while the children were photographed for 2.5 minutes. In an attempt to avoid having one child look over his shoulder to see his mother, for several peer sessions some of the mothers sat in the armchairs in the playroom. However, the children became restless and uneasy and called to their mothers constantly. The mothers concluded that the situation was very artificial, and that it was more normal for them to be chatting in an adjoining room. The mothers were instructed to sit next to the children if they felt this was wanted, and to comfort them if necessary, but not to refer to the Toy or to encourage the children to Play during this period, which constitutes SITUATION 2 of the study.

After each visit, the author discussed the sessions with the mothers and arranged the next visit, while the children were being readied for departure.

At each of the subsequent three visits, the same procedure was followed, and the same demonstration was given. The colours of the chairs and the children's positions at the Toy were rotated at each visit.

The study is therefore based on four Situation 1 recordings for each mother-infant dyad, and four Situation 2 recordings for each peer dyad, a total of 12 x 2.5 minute recordings for each subject group (Table 3).

TABLE 3 : ANALYSIS OF VIDEOTAPED RECORDINGS FOR EACH SUBJECT GROUP			
SUBJECTS	SITUATION	NUMBER OF VISITS	TOTAL TIME RECORDED
Mother-child dyad No. 1*	1	4	10 minutes
Mother-child dyad No. 2	1	4	10 minutes
Peer dyad	2	4	10 minutes

* The older child in each dyad is referred to as Child 1 (C1), and his mother is referred to as Mother 1 (M1). Similarly, the younger child is C2 and his mother is M2. In the case of twins, the same notation applies to distinguish when the mother plays with C1 or C2.

2.4 RESPONSE MEASURES

The terms 'quantitative data' and 'qualitative data' have been avoided, since it is believed that all behaviour categories in social behaviour research can be labelled equally well as quantitative and qualitative. For example, 'Looking at each other' is generally considered to be a quantitative behaviour category, yet it is qualitative when compared with a description of relevant head and eye movements. Similarly, long 'qualitative' sequences can be accurately specified and counted. In this study, therefore, 'discrete measures' will refer to discrete acts or interactions, and 'additional measures' will refer to patterns of behaviour requiring a more overall examination of the data.

2.4.1   Discrete measures

Behaviours to be coded were selected by inspecting the data rather than before embarking on the study, as suggested for interaction research by Cairns (1979).   After examination of the videotape recordings, therefore, three broad areas of behaviours were examined (Table 4).

All behaviours in a dyad are basically dyadic, since they are probably mediated by the presence of the partner.   However, for the purposes of this description, dyadic measures are those which cannot be performed by one partner, for example, looking at each other.   Since the mothers' attention was generally focussed on the children throughout, it was the children's action which made a behaviour dyadic.   For example, when a mother looked at her child all through a session, it became dyadic only when the child looked at her.   The dyadic behaviours are therefore listed under 'Children's behaviours'.

Descriptions of the behaviour categories are set out in Table 5 (p.52). Because of the nature of the behaviour examined, some of these categories overlap, but it seemed more meaningful to look at them side by side. For example, 'making requests' is a mothers' behaviour (see Table 4), whereas the coding of whether these requests were complied with is actually a behaviour performed by the children.   These are referred to as related categories.

TABLE 4 : THE THREE BROAD AREAS OF BEHAVIOURS EXAMINED.

	BEHAVIOURS*
1. Mothers' Behaviours	Attention-getting (AGB) Encouragement Evoking Co-operation Making requests Prohibitions Responses to Variations Speech

2. Children's
  Behaviours
  With Mothers
	Compliance
	Disengagement
	Engagement (dyadic)
	Looking at each other (dyadic)
	Manipulation
	Physical Activity
	Play and Turntaking (dyadic)
	Smiling at the Same Time (dyadic)
	Variations
	Vocalisation

3. Peer Behaviours	Attention-getting (AGB) Compliance Disengagement Engagement (dyadic) Evoking Co-operation Joint Negative Play (dyadic) Joint Positive Play (dyadic) Looking at each other (dyadic) Manipulation Physical Activity Play and Turntaking (dyadic) Preventing Play[+] Prohibitions Responses to Variations Smiling at the Same Time (dyadic) Variations Vocalising

* For description of Behaviours, see **Table 5.**

+ Dropped from analysis, since frequencies were too low.

In order not to simplify categories too much and therefore risk
losing detail (Bronson & Pankey, 1977), a more fine-grained
analysis of special areas of interest was made, for example of
'evoking co-operation'; and a more coarse-grained one in areas
of lesser importance for this study, for example speech content.
The separate behaviours looked at within the broad category of special
interest are referred to as subordinate categories (Lytton, 1980).

TABLE 5 : DESCRIPTION OF BEHAVIOUR CATEGORIES AND RELATED HYPOTHESES (In alphabetical order)		
CODE	BEHAVIOUR	DEFINITION
D	ATTENTION-GETTING (AGB)	Verbal or non-verbal behaviour designed to attract the attention of, or to distract the partner. The acting partner must look at the other, who must be looking away or fretting/crying.
	Related Category	Expressed as a proportion of AGB.
DB	Compliance	Attention is brought back to the partner or to the Toy. Play does not need to occur.
DU	Non-compliance	No change in partner's behaviour.

Attention is considered to be crucial to learning and to co-operative activity, when it is necessary to assess the feedback from partner. It is difficult to assess attention-paying behaviour, and one generally assumes that the child is attending if he continues to behave as requested (Newson, 1977). AGBs occur only when the child indicates by looking away that he is not paying attention. Mothers' AGBs are expected to decrease over the age groups, as attention span is expected to increase with age (Kagan & Lewis, 1965). The proportion of AGBs with successful outcomes is also expected to increase with age (Trevarthen, 1982; Lytton, 1980).

COMPLIANCE   See Related Categories of

    Attention-Getting
    Making Requests
    Prohibitions

This is seen as a co-operative activity, because in order to comply with another's wishes, it is necessary to understand the difference between self-produced and other-produced behaviour. This view is taken by Trevarthen (pers. comm.) and by Lytton (1980) who found it to be associated with other aspects of maturity. Frequencies for twins are expected to be higher than for singletons (Savic, 1980).

TABLE 5 (Continued): DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
L3	DISENGAGEMENT	The proportion of a session that a child is looking away from the Game and from the partner, and is also not Playing. Duration was measured by stopwatch.
		Disengagement is expected to be greater in the younger age groups. The Game is likely to be very different from what the younger infants are used to, and, as discussed, this is expected to lead to lack of interest. It is also expected to occur more with peers than with mothers who are more able to engage the children's attention. It is anticipated that disengagement will be higher for twins (Savic, 1980).
K	ENCOURAGEMENT	Mother's approving acknowledgment of child's Play, which must come immediately after the Play. The two behaviours must not be separated by either partner looking away or prohibiting.
	Subordinate Categories	Expressed as a proportion of Play.
K colour coded	Verbal ... ... Non-verbal ... Of incorrect Play ... ... Game-playing..	e.g. 'Good', 'clever', 'there'. Exclamation, handclap, a look or smile, or immediate Play response. Any positive response. Words or action of a game, or reference to the light on the Toy.
		As discussed, it is difficult to assess what is reinforcing behaviour without knowing a great deal about the previous interactions between dyad partners, and the previous experience of each partner. The proportion of encouragement given for 'incorrect' performance was expected to decrease over the age groups, since the mothers would probably use it more for 'shaping' in the younger age groups. Although the subordinate categories were expressed as a proportion of Play, the Encouragement total was not expressed as a proportion of Play because mothers encouraged Play which was interspersed with lifting the handle. When Play scores were calculated, frequencies of lifting the handle were subtracted because they were seen as non-cooperative, or solitary. The Play scores and the Encouragement scores could therefore not be compared.

CODE	BEHAVIOUR	DEFINITION

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES

CODE	BEHAVIOUR	DEFINITION
B	ENGAGEMENT (Dyadic)	Proportion of 5-second intervals[*] in which co-operative behaviours occur. Co-operative behaviours are seen as Compliance, Turntaking (see Play) and Joint Positive Play. Engagement was scored once for each 5-second interval in which any of these behaviours occurred.

The proportion of time spent in Engagement is seen as the extent to which co-operation occurred. It is expected to increase with age and to be higher in the mother-infant situation than in the peer situation, because mothers are more skilled than infants in gaining and holding attention. It is also expected to be higher for twins (Savic, 1980).

CODE	BEHAVIOUR	DEFINITION
V1	EVOKING CO-OPERATION	Prosocial behaviours, apparently designed to evoke or maintain co-operative behaviour. These behaviours are not contrary to Game rules.
	Subordinate Categories	
V1 Ringed or colour coded	Voice	Changes in pitch or pace of speech, or exclamations.
	Initiating game	Mother's game, or child's initiating of game originally initiated by mother.
	Playing game ..	Proportion of 5-second intervals in which game-playing occurred.
	Light	Verbal or non-verbal references to the light on the Toy.
	Action	Mother rattling or lifting her own side of the Toy.
	Help	Mother helping child physically, e.g. pushing down child's side, or removing child's hand from handle.

The prosocial nature of these behaviours appears likely to distinguish between mothers who are able to hold their children's attention and those who are not able to do so. For example, some mothers made use of high-pitched vocal sounds, which according to Berlyne (1960) seem to be more exciting to humans than low-pitched sounds. Playing games was expected to capture the children's attention, and the number of times mothers initiated games could be a measure of their sensitivity to their children's interest. Drawing attention to the light on the Toy could show a capacity to maximise environmental resources to produce interest. This category is expected to correlate positively with Engagement, and the child who has a high input of these behaviours is expected to use them more with his peers (Escalona, 1973; Lamb, 1981).

/Continued

* See 'Method of recording discrete measures', p.64.

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
J2	JOINT NEGATIVE PLAY (Dyadic)	Behaviours engaged in by both partners at the same time, with competitive or aversive affect, and apparently to prevent partner from Playing. There must be evidence that partners are aware of each other, for example by look or vocalisation. Both partners must be trying to gain control, unlike Preventing Play which is coded when one partner has control. This behaviour is coded once for each 5-second interval in which it occurs.
	This behaviour is expected to occur only in the peer dyad, and more with boy peers than with girl peers (Jacklin & Maccoby, 1978).	
J1	JOINT POSITIVE PLAY (Dyadic)	The same as Joint Negative Play, except that there must be clear evidence that both partners are enjoying the activity, for example, there must be smiling or pleasant vocalisations. This behaviour is coded once for each 5-second interval in which it occurs.
	This behaviour is expected to occur more frequently in the peer dyad, since mothers are not expected to take part in it. It is clearly a game. Whereas 'game-playing' is not considered to be co-operative because only one partner needs to be involved, in this category both partners are necessary, and if one stops playing, the game is over. It is therefore considered to be co-operative and is used as one of the measures to assess the proportion of time in which Engagement occurred. This behaviour is expected to occur more frequently with twins (Savic, 1980).	

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES

CODE	BEHAVIOUR	DEFINITION
L2	LOOKING AT EACH OTHER	This is recorded once in each 5-second interval, regardless of how long it endures. If, however, the behaviour stops and starts again, then it is coded again.
		This behaviour is expected to be higher in the mother-infant dyad than in the peer dyad, since mothers are expected to command attention more effectively. It is seen as one of the first signs of joint attention (Krige & Albino, 1977) and, as one of the tasks of co-operative play (Eckerman & Stein,1982), it is expected to correlate positively with Engagement. It is also expected to occur less frequently with twins (Savic, 1980).
SG	MAKING REQUESTS	A clear verbal or gestural request, for example 'Push down' or a clear downward-pointing gesture of the hand.
	Related Category	
SGB	Compliance	This is expressed as a proportion of Making Requests.
SGU	Non-compliance	Noted in the string of codes for use in the assessment of Turntaking (see Play).
		Since there is no way of knowing exactly how much of what is said is understandable to children, clear requests (as opposed to isolated phrases) are used to assess compliance. Compliance is seen as co-operative behaviour (Trevarthen, 1982; Lytton, 1980). Escalona (1973) found that it is associated with the number of requests made. It is therefore expressed as a proportion of Making Requests, and is used as one of the measures to assess the proportion of time in which co-operation occurred.

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
V2	MANIPULATION	Behaviours contrary to Game rules, which are interpreted as being experimental actions on the Toy. They do not appear to be intended to prevent partner from Playing, although they may actually do so.
	Subordinate Categories	
V2 Colour coded	Lifting	Lifting side.
	Hand on handle ..	Holding handle loosely between turns.
	Holding down ...	Holding handle down forcefully, but apparently while ignoring partner. Only coded if partner attempts to Play.
	See-saw	See-saw action by one, apparently ignoring partner.
	Other	All other forms of manipulation, e.g. shaking, pumping, pulling of handle or Toy.

The separate behaviours making up this category are all 'solitary activities' (Dickman, 1979) not requiring the participation or even the presence of the partner. As discussed earlier, manipulation of objects is an important part of the early learning process, and it is expected that these behaviours will decrease with age. It is also expected that there will be more of this behaviour with peers than with mothers, who are likely to discourage it.

G	PHYSICAL ACTIVITY	Gesture or action which does not appear to require a response, e.g. general arm movements while talking, wriggling in chair, pulling at harness.

The duration of this behaviour is not scored, only its incidence. Therefore, if the same 'run' extends over time, it is scored once for each 5-second interval. It is expected that older children will be more likely than younger children to display physical activity when confined to a chair; that the behaviour will be more frequent in boys than in girls (Goldberg & Lewis, 1974); and that it will be more frequent with peers than with mothers, who will be more able to engage the children's interest.

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES

CODE	BEHAVIOUR	DEFINITION
P	<u>PLAY</u>	'Correct' Play consisting of pushing the handle down, starting from any point but ending at the lowest point, with the hand taken off immediately.
	<u>Subordinate Categories</u>	
P1 colour coded	Body variation..	Playing with something other than the hand : 'correct' or 'incorrect'.
	'Incorrect' ...	Hand remains on handle after Play.
	Half Play ...	Play which stops before lowest point.
	Slapping	Slapping or forcing the handle down.
	Several Strokes.	Play using several little pushes.

The 'score' of this behaviour is the sum of the Plays of both partners, 'correct' and 'incorrect', minus Lifting (see Manipulation), and minus the number of times the mother pushes down the infant's side in the Help category (see Evoking Co-operation). This ensures that the Play acts are contributed to by both partners.

	<u>TURNTAKING</u>	Four consecutive Plays, two from each player. The Plays must not be separated by Manipulation acts, Disengagement, Non-compliance, Preventing Play, or by an 'empty' 5-second interval. This behaviour is not coded on its own, but as part of Engagement.

As suggested by Schaffer (1975), Turn-taking can be seen as a co-operative behaviour. It requires an understanding of the difference between self-produced and other-produced behaviour, the awareness of the contingencies of self-produced behaviour, the capacity to regulate responses in the light of such feedback, and the ability to predict the probable outcome of one's behaviour on the basis of previous experience. It is expected to occur more frequently with twins (Savic, 1980).

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
V4	PREVENTING PLAY	Similar to Holding Down (see Manipulation) except that there appears to be intention to prevent partner from Playing. There must be a look and/or smile and/or vocalisation before, during or immediately after the action. In order for V4 to be coded, one player must be holding on to, or manipulating the handle, and there must be an element of force involved. This code presupposes that partner has tried or is trying to Play, but is not fighting for control. Coded once for each 5-second interval in which the behaviour occurs.
	This behaviour requires the participation of the partner, but is competitive, not co-operative.	
O	PROHIBITIONS	A clear objection, in words or by gesture, to actions which have already occurred, or to those which can be rectified, or example, 'Take your hand off'.
	Related Categories	
OB	Compliance	When a response is possible, and is made.
OU	Non-compliance ...	When a response is possible and is not made.
		Compliance is expressed as a proportion of the sum of OB and OU, since O contains prohibitions which cannot be responded to.
	This form of control (Lytton, 1980) is expected to be associated with greater attention to the task, particularly in the mother-infant situation. It is therefore expected to be associated with co-operative behaviour in that situation, but not necessarily in the peer situation, since peers are not expected to give clear objections.	

/Continued

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
	RESPONSES TO VARIATIONS AND TO INVITATIONS	See Related Categories of Variations.
H2	SMILING/LAUGHING AT THE SAME TIME	This is recorded once in each 5-second interval, regardless of how long it endures. If, however, the behaviour stops and starts again, then it is coded again.
		This is seen as a measure of shared understanding, and was also found to be one of the tasks of co-operative play by Eckerman & Stein (1982). It is expected to correlate positively with Engagement, and to be more frequent in the mother-infant situation, since mothers are expected to arrange shared experiences more effectively than peers. It is also expected to occur more frequently with twins (Savic, 1980).
S	SPEECH and	All clearly heard words and all vocalisations that appear to be speech are
VOC	VOCALISING	recorded for each session. Words are summed. Each vocalisation, regardless of its duration, is treated as one word and summed accordingly.
	Subordinate Category	
N	Names	The number of times the mother uses a child's name or clearly recognised nickname.
		Vocalising is expected to increase with age. It is expected to occur less frequently with twins than with singletons (Savic, 1980). Lytton (1980) found that using names was a form of control, and it is anticipated that this behaviour will decrease with age since names are used mainly to attract attention which is expected to stray more in the younger age groups.

CODE	BEHAVIOUR	DEFINITION

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES

CODE	BEHAVIOUR	DEFINITION
	<u>TURNTAKING</u>	See Play.

VAR	<u>VARIATIONS</u>	A Play variation introduced by the child which may or may not be contrary to Game 'rules'. Behaviours coded as Variations were
		    Body Variations (see Play)
		    Slapping (see Play)
		    Several Stroked (see Play)
		    Initiating Game (see Evoking Co-operation)
		    Lifting (see Manipulation)
		    Preventing Play.
		
		When the side was banged down in an apparently involuntary fashion because the Toy was not working smoothly, it was not coded as a Variation.

	<u>*Related Categories</u>	
VAREN	Variation Accepted.	Acceptance or encouragement (with a smile or verbally) of Variation, expressed as a proportion of Variations.
VARON	Variation objected to	Clear objection, either verbal or gestural, expressed as a proportion of Variations.
J and V3B	Joining	The joining of a Variation or an Invitation (see below) by imitation, expressed as a proportion of Variations or Invitations.
	<u>Subordinate Category</u>	
V3	Invitations ...	Variations which appear to be invitations to join in a turntaking game of the child's choosing. There is always pro-social affect. To be coded as an Invitation rather than as a Variation, the behaviour must be preceeded, accompanied or immediately followed by a smile or vocalisation, and is always followed by an expectant pause.

As discussed, as soon as a behaviour is mastered, children introduce variations. This is therefore seen as a sign of maturity (Kagan & Lewis, 1965), and it is expected that Variations will increase over the age groups. It is also expected that mothers' encouragement or acceptance of Variations will decrease over the age groups, to allow for 'shaping' in the younger age groups; and that her

/Continued

* Variations which were ignored were not coded for response.

TABLE 5 (Continued) : DESCRIPTION OF BEHAVIOUR CATEGORIES		
CODE	BEHAVIOUR	DEFINITION
	objections to them will increase over the age groups for the same reason. Invitations and Joining in the peer situation are expected to increase over the age groups (Eckerman & Whatley, 1977; Mueller & Brenner, 1977), and more are expected to occur in the peer situation than in the mother-infant situation (Vlietstra, 1978). Joining is seen as a response which shows understanding of the partner's game initiation, and an ability to act to sustain an interaction. This appears to be a more advanced or mature behaviour than even complex initiations (Bronson, 1975). Imitation is seen as a simple form of Joining. If, however, a child starts a see-saw game by saying 'see' and his partner says 'saw', this would be a complex form of Joining. Variations and Invitations are expected to occur less frequently with twins, whereas Joining of Invitations are expected to occur more frequently with twins than with singletons (Savic,1980).	
	VOCALISING	See Speech.

As already mentioned, specific outcomes were expected for most, but not all of the behaviours selected for observation. These are set out in Table 6. Bases for these expectations are detailed with the description of behaviour categories in Table 5.

As already discussed, the twin hypotheses set out in Table 6 were based on the work of Savic (1980). She suggested (a) that twins do not find as much stimulation in each other's company as singleton peers do, and (b) that they are more socially skilled than singletons are. In terms of the behaviours looked at in this study, for hypothesis (a) to be confirmed, compared to singletons twins should show a pattern of more Disengagement, less Vocalising, fewer Variations and fewer Invitations. For hypothesis (b) to be confirmed, compared to singletons, twins should show more of the activities associated with social maturity. That is, they should show a pattern of more Compliance, more Engagement, and more Joining of partner's game Invitations. There should be more positive interactions, such as Smiling at the Same Time and Joint Positive Play. Since they are most familiar with each other's strategies, there should be less Looking at Each Other.

TABLE 6 : BEHAVIOURS FOR WHICH EXPECTED OUTCOMES WERE FORMULATED	
Behaviours	Expected Outcomes

MOTHER-INFANT SITUATION

AGBs	Decrease with age *
Compliance:Requests	Increase with age *
Prohibitions	Increase with age *
AGBs	Increase with age *
Disengagement	Decrease with age
Encouragement of 'incorrect' Play	Decrease with age
Engagement	Increase with age
Evoking Co-operation	Pos.Corr. with Engagement
Looking at Each Other	Pos.Corr. with Engagement *
Manipulation	Decrease with age
Physical Activity	Increase with age
Prohibitions	Pos.Corr. with Engagement *
Smiling at Same Time	Pos.Corr. with Engagement *
Speech: Vocalising	Increase with age
Names	Decrease with age
Variations	Increase with age *
Acceptance by mothers	Decrease with age
Objections by mothers	Increase with age
Invitations	Increase with age *

PEER SITUATION

Disengagement	More than with mothers
Engagement	Less than with mothers
Looking at each other	Less than with mothers
Manipulation	More than with mothers
Physical Activity	More than with mothers
Smiling at Same Time	Less than with mothers
Variations :	
Invitations	More than with mothers *
Joining	Increase with age *
	More than with mothers

CONTINUITIES BETWEEN SITUATIONS

Evoking Co-operation	Positive Correlation *

TWINS : Hypothesis (a) *

Disengagement	More than singletons
Smiling at Same Time	Less than singletons
Speech: Vocalising	Less than singletons
Invitations	Less than singletons

TWINS : Hypothesis (b) *

Compliance:Requests	More than singletons
Prohibitions	More than singletons
AGBs	More than singletons
Engagement	More than singletons
Joint Positive Play	More than singletons
Looking at each other	Less than singletons
Play	More than singletons
Smiling at Same Time	More than singletons
Invitations: Joining	More than singletons

SEX DIFFERENCES

Physical Activity	More in boys*

* Based on research findings : see Table 5 (p. 58)

2.4.2   Method of recording discrete measures

In order to obtain a sequential flow of events, narrative records of the videotape recordings were dictated onto tape in 'stream of behaviour' fashion (Yarrow & Waxler, 1979).   For this first record, the guidelines used were the turntaking behaviours on the Toy and the mothers' teaching behaviours.   Time units of 5 seconds were noted in the narrative.   This time unit was chosen since studies have suggested that infants would not perceive another person's behaviour as related to their own if time between events was greater than 5 to 7 seconds (Millar & Watson, 1979; Ramey & Ourth, 1971).   Vandell & Wilson (1982) found that responses to socially directed behaviours typically came in 1.8 seconds.   Although the ages of the children in these studies were not all the same as the ages in the present study, 5 seconds was chosen as a convenient time unit to assess contingent behaviours.

The dictated narratives were then typed, and photostat copies made onto wide sheets.   These became the working sheets, while the original protocols were stored for record purposes.

To put more detail into these initial impressions, the tapes were examined many more times to record dyadic acts such as Looking at Each Other;   to record the mothers' speech accurately;   to time the infants' disengaged periods with a stopwatch; and to check the narratives for accuracy.   Since the members of dyads did not sit close together, it was impossible to watch them both at the same time, and responses to behaviours of interest had to be checked separately.

Coding was done on the worksheet alongside the typed narrative.   This was decided on rather than direct coding from the tapes because it was important to keep the order of events to pick up responses and to assess the meaning of the actions.   The behaviour was therefore translated into a string of codes contained within the lines demarcating the 5-second time intervals.   In some cases, individual acts were recorded separately and then combined more meaningfully, as suggested by Cairns (1979).   For example, in assessing the amount of Turntaking that was occurring, it was found to be better to code each partner's

Play behaviour separately, and then to assess how much of it was
Turntaking.   In other cases, Shotter's hermeneutical approach seemed
to be more apt (p.29), for example when coding game-playing or AGBs
(Attention-getting behaviours).   In other words, some codes were
based directly on what was observed, whereas for other codes, it was
necessary to stand back, as it were, and assess the meaning of the
action after immediate coding was completed.   For example, Prohibitions
could be verbal (in which case it was coded as Speech in the first
instance), or gestural (in which case it could be coded as Help in the
first instance).   The overall intent of both behaviours, however, was
to prohibit a behaviour.

In most cases, a behaviour was coded each time it occurred.   With
some behaviours, however, this could not be done.   For example, when
a mother introduced a game in which she said 'down' every time either
handle was Played, it would be possible to count the number of times
she did this as a method of recording the game-playing for that
session.   Alternatively, it could be seen as one game played throughout
the session.   It became even more difficult when the game consisted of
a long verse such as 'see-saw, marjorie daw'.   Some mothers said the
words very quickly, and engaged the children for the same period of
time as the mothers who said the words slowly.   For the game-playing
category, therefore, the 5-second time units were used as a more
meaningful measure of the behaviour;   that is, game-playing was coded
once for each 5-second interval in which it occurred, regardless of
how many times it occurred in that interval.   As can be seen from
Table 5 (p.52), categories of behaviour coded in this way were game-
playing, Preventing Play, Joint Positive Play, Joint Negative Play
and Engagement.

Reliability.   For the category Disengagement, intra-reliability on
the stopwatch timing of six sessions chosen at random was computed at
.95.   The differences ranged from 2 to 7 seconds, with a mean of
3.33 seconds.

For the reliability computation of the codes, 4 randomly selected
videotapes were used for the intra-reliability computation and 8
randomly selected videotapes for the inter-reliability computation.

Lytton (1980) points out that when complex social interaction is coded, a lot of practice is needed, particularly when there are many complex codes. It is easy for one coder to overlook behaviours which another coder has noticed. He was arguing for direct coding from observation, but it is felt that the same argument applies for coding from a narrative using a complex coding system. According to Lytton, it has been shown that the inter-observer agreement decreases with an increase in the number of categories in the coding system. In this study, because of the complexity, a fair amount of behaviour was not recognised and the codes for them were therefore omitted. These are referred to as the 'extra' codes. It is argued that differences produced by these codes are not a reflection on the reliability of the coding system, but are a function of the experience or 'match' of the coders. The reliability of the coding system can best be assessed by looking at differences in the coding of the behaviours that both coders selected for coding.

Reliability is therefore computed in three ways (Table 7). The coding is compared for Agreements (A), Disagreements (D) and Extra Codes (X).

1. To check on the reliability of the codes, the formula $\dfrac{A}{A+D}$ is used.

2. To check on the 'match' of the coders, or one coder's performance on different occasions, the formula $\dfrac{A}{A+D+X}$ is used. This is the usual 'agreement/agreement plus disagreement' formula.

3. As an overall reliability computation, the formula $\dfrac{A}{A+D+1/2X}$ is used.

It will be noted from Table 7 that method 1 produced a high reliability, suggesting that agreement concerning a response is high once it is detected. This suggests that an individual coder would be more likely to underestimate rather than overestimate the behaviour seen.

TABLE 7 : OVERALL INTRA-OBSERVER AND INTER-OBSERVER AGREEMENT FOR BEHAVIOUR CODES			
Method ... ... :	$\frac{A^1}{A+D}$	$\frac{A^2}{A+D+X}$	$\frac{A^3}{A+D+1/2X}$
Intra-reliability : 4 Tapes :	.94	.86	.90
Inter-reliability : 8 Tapes :	.90	.78	.84
Mean ... ... :	.92	.82	.87

1. Without 'extra' codes - a check on reliability of codes.
2. The usual 'agreement/agreement plus disagreement' formula - check on 'match' of coders.
3. Overall check, allowing for 'extra' behaviours being seen by both coders.

2.4.3   Additional Measures

As already discussed, the discrete measures were selected so as to hold isolated 'bits' of behaviour to a minimum, and to concentrate as far as possible on the sequential flow of events.

However, while categories may include broadly similar events, they are still likely to be experienced very differently, and may not have the same meaning in the different situations.   For example, compliance with mothers' wishes is seen as a measure of maturity (Trevarthen, 1982; Lytton, 1980).   Prohibitions were directed at children by mothers and by peers, and it is not clear whether compliance with peers' prohibitions is equivalent to compliance with similar behaviours by mothers.   It is not clear whether they are even likely to be experienced by the recipient as the same category of behaviour.

Similar behaviours directed to children by mothers and peers, and those directed by children to mothers and to peers were therefore looked at to see how they appear to be experienced by the different

recipients.   This may throw further light on the responses made in the two situations.

Each session was described in detail in an effort to tease out larger patterns of behaviour than those which could be detected by the categorising analysis.   For example, an attempt was made to assess whether mothers' behaviours appeared to be related to subsequent behaviour of the children in the peer situation.

2.4.4   Method of recording additional measures

The narrative recordings and videotape recordings of the subject groups were reviewed several times and compared with each other to discover similarities and differences in behaviours.

The behaviour typical of each subject group was then described overall, and selected examples of behaviours were described and photographed.

2.5   PROBLEMS OF THIS STUDY

The sample

The scarcity of suitable subjects, particularly in the younger age
groups, made it impossible to select on the basis of parents'
education, birth order, or sex of peer partner.

There were not enough twin pairs for them to be treated as a separate
group over all the age groups.   Also, some of the twins were of
mixed sexes, so it was not possible to combine their scores for
use when comparing sexes.   Comparisons between twins and singletons
were therefore made in the first two age groups, where their numbers
were equal overall.   Sex comparisons were made for the singletons
in the third and fourth age groups only.   Comparisons over all the
age groups used singleton data only.

SG20 in AG4 was omitted from the statistical analysis because the
mother also formed part of SG4 in AG1, and inclusion of both groups
would have violated assumptions of independence.   The choice
between them was dictated by the small number of SGs in AG1.

Two children watched their mother teach the game to a sibling.
They therefore were exposed to more teaching than the other children.
This was not considered to be a confounding factor because the same
teaching style was involved.

Some children became ill during the course of the sessions.   Visits
were postponed until the mother felt they were quite well, but they
still appeared to get tired very quickly.   At least two children
were also having painful teething episodes.   It was felt that both
these circumstances would underestimate the amount of social inter-
action possible.

Procedure

Some of the youngest children did not look comfortable, and this
may have resulted in less social interaction than was possible.

The wearing of a harness was problematic in all but the earliest
age groups. It appeared to be associated with 'being a baby',
and they also objected to being confined.

Some of the children used pacifiers, and this made it difficult to
read their expressions. In AG1, one child was observed removing
her pacifier or dummy to smile. In other cases, when the child
smiled, the dummy fell out, causing distress.

The 'posting game' in the waitingroom proved to be too noisy and
too popular. The children objected to leaving it and, since they
could hear their peers playing with it, it was a definite distraction
in the mother-infant sessions.

The fixed time of two and a half minutes filming had disadvantages.
If a child was in pain or crying for other reasons, it could take
that time before he got over it.

Some mothers went to their children immediately they cried. Others
preferred to let them get over it by themselves. Some peer sessions
therefore had mothers sitting alongside the Toy, other sessions did
not. This may have affected the level of interaction between the
peers.

Some children refused to participate, or cried throughout a session.
In each case, only one visit was involved, and results were not pro-
rated since this was considered to be age-related behaviour (Table 8).

Age Group	Situation 1 (Boys with Mother)	Situation 1 (Girls with Mother)	Situation 2 (Peer boys)	Situation 2 (Peer girls)
1	SG2 C1 V3	-	-	-
2	-	SG7 C2 V3 (T) SG8 C1 V4	-	SG7 V3
3	SG16 C1 V4	-	-	-
4	SG17 C1 V3 SG24 C2 V1 (T)	-	-	SG19 V3

TABLE 8 : CHILDREN WHO REFUSED TO PARTICIPATE IN A SESSION.

SG = Subject Group
C1 = Older child of the peer dyad
C2 = Younger child of the peer dyad
V = Visit
T = Twin

The Apparatus

The arm of the Toy did not always play down easily. There were different reactions to this. In AG1 and AG2 it sometimes led to a complete cessation of effort. Sometimes, the mother helped the child by pushing down for him, and on occasion the child then appeared to assume that that was the game, that is that the mother should do it for him. Sometimes, when the side stuck and then came down with a bang, the child fretted or cried. By AG3, some children got used to the sticking handle, after finding it frightening at first. In other cases, it stopped Play entirely. Some mothers turned it into a game. However, the problem did not pass unnoticed, and may have resulted in an underestimation of the amount of Play possible.

Instead of the arm of the Toy locking in the 'down' position, it was possible to lift it, sometimes with a good deal of effort, and at other times so easily that even the younger infants were able to do it. This, of course, interfered with Turntaking, and therefore may have resulted in an underestimation of the proportion of time spent in Engagement. It is also likely to have inflated the frequency of mothers' prohibitions.

The light on the Toy did not consistently come on at the first Play and go off at the second Play, as originally intended. Sometimes it flickered on and off each time the arm was Played down, and at other

times it did not come on at all. This disconcerted those mothers who had highlighted the light as a contingency reinforcement, and may have contributed to the children becoming bored with the Game. It also necessitated the abandoning of two Subordinate Categories (see Adjustments p. 73).

The handle of the Toy came off over several sessions. This intrigued some of the children who made a game of it. Others cried or became tense. Cautions by mothers, such as 'You'll break it' may have affected some of the infants. In some cases, the handle was replaced and Play continued. At other times, it became the focus of attention, and in one peer session in AG3, it became a co-operative activity on its own, and no other Play occurred. In any event, when the handle came off, attention was diverted from the co-operation activity being observed, and therefore may have resulted in an underestimation of co-operative behaviour.

A certain amount of missing information was inevitable because of camera placement. It was not possible to show both faces of an interacting pair fully, and the categories Looking at Each Other and Smiling at the Same Time may be underestimated.

The sound recording was unclear, and often appeared to be more sensitive to the noises and conversation from the adjoining waitingroom than to the sounds and speech in the playroom. Most of the mothers' speech was identified, sometimes after running the tapes with the picture blotted out, but the children's speech was generally only heard as vocalisations. It is felt that this may have underestimated the game initiation and game-playing categories.

On the whole, these problems are likely to have underestimated the frequency of Game-playing co-operative behaviour possible between the dyads, and to have overestimated the frequency of mothers' prohibitions. However, since the problems were spread randomly over the entire sample, they are not considered to have invalidated the results.

CHAPTER 3

3.1 RESULTS

3.1.1 Adjustments

a) Recordings of two visits were destroyed in error, and therefore complete sets of recordings were not available for SG12 in AG3 and SG18 in AG4. These subject groups were therefore omitted from the analysis of discrete measures, but were included in the analysis of additional measures.

b) As discussed in Table 5 (p. 52), it was more meaningful to examine the proportions rather than the rates of some behaviours. Behaviours expressed in this way were

> Responses to variations
> Compliance
> Engagement
> Disengagement
> Subordinate Categories of Encouragement
> Game-playing in the category Evoking Co-operation

c) Certain categories were not analysed separately because :

  i) frequencies were too low :

> Joint Negative and Joint Positive Play in the analysis
>   of sex differences
> Preventing Play
> Action in the category Evoking Co-operation
> All the Subordinate Categories of Evoking Co-operation
>   in the analysis of peer sessions

  ii) category was too general :

> Non-verbal Encouragement

  iii) the inconsistent operation of the light made the category meaningless :

> Game-playing in the category Encouragement
> Light in the category Evoking Co-operation

  iv) they were coded for the scoring of other behaviours :

> Subordinate categories of Manipulation
> Subordinate categories of Play

d) The total recordings of four dyads were undertimed, and the
    total recordings of one dyad was overtimed (Table 9).   All
    the frequencies for these sessions were adjusted to show them
    as proportions of 600 seconds.

TABLE 9 : UNDER- OR OVER-TIMED SESSIONS WHICH WERE PRO-RATED				
Age Group	Situation 1	Time in Seconds	Situation 2	Time in Seconds
1	SG4 C1	585	SG1	585
2	SG6 C1	615	-	-
3	SG15 C1	575	SG15	555

e) As already mentioned, when children refused to participate, their
    'scores' were not adjusted, but were treated as nil 'scores'
    (see Table 8, p. 71).

f) As discussed in Table 5 (p. 53), the Encouragement total was not
    expressed as a proportion of Play because mothers encouraged
    Play which was interspersed with Lifting (see Manipulation,
    p. 57).   When Play scores were calculated, Lifting scores were
    subtracted because they were seen as non-cooperative or solitary.
    The Subordinate Categories, however, were expressed as a
    proportion of Play.

3.1.2 Method of analysis

Behaviours were grouped into three broad areas : singletons over
all age groups, singletons and twins over age groups 1 and 2; and
sex comparisons over age groups 3 and 4.   As can be seen from Table 10,
each of the three groups consists of five subgroups of behaviours.

All the behaviours observed occurred in dyadic situations, and were
therefore likely to have been influenced by the partner to some extent,
even when the behaviours appeared to be solitary ones (Kraemer & Jacklin,
1979).   To take care of possible correlations, Manovas of each of the
subgroups would have been the preferred method of analysis, since it
provides a simultaneous test for the effect of all variables, and
considers the various interrelationships among them (Hair et al, 1979).
This was not possible, however, for the behaviours in Group 1, since
only one dependent variable (age) was involved.   Univariate analysis
using multiple independent variables was therefore used for the five
subgroups of Group 1.   In order to minimise the possibility of Type I
error, only those behaviours showing significant differences over the
age groups were subjected to tests for trend, using orthogonal
polynomials, and to t-tests for differences between the age groups.
Manovas were used to analyse the remaining subgroups in Table 10.
Since only two age groups were involved in these subgroups, tests for
trend and t-tests were not relevant.

Pearson correlations were computed for the category Engagement with all
the mothers' behaviours.   Continuities between mothers' behaviours
(Situation 1) and infants' behaviours with peers (Situation 2) were
sought by computing correlations for the categories Evoking Co-operation,
Initiating game, Playing game and Speech/Vocalising in Situations 1 and 2.

As mentioned, the number of comparisons were kept to a minimum so as
to minimise the possibility of Type I error.   A further approach could
have been to lower the significance level.   However, this would have
increased the possibility of Type II error, which was considered to be

TABLE 10 : GROUPS OF BEHAVIOURS USED FOR INITIAL ANALYSIS

GROUP 1 : Singletons over all age groups

1. Mothers' behaviours with singletons over all age groups
2. Singletons' behaviours with mothers over all age groups
3. Singleton peers' behaviours over all age groups
4. A comparison of similar behaviours directed to singletons by mothers and by peers over all age groups
5. A comparison of similar behaviours directed by singletons to mothers and to peers over all age groups

GROUP 2 : Singletons and twins over age groups 1 and 2

1. A comparison of mothers' behaviours with singletons and twins over age groups 1 and 2
2. A comparison of the behaviours of singletons and twins with mothers over age groups 1 and 2
3. A comparison of singleton and twin peer behaviours over age groups 1 and 2
4. A comparison of similar behaviours directed to singletons and to twins by mothers and by peers over age groups 1 and 2
5. A comparison of similar behaviours directed to mothers and to peers by singletons and by twins over age groups 1 and 2

GROUP 3 : Sex comparisons over age groups 3 and 4

1. A comparison of mothers' behaviours with singleton boys and girls over age groups 3 and 4
2. A comparison of the behaviours of singleton boys and girls with mothers over age groups 3 and 4
3. A comparison of the behaviours of singleton boys and girls with peers over age groups 3 and 4
4. A comparison of similar behaviours directed by mothers and by peers to singleton boys and girls over age groups 3 and 4
5. A comparison of similar behaviours directed to mothers and to peers by singleton boys and girls over age groups 3 and 4

undesirable for this research study because of its essentially
exploratory nature (Keppel, 1982). A significance level of .05 was
therefore decided on. All results at this level or lower will be
discussed. Other results will be commented on only if they appear to
be of interest.

Although hypotheses based on previous research findings were formulated
for some of the behaviours examined, the design for this research was
different from previous studies. In the interests of caution,
therefore, two-tailed tests of significance were used throughout.

TABLE 11: MEANS OF MOTHERS' BEHAVIOURS WITH SINGLETONS OVER ALL AGE GROUPS

BEHAVIOURS	AG 1 (N=4)	AG 2 (N=6)	AG 3 (N=8)	AG 4 (N=10)
Attention-getting .... :	11.00	18.33	7.88	5.20
Encouragement :				
Verbal[a] .... :	.11	.12	.16	.10
Of incorrect Play[a] .... :	.26	.22	.18	.19
Evoking Co-operation – Total :	59.00	^^ 91.83	65.38	45.10
Voice .... :	6.00	^ 23.83	10.25	5.30**$_{xx}$
Initiating game .... :	3.00	4.33	6.25	4.30
Playing game[b] .... :	.19	^ .40	.31	.16
Help .... :	25.25	8.33	1.75	3.30***$_{xx}$$_{+++}$
Making Requests .... :	54.25	76.83	88.25	71.80
Prohibitions .... :	28.75	37.33	36.38	29.20
Responses to Variations :				
Variation Accepted[c] .... :	^ .26	.35	.10	.26
Variations Objected to[c] .... :	.35	.46	.61	.39
Joining Invitations[d] ...... :	0	0	0	.05
Speech .... :	335.75	715.83	843.38	693.40**$_{xx}$$_{++}$
Names .... :	26.25	55.67	33.13	11.40*$_{x}$

Diff. between groups: $p < .01$
Effect Age : * $p < .05$ Linear Trend : ++ $p < .01$
         ** $p < .01$ +++ $p < .001$
         *** $p < .001$ Quadratic Trend : x $p < .05$
                                         xx $p < .01$

a= Expressed as a proportion of Play (Table 12)
b= Expressed as a proportion of total time.
c= Expressed as a proportion of Variations (Table 12)
d= Expressed as a proportion of Invitations (Table 12)

Positive Correlations with Engagement : ^ $p < .05$
                                        ^^ $p < .01$

3.2   RESULTS OF ANALYSIS OF DISCRETE MEASURES

3.2.1 Mothers' behaviours with singletons over all age groups (Table 11)

It will be noted from Table 11 that there was a significant overall difference between the age groups ($p < .01$).

The total strategies by mothers to gain attention and to evoke co-operation peaked in AG2 and were used least in AG4, but these did not reach significance.   There was a positive correlation between the total of these strategies and Engagement in AG2 ($p < .01$).   The use of changes in voice pitch or in pace of speech differed significantly over the age groups ($p < .01$), peaking in AG2, with a quadratic function ($p < .01$) over AG1 to AG3.   There are also significant differences between AG1 and AG2 ($p < .01$), and between AG2 and AG3 ($p < .02$) (Fig.1a). Mothers' use of physical help decreased significantly over the age groups ($p < .001$), with a significant difference between AG1 and AG2 ($p < .003$) (Fig. 1b).   There is an overall significant linear trend ($p < .001$), with a significant quadratic function over AG3 and AG4 ($p < .01$).
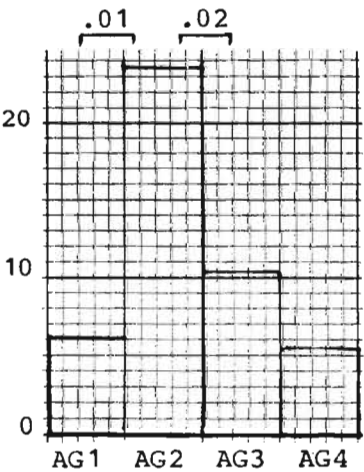
FIG.1a : VOICE
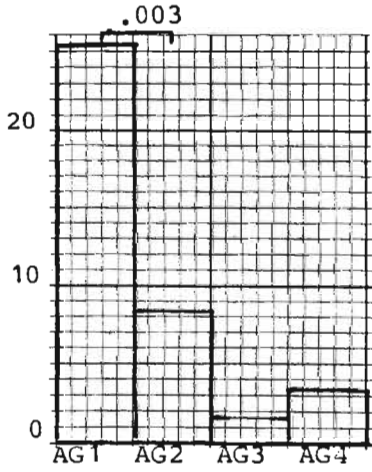
FIG.1b : HELP

Mothers' speech showed a significant age effect $(p < .01)$, the increase from AG1 to AG2 reaching significance $(p < .007)$ (Fig.1c). There was an overall linear trend reaching significance at $p < .01$, and a significant quadratic function over AG3 and AG4 $(p < .01)$.
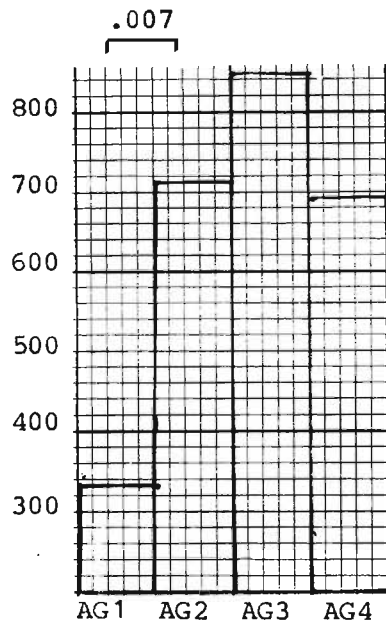
FIG. 1c : SPEECH

There was a significant difference in the use of names by mothers over the age groups $(p < .05)$, and a significant quadratic function over the first two age groups $(p < .02)$.

As expected, Encouragement for Incorrect Play was highest in AG1 and tended to decrease over the age groups. This did not reach significance, however.

A positive correlation was found between Engagement and Variations Accepted $(p < .05)$, but only for AG1.

TABLE 12 : MEANS OF SINGLETONS' BEHAVIOURS WITH MOTHERS OVER ALL
AGE GROUPS

BEHAVIOURS	AG1 (N=4)	AG2 (N=6)	AG3 (N=8)	AG4 (N=10)
Compliance :				
With mothers' requests[a] ..... :	.38	.34	.50	.64x ***+++
With mothers' prohibitions[b].. :	.34	.36	.53	.70** +++
With mothers' AGBs [c] .... :	.43	.49	.67	.58 +++
Disengagement[d] .... :	.17	.19	.18	.11
Engagement[d] .... :	.70	.58	.63	.72
Looking at Each Other .... :	46.25	62.00	^50.00	49.00
Manipulation .... :	32.25	22.67	22.00	18.00
Physical Activity .... :	6.50	33.50	35.75	27.90** ++ xx
Play[e] .... :	140.75	143.67	122.38	159.90
Smiling at the Same Time ...... :	22.75	17.67	12.25	16.80
Variations .... :	13.50	14.17	19.50	17.90
Invitations .... :	0	.67	3.63	2.20
Vocalisation .... :	22.75	47.67	68.38	94.00* ++

Diff. between groups: $p < .01$
Effect Age :   * $p < .05$ Linear Trend   : ++ $p < .01$
             ** $p < .01$ +++ $p < .001$
            *** $p < .001$ Quadratic Trend : x $p < .05$
                                                       xx $p < .01$

a= Proportion of Making Requests (Table 11)
b= Proportion of Prohibitions (Table 11)
c= Proportion of Attention-getting (Table 11)
d= Proportion of total time.
e= Scores of both partners combined.

Positive Correlation with Engagement : ^ $p < .05$

3.2.2 Singletons' behaviours with mothers over all age groups (Table 12)

There was an overall significant difference between the singletons' behaviours in the different age groups (p < .05).

Compliance with Requests increased significantly over the age groups · (p < .001), showing an overall significant linear trend (p < .001) with a quadratic component over the first age groups (p < .04).   As can be seen from Fig. 2a, there were significant differences between AG2 and AG3, and between AG3 and AG4.

Mothers' prohibitions were complied with significantly more frequently with age (p < .001), with a significant linear trend (p < .001) (Fig. 2b).
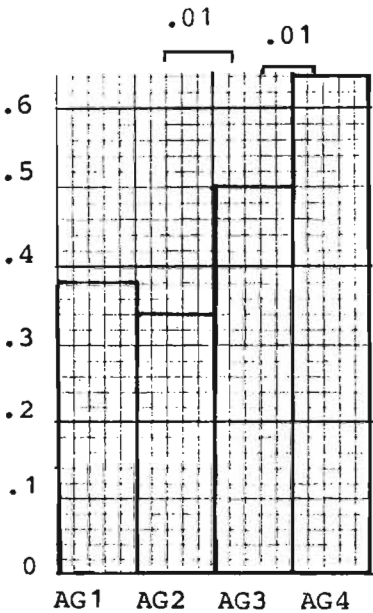
FIG.2a : COMPLIANCE WITH REQUESTS
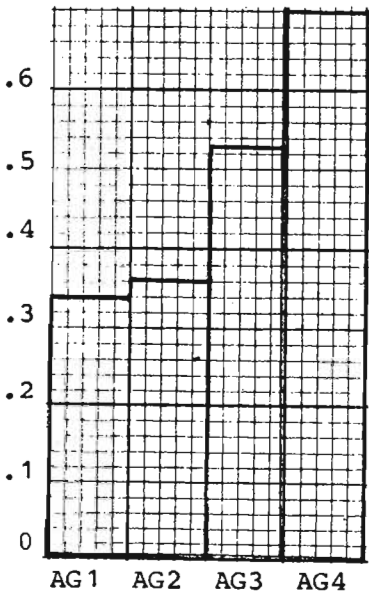
FIG. 2b : COMPLIANCE WITH PROHIBITIONS

Children were least physically active in the youngest age group
(Fig. 2c), and over all age groups the effect of age was significant
at $p < .01$. There was a significant linear trend ($p < .01$) with a
quadratic function over AG3 and AG4 ($p < .01$).
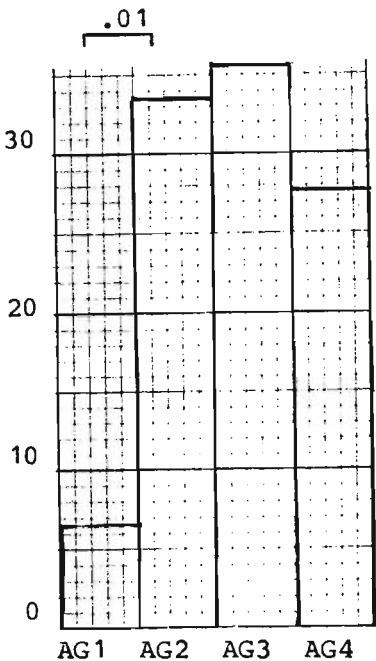
FIG.2c : PHYSICAL
ACTIVITY

Vocalising to mothers increased significantly over the age groups
($p < .05$), showing a significant linear trend ($p < .01$).

Disengagement and Manipulating decreased over the age groups, although
these did not reach significance.

It will be noted that the lower Engagement in AG2 corresponds to the
significant increase in Physical Activity at that age.

A positive correlation (p .05) was found between Engagement and Looking
at each other, but only for AG3.

TABLE 13 : MEANS OF SINGLETON PEERS' BEHAVIOURS OVER ALL AGE GROUPS

BEHAVIOURS	AG1 (N=4)	AG2 (N=6)	AG3 (N=8)	AG4 (N=10)
Attention-getting .... :	2.75	.17	1.50	.70
Compliance[a] .... :	.30	.17	.25	.20
Disengagement[b] .... :	.21	.27	.27	.22
Engagement[bc] .... :	.46	.29	.24	.44 xx *
Evoking Co-operation : Total ... :	.25	5.50	1.50	2.40
Joint Negative Play[c] .... :	2.00	0	.38	3.10
Joint Positive Play[c] .... :	.75	.67	.38	2.20
Looking at Each Other[c] .... :	24.00	21.67	27.75	35.40
Manipulating .... :	43.75	40.17	29.63	22.40
Physical Activity .... :	16.50	31.67	37.25	27.70
Play[c] .... :	59.50	33.33	42.50	68.80
Prohibitions .... :	1.50	2.00	.13	3.20
Smiling at the Same Time[c] ...... :	0	4.00	3.00	5.60 * +
Variations .... :	9.75	18.00	12.13	17.20
VariationsAccepted [d] .... :	0	.10	.04	.23
Variations Objected to [d] ...... :	.18	.03	0	.12*
Joining [d] .... :	0	.12	.02	.09
Invitations .... :	1.00	3.33	1.38	1.50
Invitations Joined[e] .... :	.06	.03	.13	.37
Vocalising .... :	16.50	29.17	32.50	43.10

Effect Age :   * p < .05
Linear Trend   : + p < .05
Quadratic Trend : xx p < .01

a= Proportion of AGB
b= Proportion of total time
c= Total apportioned to each member of the dyad
d= Proportion of Variations
e= Proportion of Invitations

3.2.3 Singleton Peers' behaviours over all age groups (Table 13)

A significant age effect was shown for the proportion of time the peers were engaged (p $<$.05), with the lowest engagement occurring at AG3. There was a significant quadratic component over the last two age groups (p $<$.005), with the difference between AG3 and AG4 significant at p $<$.01 (Fig. 3a).

The amount of time the children smiled at the same time showed a significant increase over the age groups (p $<$.05), with a significant linear trend (p $<$.05) (Fig. 3b)

FIG. 3a: ENGAGEMENT

FIG. 3b: SMILING AT THE SAME TIME
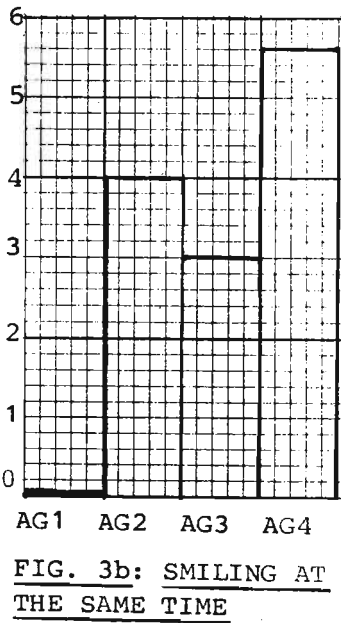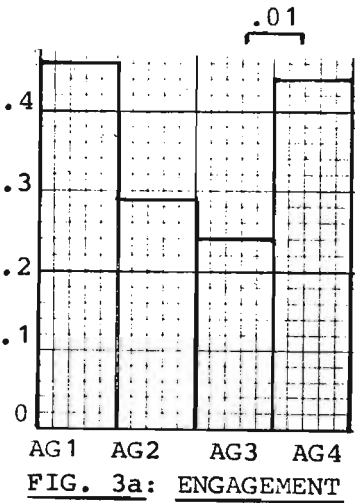
Objections to Variations showed a significant age effect (p $<$ .05) with the lowest level occurring at AG3 (Fig. 3c).
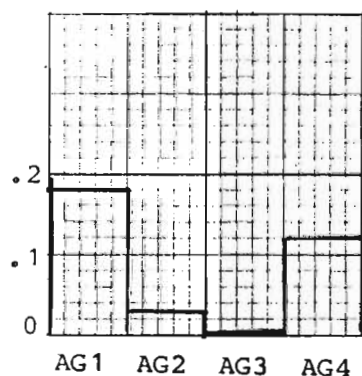
FIG. 3c: OBJECTIONS TO VARIATIONS

Overall, there was no significant difference between the age groups. Vocalising increased over the age groups and Manipulating decreased, but these did not reach significance.

3.2.4 **A comparison of similar behaviours directed to singletons**
       by mothers and by peers (Table 14)

There was an overall significant difference between the behaviours of
mothers and the behaviours of peers (p < .001).

Peers' acceptance of Variations increased over the age groups so that
in AG4, the proportion of Variations accepted is very similar in the two
Situations (Fig. 4a).

Objections to Variations showed a significant interaction between age
and situation (p < .05). However, as can be seen from Fig. 4b, the
Situation effect is still a real one.

All other behaviours showed significant differences between the two
situations. It will, however, be noted that mothers' behaviours were
more frequent in all cases except for Invitations Joined, which occurred
more frequently with peers (Fig. 4c).

Mothers : ——————
Peers   : - - - - -

FIG. 4a :   FIG. 4b :   FIG. 4c :
Variations   Variations   Invitations
Accepted   Objected to   Joined

TABLE 14 : MEANS OF SIMILAR BEHAVIOURS DIRECTED TO SINGLETONS BY
            MOTHERS AND BY PEERS OVER ALL AGE GROUPS

BEHAVIOURS TO SINGLETONS	BY	AG1 (N=4)	AG2 (N=6)	AG3 (N=8)	AG4 (N=10)
Attention-getting ..... :	Mothers	11.00	18.33	7.88	5.20
	Peers	2.75	.17	1.50	.70^^^
Evoking Co-operation .. :	Mothers	59.00	91.83	65.38	45.10
	Peers	.25	5.50	1.50	2.40^^^
Prohibitions .... :	Mothers	28.75	37.33	36.38	29.20
	Peers	1.50	2.00	.13	3.20^^^
Responses to Variations:					
Variations Accepted[a]. :	Mothers	.26	.35	.10	.26
	Peers	0	.10	.04	.23^
Variations Objected to[a]:	Mothers	.35	.46	.61	.39
	Peers	.18	.03	0	.12i^^
Invitations Joined[b] . :	Mothers	0	0	0	.05
	Peers	.06	.03	.13	.37^

Age x Situation : i   p < .05
Effect Situation: ^   p < .05
               ^^^ p < .001

Effect Situation - Difference between groups : p .001

a= Proportion of Variations (Tables 12 and 13)
b= Proportion of Invitations (Tables 12 and 13)

TABLE 15 : MEANS OF SIMILAR BEHAVIOURS DIRECTED BY SINGLETONS TO MOTHERS AND TO PEERS OVER AGE GROUPS

BEHAVIOURS BY SINGLETONS	TO	AG1 (N=4)	AG2 (N=6)	AG3 (N=8)	AG4 (N=10)
Compliance : With AGBs a...........	: Mothers	.43	.49	.67	.58
	Peers	.30	.17	.25	.20^^^
Disengagement b..........	: Mothers	.17	.19	.18	.11
	Peers	.21	.27	.27	.22*
Engagement b	: Mothers	.70	.58	.63	.72^^^
	Peers	.46	.29	.24	.44**
Looking at Each Other ..	: Mothers	46.25	62.00	50.00	49.00
	Peers	24.00	21.67	27.75	35.40^^^
Manipulating	: Mothers	32.25	22.67	22.00	18.00^
	Peers	43.75	40.17	29.63	22.40*
Physical Activity	: Mothers	6.50	33.50	35.75	27.90
	Peers	16.50	31.67	37.25	27.70***
Play	: Mothers	140.75	143.67	122.38	159.90
	Peers	59.50	33.33	42.50	68.80^^^
Smiling at the Same Time	: Mothers	22.75	17.67	12.25	16.80
	Peers	0	4.00	3.00	5.60^^^
Variations	: Mothers	13.50	14.17	19.50	17.90
	Peers	9.75	18.00	12.13	17.20
Invitations	: Mothers	0	.67	3.63	2.20
	Peers	1.00	3.33	1.38	1.50
Vocalisation	: Mothers	22.75	47.67	68.38	94.00^^
	Peers	16.50	29.17	32.50	43.10**

Overall Situational differences between groups : $p < .001$
Overall Age differences between groups : $p < .01$ Effect Situation :   ^ $p < .05$
Effect Age :   * $p < .05$ ^^ $p < .01$
           ** $p < .01$ ^^^ $p < .001$
           *** $p < .001$

a= Proportion of partner's AGBs (Tables 12 and 13)
b= Proportion of total time.

3.2.5   A comparison of similar behaviours directed by singletons to mothers and to peers over all age groups (Table 15)

There was an overall significant difference between the children's behaviour with their mothers and with their peers ($p < .001$).

There was also an overall significant difference over the age groups ($p < .01$).

More specifically, the children complied with their mothers' AGBs significantly more often ($p < .001$), and they and their mothers looked at each other significantly more often than the peers did ($p < .001$).

There was significantly more solitary behaviour (Manipulating) with peers than with mothers ($p < .05$). In both situations, this behaviour decreased significantly with age ($p < .05$) (Fig. 5a).

Children vocalised significantly more with their mothers than with their peers ($p < .01$), but in both situations they vocalised significantly more with age ($p < .01$) (Fig. 5b). They Played significantly more with mothers ($p < .001$) and smiled together with their mothers significantly more often than with their peers ($p < .001$).

FIG.5a : MANIPULATING

FIG. 5b : VOCALISATION
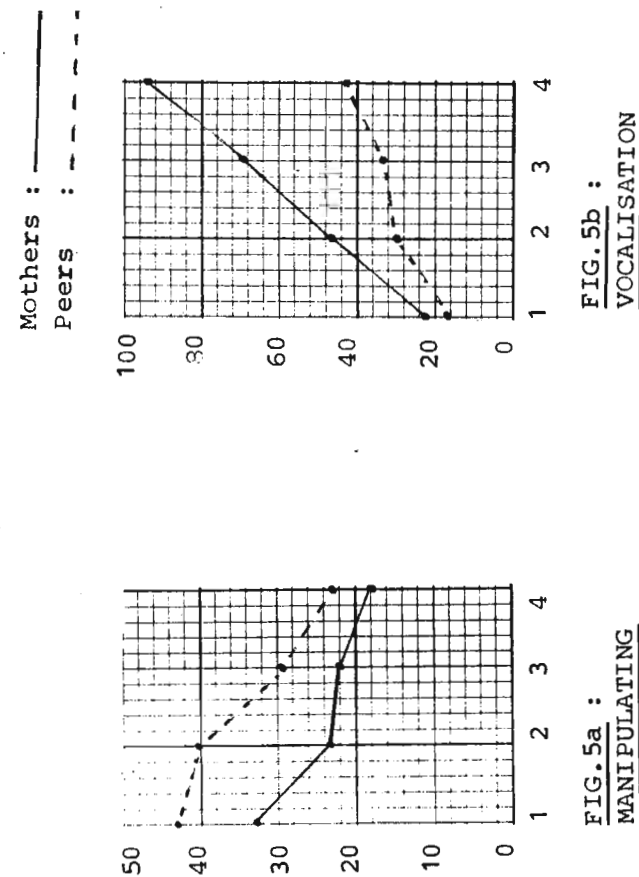
Mothers : ———
Peers : ‑ ‑ ‑ ‑

There was a significant age effect for Engagement (p < .01) and there was significantly more engagement with mothers than with peers (p < .001) (Fig. 5c). Disengaged behaviour also showed an age effect (p < .05), but no significant Situational effect (Fig. 5d), although it tended to be higher with peers.

Mothers : ————————
Peers   : – – – – – –
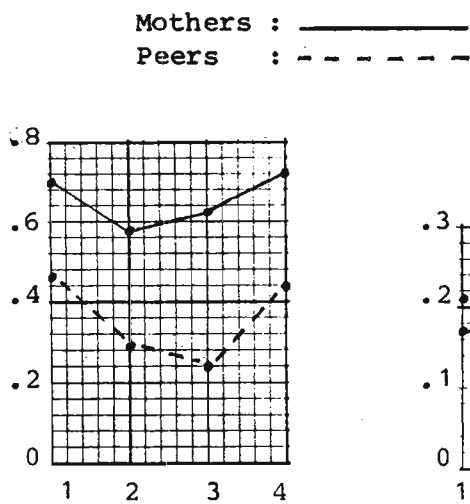
FIG.5c :
ENGAGEMENT
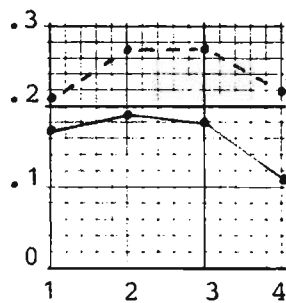
FIG.5d :
DISENGAGEMENT

Other behaviours which did not show a Situational effect were
Physical Activity, Variations and Invitations.   Physical Activity
was similar in the two Situations, but increased significantly with
age (p<.001) (Fig. 5e).   However, the number of Variations was
very similar over both Situations and over the four age groups
(Fig. 5f).   There were very low frequencies of Invitations, but
they were also very similar over both Situations and over the age
groups (Fig. 5g).
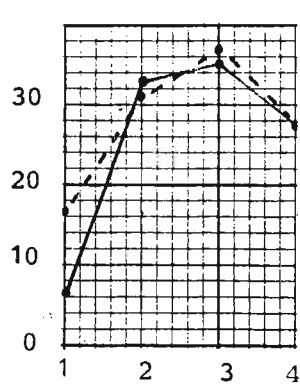
FIG.5e :
PHYSICAL
ACTIVITY
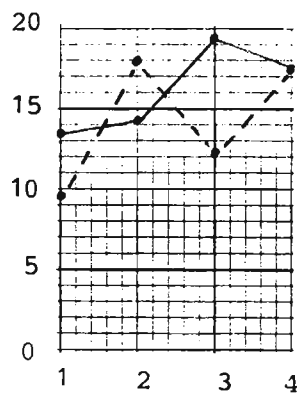
FIG 5f :
VARIATIONS

Mothers : _____

Peers   : _ _ _ _ _ _
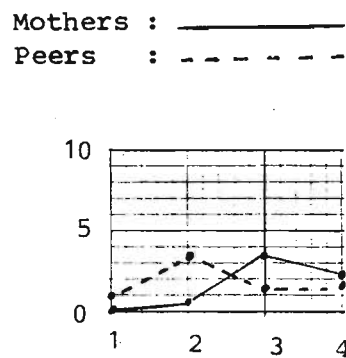
FIG.5g :
INVITATIONS

3.2.6 A comparison of mothers' behaviours with singletons and twins over age groups 1 and 2 (Table 16)

Interactions between age and twinship reached significance for Evoking Co-operation (p < .05) (Fig. 6a) and for Speech (p < .05) (Fig. 6b). Mothers used more of these behaviours with twins in AG1, and more with singletons in AG2, with the difference being much greater in AG2.

FIG.6a:
EVOKING
COOPERA-
TION

FIG.6b:
SPEECH

Singletons with M: ——
Twins with M: – – –

TABLE 16 : MEANS OF MOTHERS' BEHAVIOURS WITH SINGLETONS AND TWINS OVER AGE GROUPS 1 and 2 [a]

BEHAVIOURS		AG1	AG2
Attention-getting .... :	Singletons	11.00	18.33 x
	Twins	28.00	26.00 ^^ x
Encouragement : Verbal[b] ...... :	Singletons	.11	.12
	Twins	.22	.20
Of Incorrect Play[b] .... :	Singletons	.26	.22
	Twins	.47	.18
Evoking Co-operation Total .. :	Singletons	59.00	91.83 i
	Twins	76.00	45.25
Voice .... :	Singletons	6.00	23.83
	Twins	20.33	17.00
Initiating game .... :	Singletons	3.00	4.33 x
	Twins	1.33	1.00 ^
Playing game[c] .... :	Singletons	.19	.40 xx
	Twins	.06	.03 ^
Help .... :	Singletons	25.25	8.33 **
	Twins	29.00	3.50
Making Requests .... :	Singletons	54.25	76.83 *
	Twins	55.00	68.00
Prohibitions .... :	Singletons	28.75	37.33 x
	Twins	12.00	13.00
Responses to Variations : Accepting Variations[d] ...... :	Singletons	.26	.35
	Twins	.40	.29
Objecting to Variations[d] .... :	Singletons	.35	.46
	Twins	.26	.31 n
Joining Invitations[e] .... :	Singletons	0	0
	Twins	0	0
Speech .... :	Singletons	335.75	715.83 i
	Twins	391.00	509.50
Names .... :	Singletons	26.25	55.67
	Twins	25.67	40.25

Interaction Age and twins : i p < .05

Effect Age : * p < .05   Effect Twins : x p < .05
                                 ** p < .01   xx p < .01

a= See Table 2 for composition of age groups (p. 43)
b= Proportion of Play (Table 17)
c= Proportion of total time
d= Proportion of Variations (Table 17)
e= Proportion of Invitations (Table 17)

Positive Correlation with Engagement (Twins) : ^ p < .05
                                               ^^ p < .01

Negative Correlation with Play (Twins) : n p < .05

Mothers initiated significantly more games with singletons than with twins ($p < .05$), and they also spent more time playing games with singletons ($p < .01$). For twins in AG2, there was a positive correlation between Engagement and mothers' Initiating games ($p < .05$) and mothers' playing games ($p < .05$).

Verbal Encouragement was significantly higher for twins ($p < .05$). AGBs were significantly more frequent with twins over the two age groups ($p < .05$), and a positive correlation was found between mothers' AGBs and Engagement for twins in AG2.

Over both age groups, very few Invitations to play a child's game were observed (Table 17), and mothers joined none of them. For twins in AG2, a negative correlation was found between Play and mothers' objecting to Variations ($p < .05$).

TABLE 17 : MEANS OF BEHAVIOURS OF SINGLETONS AND TWINS WITH MOTHERS OVER AGE GROUPS 1 and 2 [a]

BEHAVIOURS		AG1	AG2
Compliance :			
With Making Requests [b]	: Singletons	.38	.34 i
	Twins	.37	.57 i
With AGBs [c]	: Singletons	.43	.49
	Twins	.42	.44
With Prohibitions [d]	: Singletons	.34	.36
	Twins	.17	.58
Disengagement [e]	: Singletons	.17	.19
	Twins	.26	.30
Engagement [e]	: Singletons	.70	.58 i
	Twins	.51	.72 i
Looking at Each Other	: Singletons	46.25	62.00 xx
	Twins	32.33	24.00
Manipulation	: Singletons	32.25	22.67
	Twins	21.83	15.75
Physical Activity	: Singletons	6.50	33.50 **
	Twins	10.00	19.50
Play [f]	: Singletons	140.75	143.67
	Twins	78.50	165.50
Smiling at the Same Time	: Singletons	22.75	17.67
	Twins	14.83	11.00
Variations	: Singletons	13.50	14.17
	Twins	18.33	18.25
Invitations	: Singletons	0	1.67
	Twins	.17	1.00
Vocalising	: Singletons	22.75	47.67 *
	Twins	13.33	23.25 x

Overall difference between groups : Age p < .05
Interaction Age and Twins : i p < .05

Effect Age : * p < .05   Effect Twins : x p < .05
        ** p < .01   xx p < .01

a= See Table 2 for composition of age groups (p. 43)
b= Proportion of Making Requests (Table 16)
c= Proportion of AGBs (Table 16)
d= Proportion of Prohibitions (Table 16)
e= Proportion of total time
f= Scores of both partners combined

3.2.7 A comparison of the behaviours of singletons and twins with mothers over age groups 1 and 2 (Table 17)

Both Engagement (Fig. 7a) and Compliance with mothers' requests (Fig. 7b) showed significant interaction between singletons, twins and age (p < .05).

Singletons with M: ————
Twins with M: – – – –
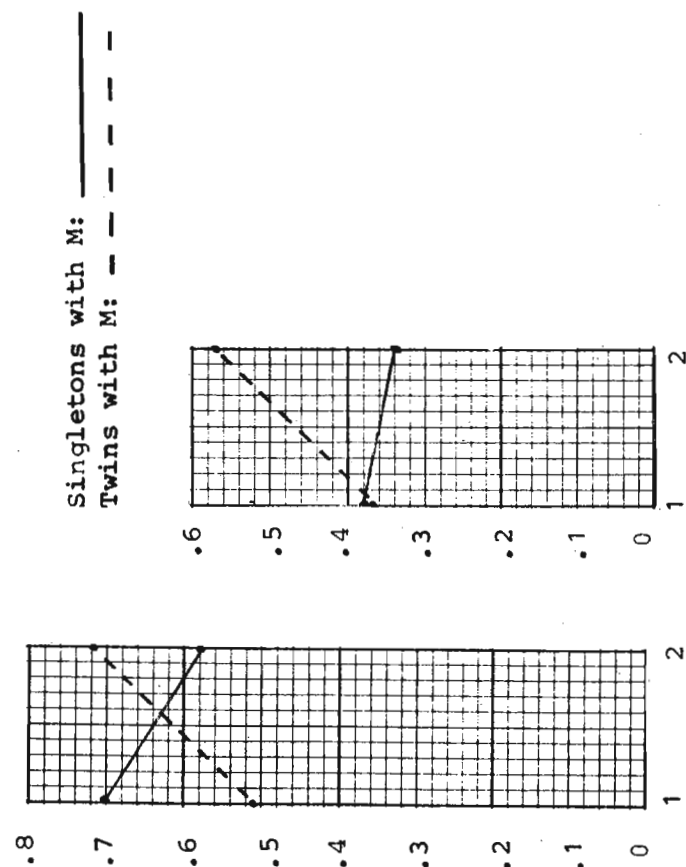
FIG.7a:
ENGAGE

FIG.7b:
COMPLIANCE
WITH
REQUESTS

The effect of twinship reached significance (p < .05) for vocalising, with singletons vocalising more to their mothers at both age levels. The pattern of Looking at Each Other was also significantly different (p < .01), with singletons and their mothers looking at each other more in AG2, whereas twins and their mothers looked at each other more in AG1. In both age groups, singletons and their mothers looked at each other more than twins and their mothers did.

In most categories, singletons performed behaviours more often than twins did, over both age groups.   In some categories, however, the position was reversed.   Twins introduced more variations and spent approximately 50% more time disengaged.   In AG2, they complied more with mothers' requests and with mothers' prohibitions (almost reaching significance at $p < .055$), but they did not comply more with mothers' AGBs. · In the amount of Play they engaged in, after approximately 50% less than singletons in AG1, twins Played 15% more than singletons did in AG2.   This did not reach significance, however.

3.2.8 A comparison of singleton and twin peer behaviours (Table 18)

There were significant interactions between twinship and age for the number of peer Invitations joined $(p<.05)$(Fig. 8a), for the amount of time the dyads were engaged $(p<.01)$(Fig. 8b), and for Play $(p<.001)$(Fig. 8c). In each case, twins performed at a lower level than singletons in AG1 and at a higher level than singletons in AG2. Similar reversals occurred with Attention-getting behaviours and Compliance with them, but these did not reach significance.
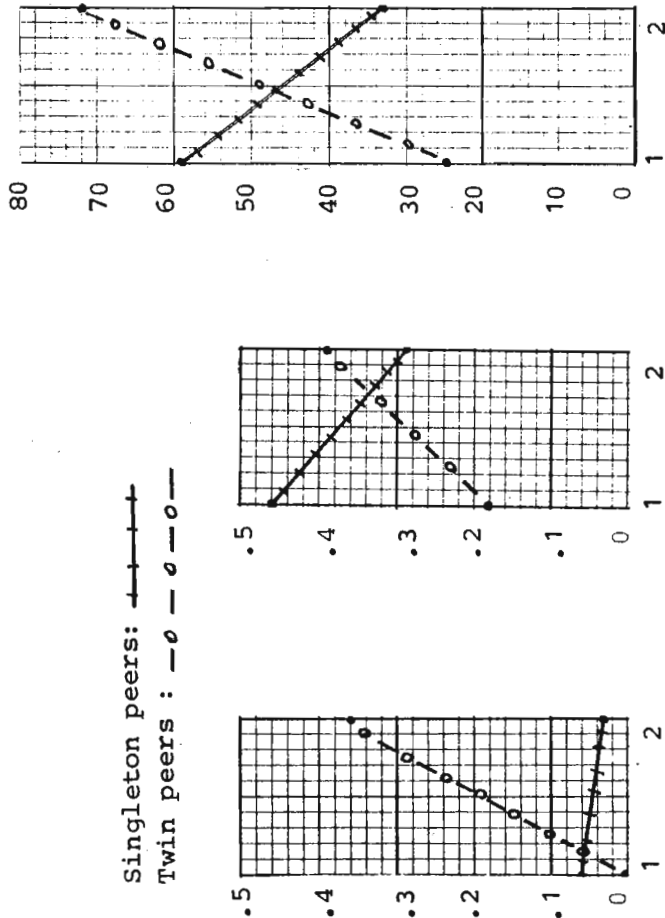
Singleton peers tended to be more active than twin peers. For example, they used more Evoking Co-operation behaviours, they looked at each other more, they were involved in more solitary behaviours (Manipulating), they prohibited more, introduced more Variations, and vocalised more. Twins, on the other hand, tended to be more disengaged. These tendencies did not reach significance, however.

TABLE 18 : MEANS OF SINGLETON AND TWIN PEER BEHAVIOURS OVER AGE GROUPS 1 and 2 [a]

BEHAVIOURS		AG1	AG2
Attention-getting .... :	Singletons	2.75	.17
	Twins	1.67	6.00
Compliance[b] .... :	Singletons	.30	.17
	Twins	0	.60
Disengagement[c] .... :	Singletons	.21	.27
	Twins	.37	.40
Engage[c] .... :	Singletons	.46	.29 ii
	Twins	.18	.39
Evoking Co-operation .... :	Singletons	.25	5.50
	Twins	.17	2.00
Joint Negative Play .... :	Singletons	2.00	0
	Twins	0	.25
Joint Positive Play .... :	Singletons	.75	.67
	Twins	.33	1.50
Looking at Each Other ...... :	Singletons	24.00	21.67
	Twins	12.33	9.00
Manipulating .... :	Singletons	43.75	40.17
	Twins	37.17	25.00
Physical Activity .... :	Singletons	16.50	31.67
	Twins	20.00	25.00
Play[d] .... :	Singletons	59.50	33.33 iii
	Twins	24.33	72.00
Prohibitions .... :	Singletons	1.50	2.00
	Twins	.17	0
Smiling at the Same Time ... :	Singletons	0	4.00 *
	Twins	.67	6.00
Variations .... :	Singletons	9.75	18.00
	Twins	6.67	11.00
Variations accepted[e] ..... :	Singletons	0	.10
	Twins	.04	.13
Variations objected to[e] ... :	Singletons	.18	.02
	Twins	.02	0
Joining Variations[e] ...... :	Singletons	0	2.17
	Twins	0	.75
Invitations .... :	Singletons	1.00	3.33
	Twins	.67	.75
Joining Invitations[f] .... :	Singletons	.06	.03 i
	Twins	0	.36
Vocalising .... :	Singletons	16.50	29.17
	Twins	13.50	14.00

Interaction Age and Twins : i $p<.05$ Effect Age : * $p<.05$
  ii $p<.01$
  iii $p<.001$

a= See Table 2 for composition of age groups. (p.43)
b= Proportion of Attention-getting.
c= Proportion of total time.
d= Scores of both partners combined.
e= Proportion of Variations.
f= Proportion of Invitations.

Singleton peers: ———
Twin peers : —o—o—

FIG.8a: JOINING

FIG.8b: ENGAGE

FIG.8c: PLAY

TABLE 19 : MEANS OF SIMILAR BEHAVIOURS DIRECTED TO SINGLETONS AND TWINS BY MOTHERS AND PEERS OVER AGE GROUPS 1 and 2[a]

BEHAVIOURS BY :	MOTHERS		PEERS	
	AG1	AG2	AG1	AG2
AGBs .... TO : Singletons	11.00	18.33	2.75	.17^^^
Twins	28.00	26.00	1.67	6.00 x
Evoking Co-operation : Singletons	59.00	91.83	.25	5.50^^^ i
Twins	76.00	45.25*	.17	*2.00 z
Prohibitions .... : Singletons	28.75	37.33	1.50	2.00^^^ xx
Twins	12.00	13.00	.17	0 y
Variations Accepted[b] : Singletons	.26	.35	0	.10^^^
Twins	.40	.29	.04	.13
Variations Objected to: Singletons	.35	.46	.18	.03^^^
Twins	.26	.31	.02	0
Invitations Joined[c].. : Singletons	0	0	.06	.03 z
Twins	0	0	0	.36 i

Overall differences between groups:
     Situation (with mothers, with peers) : $p < .001$
     Twins and singletons : $p < .013$
     Interaction between twins and situation : $p < .05$

Interactions :   Age, twins and situation : z $p < .05$
                 Twins and situation : y $p < .05$
                 Age and twins : i $p < .05$

Real main effects (ordinality) : Situation : ^^^ $p < .001$

                 Twins : x $p < .05$
                        xx $p < .01$

a= See Table 2 for composition of age groups (p.43)
b= Expressed as a proportion of Variations (Tables 16 and 18)
c= Expressed as a proportion of Invitations (Tables 16 and 18)

Twins in AG2 : Positive correlation between Evoking Co-operation
               by mothers and similar behaviours directed to
               peers :   * $p < .05$

3.2.9   A comparison of similar behaviours directed to singletons and to twins by mothers and by peers (Table 19)

As a whole, mothers directed significantly more behaviours to the children than peers did ($p < .001$), with more directed to singletons than to twins ($p < .01$), by mothers particularly ($p < .05$).

There was a significant age x twin x Situation interaction ($p < .05$) for Evoking Co-operation (Fig. 9a) and for Joining Invitations ($p < .05$), as well as a twin x Situation interaction for Prohibiting ($p < .05$) (Fig. 9b). However, more Prohibitions were directed to singletons by mothers and by peers. In spite of the interaction, this was a real main effect and reached significance at $p < .01$.

Mothers and peers used more AGBs with twins than with singletons ($p < .05$), which ties in with the higher disengagement time of twins with mothers and with peers (Table 20).

For twins in AG2, there was a positive correlation ($p < .05$) between Evoking Co-operation by mothers and similar behaviours directed to peers.

Singletons with M: ——————
Twins with M: — — — — — —
Singleton peers : +—+—+—+—+
Twin peers : — o — o — o — o —
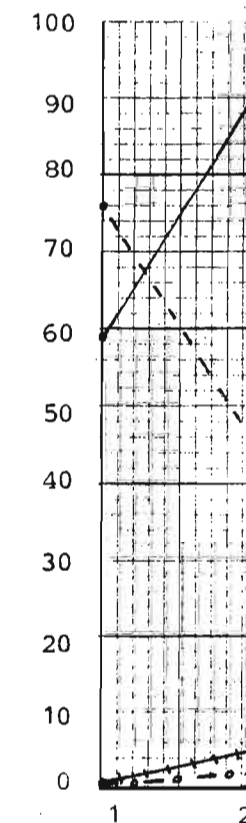
FIG.9a: EVOKING CO-OPERATION

FIG.9b: PROHIBITIONS

3.2.10   A comparison of similar behaviours directed by
          singletons and twins to mothers and to peers
          (Table 20)

Behaviours with mothers were significantly more frequent than with
peers ($p < .001$). In both situations, the twins were disengaged
significantly more of the time ($p < .01$), they vocalised less with
mothers and with peers than singletons did ($p < .05$), and they
exchanged looks with their partners significantly less of the time
($p < .001$). They were involved in less solitary behaviour
(Manipulating) than singletons were, and this just failed to reach
significance at $p < .056$.

There was a significant age x twin interaction for Play ($p < .01$)
(Fig.10a) and for Engagement ($p < .001$) (Fig.10b). In both cases,
twins had lower frequencies in AG1 and higher ones in AG2. There was
also a significant age x twin x Situation interaction ($p < .05$) for
Compliance with partners AGBs (Fig.10c), showing a similar increased
frequency for this behaviour in AG2 in the peer situation.

Singletons with M: —————————   Singleton peers: ++++++
Twins with M: — — — — —   Twin peers : —o—o—o—
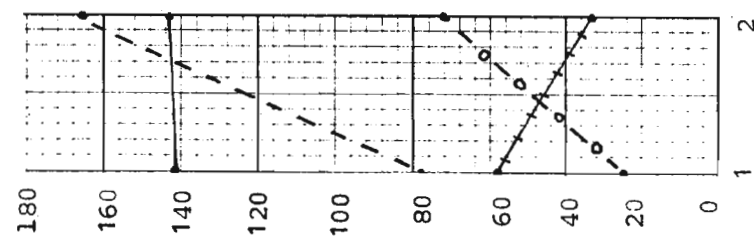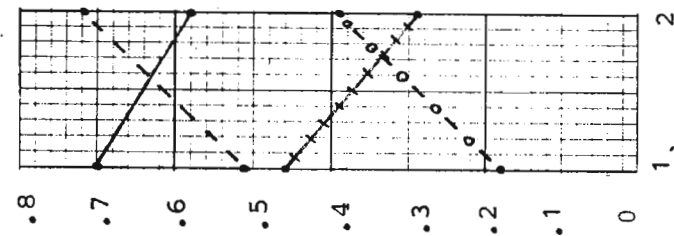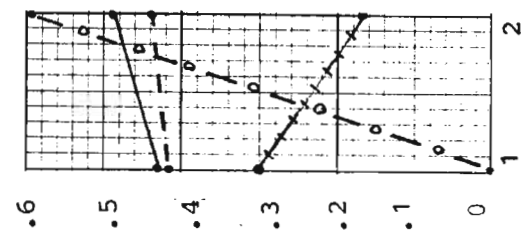
FIG.10a: FIG.10b: FIG.10c:
PLAY   ENGAGE   COMPLIANCE
                                WITH AGBs

TABLE 20 : MEANS OF SIMILAR BEHAVIOURS DIRECTED BY SINGLETONS
AND TWINS TO MOTHERS AND PEERS OVER AGE GROUPS
1 and 2[a]

BEHAVIOURS	TO	MOTHERS		PEERS	
		AG1	AG2	AG1	AG2
Compliance - AGBs ...	:Singletons	.43	.49	.30	.17 z
	Twins	.42	.44	0	.60 z
Disengagement[b]	:Singletons	.17	.19	.21	.27 xx
	Twins	.26	.30	.37	.40
Engagement[b]	:Singletons	.70	.58	.46	.29 ^^^
	Twins	.51	.72	.18	.39 iii
Looking at each other	:Singletons	46.25	62.00	24.00	21.67 ^^^
	Twins	32.33	24.00	12.33	9.00 xxx
Manipulation	:Singletons	32.25	22.67	43.75	40.17 ^^
	Twins	21.83	15.75	37.17	31.67 ***
Physical Activity ...	:Singletons	6.50	33.50	16.50	25.00
	Twins	10.00	19.50	20.00	33.33 ^^^
Play[c]	:Singletons	140.75	143.67	59.50	72.00 ii
	Twins	78.50	165.50	24.33	4.00 ^^
Smiling at Same Time	:Singletons	22.75	17.67	0	6.00
	Twins	14.83	11.00	.67	18.00
Variations	:Singletons	13.50	14.17	9.75	11.00
	Twins	18.33	18.25	6.67	3.33 *
Invitations	:Singletons	0	.67	1.00	.75
	Twins	0	.17	.67	29.17 **
Vocalising	:Singletons	22.75	47.67	16.50	14.00 x
	Twins	13.33	23.25	13.50	

Overall differences between groups :
Situation (with mothers, with peers) : $p < .001$
Age and twins : $p < .05$
Age : $p < .009$

Interactions : Age, twins and situation : z $p < .05$
               Age and twins : ii $p < .01$
                               iii $p < .001$

Main effects : ^^ $p < .01$ Twins : x $p < .05$ Age : * $p < .05$
Situation : ^^^ $p < .001$ xx $p < .01$ ** $p < .01$
                                       xxx $p < .001$ *** $p < .001$

a= See Table 2 for composition of age groups (p.43)
b= Expressed as proportion of total time
c= Scores of both partners combined

TABLE 21 : MEANS OF MOTHERS' BEHAVIOURS WITH SINGLETON BOYS AND
GIRLS OVER AGE GROUPS 3 and 4

BEHAVIOURS		AG3 (Boys N=5 Girls N=3)	AG4 (Boys N=5 Girls N=5)
Attention-getting	: Boys	9.60	6.60
	Girls	5.00	3.80
Encouragement :			
Verbal[a]	: Boys	.18	.10
	Girls	.12	.11
Of Incorrect Play[a]	: Boys	.18	.20
	Girls	.19	.19
Evoking Co-operation: Total	: Boys	72.20	59.00
	Girls	54.00	31.20
Voice	: Boys	10.20	7.80
	Girls	∧10.33	2.80
Initiating game	: Boys	7.40	5.00
	Girls	4.33	3.60
Playing game[b]	: Boys	.38	.21
	Girls	.18	.12
Help	: Boys	∧ 2.40	6.40 ..
	Girls	.67	.20
Making Requests	: Boys	87.60	77.00
	Girls	∧89.33	66.60
Prohibitions	: Boys	39.40	26.40
	Girls	31.33	32.00
Responses to Variations :			
Variations Accepted [c]	: Boys	.07	.26
	Girls	.15	.25
Variations Objected to[c]	: Boys	.69	.38
	Girls	.46	.39
Joining Invitations[d]	: Boys	0	.10
	Girls	0	0
Speech	: Boys	921.60	702.00
	Girls	713.00	684.00
Names	: Boys	23.60	11.60 *
	Girls	49.00	11.20

Effect Sex : " $p < .05$ Pos. Corr. with Engagement: ∧ $p < .05$
Effect Age : * $p < .05$

a= Proportion of Play
b= Proportion of total time.
c= Proportion of Variations (Table 22).
d= Proportion of Invitations (Table 22).

3.2.11 A comparison of mothers' behaviours with singleton boys and girls (Table 21)

Overall, mothers tended to be more active in evoking co-operation from boys. They tended to initiate and play more games with them, to use more AGBs with them, and to help them more physically. Only the latter reached significance, however ($p < .05$) (Fig. 11). For boys in AG3, there was a positive correlation ($p < .05$) between Engagement and mothers' Helping physically.

Over both age groups, mothers spoke more to boys than to girls, but they used names significantly more often in AG3 than in AG4 ($p < .05$), and more than twice as often for girls than for boys in AG3. The latter did not reach significance, however.

For girls in AG3, there was a positive correlation ($p < .05$) between Engagement and mothers' gamelike verbal behaviour, and between Engagement and mothers' Making Requests.

Mothers with boys : ──────
Mothers with girls : ─ ─ ─ ─ ─ ─
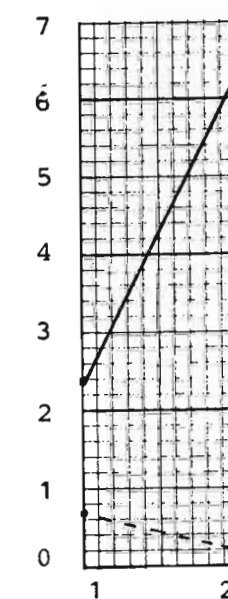
FIG.11 :
HELP

TABLE 22 : MEANS OF BEHAVIOURS OF SINGLETON BOYS AND GIRLS WITH
MOTHERS OVER AGE GROUPS 3 and 4

BEHAVIOURS		AG3 (Boys N=5, Girls N=3)	AG4 (Boys N=5, Girls N=5)
Compliance :			
With mothers' requests[a]	Boys	.50	.60 *
	Girls	.49	.68 *
With mothers' Prohibitions[b]	Boys	.57	.66 *
	Girls	.46	.73 *
With mothers' AGBs[c]	Boys	.65	.49
	Girls	.71	.67
Disengagement[d]	Boys	.20	.14
	Girls	.13	.08
Engagement[d]	Boys	.63	.66
	Girls	.62	.77
Looking at each other	Boys	47.00	38.40 ..
	Girls	55.00	59.60
Manipulation	Boys	21.20	16.60
	Girls	23.33	19.40
Physical Activity	Boys	35.60	32.80
	Girls	36.00	23.00
Play[e]	Boys	115.40	137.20
	Girls	134.00	182.60
Smiling at the same time	Boys	^ 16.80	14.00
	Girls	4.67	19.60
Variations	Boys	20.00	23.80
	Girls	18.67	12.00
Invitations	Boys	4.60	2.40
	Girls	2.00	2.00
Vocalisation	Boys	65.00	94.00
	Girls	74.00	94.80

Effect Sex: "p<.05   Pos. Corr. with Engagement: ^ p<.05
Effect Age: * p<.05

a= Proportion of Making Requests (Table 21).
b= Proportion of Prohibitions (Table 21).
c= Proportion of Attention-getting (Table 21).
d= Proportion of Total time.
e= Scores of both partners combined.

3.2.12 A comparison of the behaviours of singleton boys and girls with mothers (Table 22)

There was only one difference between the sexes which reached significance. Girls and their mothers looked at each other significantly more often than boys and their mothers did (p<.05) (Fig. 12).

Both boys and girls tended to comply significantly more often with mothers' requests and mothers' prohibitions in the older age group (p<.05). Girls tended to comply with mothers' AGBs more often than boys did, but this did not reach significance. For boys in AG3, there was a positive correlation between Engagement and Smiling at the same time with their mothers (p<.05).

Mothers with boys: ———
Mothers with girls : – – – –
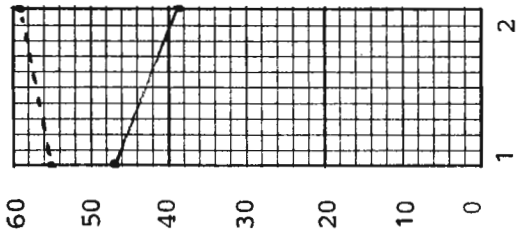
FIG.12 :
LOOKING AT
EACH OTHER

TABLE 23 : MEANS OF BOYS' AND GIRLS' BEHAVIOURS WITH PEERS
OVER AGE GROUPS 3 and 4

BEHAVIOURS		AG3 (Boys N=5 Girls N=3)	AG4 (Boys N=5 Girls N=5)
Attention-getting .... :	Boys	.60	1.00
	Girls	3.00	.40
Compliance[a] .... :	Boys	.20	.20
	Girls	.33	.20
Disengagement[b] .... :	Boys	.32	.23
	Girls	.18	.25
Engagement[b] .... :	Boys	.25	.44 *
	Girls	.22	.43
Evoking Co-operation : Total .... :	Boys	1.20	1.60
	Girls	2.00	3.20
Looking at Each Other .... :	Boys	24.80	31.20
	Girls	32.67	39.60
Manipulating .... :	Boys	32.60	26.00
	Girls	24.67	18.80
Physical Activity .... :	Boys	40.60	26.80
	Girls	31.67	28.60
Play[c] .... :	Boys	47.20	58.40
	Girls	34.67	79.20
Prohibitions .... :	Boys	.20	4.80
	Girls	0	1.60
Smiling at the Same Time .... :	Boys	2.40	5.80
	Girls	4.00	5.40
Variations .... :	Boys	15.40	20.80
	Girls	6.67	13.60
Variations Accepted[d] .... :	Boys	.07	.19
	Girls	0	.28
Variations Objected to[d] .... :	Boys	0	.18 *
	Girls	0	.06
Joining[d] .... :	Boys	.40	2.20
	Girls	0	1.00
Invitations .... :	Boys	2.00	1.80
	Girls	.33	1.20
Invitations Joined[e] .... :	Boys	.20	.60
	Girls	0	.13
Vocalisation .... :	Boys	31.00	52.00
	Girls	35.00	34.00

Effect Age: * p < .05

a= Proportion of Attention-getting.
b= Proportion of total time.
c= Scores of both partners combined.
d= Proportion of Variations.
e= Proportion of Invitations.

3.2.13 A comparison of the behaviours of singleton boys and girls with peers (Table 23)

There were no significant sex differences. However, boys in both age groups tended to manipulate the Toy more than girls did, they Prohibited more, introduced more Variations, and issued and joined more Invitations and Variations.

TABLE 24 : MEANS OF SIMILAR BEHAVIOURS DIRECTED BY MOTHERS AND PEERS TO BOYS AND GIRLS OVER AGE GROUPS 3 and 4.

BEHAVIOURS	TO :	BOYS		GIRLS	
		AG3 (N=5)	AG4 (N=5)	AG3 (N=3)	AG4 (N=5)
	BY				
Attention-getting .... : Mothers:		9.60	6.60	5.00	3.80^^
Peers :		.60	1.00	3.00	.40
Evoking Co-operation : Mothers:		72.20	59.00	54.00	31.20^^^
Peers :		1.20	1.60	2.00	3.20
Prohibitions .... : Mothers:		39.40	26.40	31.33	32.00^^^
Peers :		.20	4.80	0	1.60
Responses to Variations:					
Invitations Joined[a]. : Mothers:		0	.10	0	.0 ^
Peers :		.20	.60	0	.13

Effect Situation: ^ p <.05   ^^ p <.01   ^^^ p <.001
(Mothers vs peers)

a= Proportion of Invitations.

3.2.14 A comparison of similar behaviours directed by mothers and by peers to singleton boys and girls (Table 24)

There were no significant sex differences.

TABLE 25 : MEANS OF SIMILAR BEHAVIOURS DIRECTED TO MOTHERS AND PEERS BY SINGLETON BOYS AND GIRLS OVER AGE GROUPS 3 and 4.

BEHAVIOURS BY :	BOYS		GIRLS	
	AG3 (N=5)	AG4 (N=5)	AG3 (N=3)	AG4 (N=5)
Compliance with AGBs [a] .. : Mothers:	.65	.49	.71	.67 ^^
Peers :	.20	.20	.33	.20
Disengagement [b] .... : Mothers:	.20	.14	.13	.08 ^
Peers :	.32	.23	.18	.25
Engagement[b] .... : Mothers:	.63	.66	.62	.77 ^^^
Peers :	.25	.44	.22	.43 **
Looking at Each Other .. : Mothers:	47.00	38.40	55.00	59.60 ^^
Peers :	24.80	31.20	32.67	39.60
Manipulating .... : Mothers:	21.20	16.60	23.33	19.40
Peers :	32.60	26.00	24.67	18.80
Physical Activity ..... : Mothers:	35.60	32.80	36.00	23.00 *
Peers :	40.60	26.80	31.67	28.60
Play[c] .... : Mothers:	115.40	137.20	134.00	182.60 ^^^
Peers :	47.20	58.40	34.67	79.20 *
Smiling at the Same Time : Mothers:	16.80	14.00	4.67	19.60 ^^^
Peers :	2.40	5.80	4.00	5.40
Variations .... : Mothers:	20.00	23.80	18.67	12.00 ..
Peers :	xx15.40	20.80	x 6.67	13.60
Invitations .... : Mothers:	4.60	2.40	2.00	2.00
Peers :	2.00	1.80	.33	1.20
Vocalisation .... : Mothers:	65.00	94.00	74.00	94.80 ^^
Peers :	31.00	52.20	35.00	34.00

Effect Situation: ^ p<.05   ^^ p<.01   ^^^ p<.001
Effect Sex : ¨ p<.05
Effect Age : * p<.05   ** p<.01

a= Proportion of AGBs (Table 24).
b= Proportion of total time.
c= Scores of both partners combined in peer situation.

Positive correlation between mothers' gamesplaying and children's
    Variations with peers : x p<.05   xx p<.01

3.2.15 A comparison of similar behaviours directed to mothers and to peers by singleton boys and girls (Table 25)

Boys produced significantly more Variations than girls did for mothers and for peers (p<.05) (Fig. 13a).

Girls were involved in significantly more Looking at Each Other behaviour than boys were, both with their mothers and with peers (p<.05) (Fig. 13b).

There was a positive correlation for both boys (p<.01) and girls (p<.05) between mothers' gameplaying and children's Variations with peers, but only for AG3.

Mothers with boys : _____
Mothers with girls : − − − − −
Boys with peers : _____
Girls with peers : o − o − o −
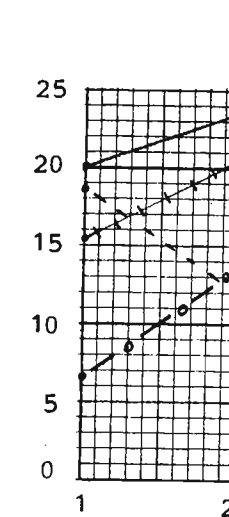
FIG.13a :
VARIATIONS
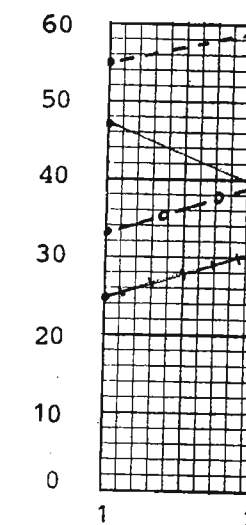
FIG.13b :
LOOKING AT
EACH OTHER

3.3   SUMMARY OF RESULTS OF ANALYSIS OF DISCRETE MEASURES

3.3.1   Singletons over all age groups (Tables 11 to 15)

Mothers appeared to use different teaching strategies for different age groups.

In AG1, helping physically was used significantly more often than in AG2 ($p < .003$), and it was used even less in the older age groups. This contrasted with the use of Speech, which was lowest in AG1. Encouragement of Incorrect Play was most frequent in AG1, and Prohibitions were least frequent, suggesting that mothers were using 'shaping' behaviours in AG1.   Although solitary play (Manipulating) was highest in AG1, the proportion of time the children were engaged was .70.   This is higher than the proportion of Engagement in AG2 (.58) or in AG3 (.63).

In AG2, the use of Speech by mothers increased significantly ($p < .007$). All the mothers' behaviours increased in frequency, except for Helping physically and Encouragement of Incorrect Play.   In particular, the game-like verbal behaviour used in the Evoking Co-operation category was higher than in all other age groups, showing a significant difference of $p < .01$ from AG1, and $p < .02$ from AG3.   Physical activity increased significantly ($p < .01$) while, as already mentioned, the proportion of Engagement fell (Table 12, p. 80).

In AG3, Speech appeared to be the main strategy used, together with speech-related strategies, such as Making Requests.   Compliance with these requests also increased, as well as compliance with prohibitions and with AGBs.   Physical activity increased, and the children became generally more active.   For example, they vocalised more, produced more Variations, and issued more Invitations.   For this age group only, there was a positive correlation for both boys ($p < .007$) and girls (p .02) between mothers' game-playing (Evoking Co-operation) and children's Variations with peers.

In the fourth age group, all mothers' teaching strategies were less frequent, except for Helping physically, which increased slightly from AG3.   The children vocalised more, Played more and remained engaged for longer.   Compliance with requests and with prohibitions increased significantly over the age groups, occurring most frequently in AG4.

3.3.2   Singletons and twins over age groups 1 and 2 (Tables 16 to 20)

In the first age group, the behaviours of singletons tended to be at a higher level than those of twins, and the mothers' behaviours appeared to differ accordingly.   For example, twins Played less in AG1, and mothers of twins used more Evoking Co-operation behaviours at that time than mothers of singletons did.   Mothers encouraged the incorrect Play of twins more, they prohibited significantly less ($p < .05$) and they accepted Variations more.   The only behaviours which did not fit into this pattern, and which the mothers did significantly more with singletons over both age groups, were Initiating games ($p < .05$) and playing games ($p < .01$).

Although twins' behaviour was generally at a lower level in AG1, in several instances they exceeded the singletons' performance in AG2. Such interaction effects reached significance for Engagement ($p < .05$) and for Compliance with mothers' requests ($p < .05$).   Twins and their mothers looked at each other significantly less than singletons and their mothers did ($p < .01$).   Solitary play (Manipulating), Physical Activity and Vocalising were lower than for singletons, with the latter reaching significance ($p < .05$).   Twins tended to be more Disengaged than singletons, although this did not reach significance, and mothers of twins used significantly more AGBs in both age groups ($p < .05$).

In contrast to this pattern of more active behaviour by singletons, twins tended to introduce more Variations with their mothers than singletons did.   Yet there tended to be less Variations performed by twin peers than by singleton peers.

In the Play, Engagement and Joining behaviours, the same reversal over the age groups occurred with peers as was seen with mothers. That is, from Playing less and being less Engaged than singleton peers in AG1, twin peers Played significantly more ($p < .001$) and were Engaged significantly more in AG2 ($p < .01$). Although there were low frequencies of Joining behaviours, there was a reversal from less Joining by peer twins in AG1 to more Joining in AG2, which reached significance ($p < .05$).

3.3.3 Boys and girls over age groups 3 and 4 (Tables 21 to 25)

Mothers appeared to help boys physically significantly more often than girls ($p < .05$). They tended to initiate and to play more games with boys, while using names more often with girls, although these did not reach significance.

There were no significant differences in the way boys and girls played with peers. However, boys tended to be more active. For example, they manipulated the Toy more, they prohibited more, issued and joined more Invitations, and joined their partner's Variations more frequently.

In line with previous results, the frequencies of the behaviours of boys and girls with their mothers were overall significantly higher than with their peers ($p < .001$). In both situations, boys produced significantly more Variations than girls did ($p < .05$), while girls were involved in significantly more Looking at Each Other behaviour with both their mothers and their peers ($p < .05$).

3.4   EXAMINATION OF HYPOTHESES

The hypotheses which formed part of the Purpose of this study are compared with results obtained (Table 26).

Mother-Infant Situation

Except for four expected outcomes, all the remaining 12 anticipated age-related hypotheses were confirmed, 5 of them significantly.   Those which were not confirmed were Engagement and Variations, which did not increase with age, and mothers' use of names and their Acceptance of Variations, which did not decrease with age.

Peer Situation

Solitary behaviours were expected to be higher with peers, and interactive behaviour was expected to be higher with mothers.   Of the 9 expectations, 7 were confirmed, 5 of them significantly.   The two behaviours which did not show expected trends were Physical Activity and Invitations.

As indicated in Table 15 (p. 85), Physical Activity showed no tendency to be different over the mother-infant and peer situations, although there was a significant difference over the age groups ($p < .001$).   The number of Invitations, as well as the number of total Variations, were both very similar over the age groups, and similar in the two Situations (Table 15, p.85).   The reactions to them by mothers and by peers, however, showed differences (Table 14, p.84).   Although mothers' acceptance of Variations was more frequent, similar behaviour by peers increased over the age groups, whereas mothers' acceptance tended to become less frequent.   As a result, at AG4, Acceptance was almost the same in both Situations.   Objecting to Variations was significantly higher in the mother-infant Situation ($p < .001$).   However, although frequencies for this behaviour were very low, significantly more peers than mothers joined game Invitations initiated by the children ($p < .05$).

TABLE 26 : EXAMINATION OF HYPOTHESES

Behaviours	Expected Outcomes	Findings
MOTHER-INFANT SITUATION		(Tables 11 & 12)
AGBs	Decrease with age *	Yes
Compliance:Requests	Increase with age *	Yes (p .001)
Prohibitions	Increase with age *	Yes (p .01)
AGBs	Increase with age *	Yes
Disengagement	Decrease with age	Yes
Enc. of 'Incorrect' Play	Decrease with age	Yes
Engagement	Increase with age	No
Evoking Co-operation	Pos.Corr. with Engagement	AG3 (p .01)
Looking at Each Other	Pos.Corr. with Engagement *	AG3 (p .05)
Manipulation	Decrease with age	Yes (p .05)
Physical Activity	Increase with age	Yes (p .01)
Prohibitions	Pos.Corr. with Engagement *	No
Smiling at Same Time	Pos.Corr. with Engagement *	Boys AG3 (p .05)
Speech: Vocalising	Increase with age	Yes (p .01)
Names	Decrease with age	No
Variations	Increase with age *	No
Acceptance by mothers	Decrease with age	No
Objections by mothers	Increase with age	Yes
Invitations	Increase with age *	Yes
PEER SITUATION		(Tables 14 & 15)
Disengagement	More than with mothers	Yes
Engagement	Less than with mothers	Yes (p .001)
Looking at Each Other	Less than with mothers	Yes (p .001)
Manipulation	More than with mothers	Yes (p .05)
Physical Activity	More than with mothers	No
Smiling at Same Time	Less than with mothers	Yes (p .001)
Variations:Invitations	More than with mothers *	No
Joining	Increase with age *	Yes
	More than with mothers	Yes (p .05)
CONTINUITIES BETWEEN SITUATIONS		
Evoking Co-operation	Positive Correlation *	Twins AG2 (p .05)
TWINS : HYPOTHESIS (a)		(Tables 17 & 18)
Disengagement	More than singletons *	Yes
Vocalising	Less than singletons *	Yes (p .01)
Variations	Less than singletons *	Yes
Invitations	Less than singletons *	Yes
TWINS : HYPOTHESIS (b)		
Compliance	More than singletons *	I/action
Engagement	More than singletons *	I/a (p .01)
Joint Positive Play	More than singletons *	I/a
Looking at Each Other	Less than singletons *	Yes (p .01)
Play	More than singletons *	I/a (p .001)
Smiling at Same Time	More than singletons *	Yes (p .05)
Joining Invitations	More than singletons *	I/a (p .05)
SEX DIFFERENCES		(Table 22)
Physical Activity	More in boys *	No

* Based on research findings : see Table 5
Note : Levels of significance appear for significant findings. Other positive findings indicate trends only.

Continuities between situations

It was expected that a positive correlation would be found between
mothers' Evoking Co-operation behaviours and similar behaviours by
children in the peer situation.   Such a positive correlation was
found (p < .05), but only for twins in AG2.

Twins

Hypothesis (a) was supported, with one significant finding.

Two of the behaviours examined for Hypothesis (b) were confirmed
significantly.   The five other behaviours all showed interactions,
reaching significance for three of them.   In all cases the expected
outcomes were confirmed in AG2.   Bearing in mind the lower physical
maturity generally found in twins, as discussed, this hypothesis is
also considered to be supported.

Other specific expected outcomes :

Correlations with Engagement :   There was no correlation between
Engagement and Prohibitions.   Evoking Co-operation and Looking at
Each Other correlated positively with Engagement for AG3 children only.
Smiling at the Same Time correlated positively with Engagement for
AG3 boys only.

Sex differences in Physical Activity were not supported.

In summary, the following results appear to support previous research
findings :
   Attention-getting behaviours decreased over the age groups, as
               reported by Kagan & Lewis (1965);
   Compliance increased with age, as found by Lytton (1980);
   Game Invitations increased with age, as found by Eckerman & Whatley
               (1977) and by Mueller & Brenner (1977);
   Looking at Each Other correlated positively with Engagement, but
               only for children in AG3 - Eckerman & Stein (1982) report
               this finding with children of a similar age.

Smiling at the Same Time correlated positively with Engagement,
          but only for boys in AG3 - Eckerman & Stein (1982) report
          findings for children of both sexes;

Joining peers' game Invitations increased with age, as found by
          Bronson (1975);

Twins appeared to be less stimulated by their peer partners than
          singletons were, and they appeared to be more socially
          competent than singletons, as proposed by Savic (1980);

There was a positive correlation between Evoking Co-operation by
          mothers and the use of similar behaviours in the peer
          situation, but only for twins in AG2 (Escalona, 1973;
          Lamb, 1981).

3.5   SUMMARY OF ADDITIONAL MEASURES
      (Summarised descriptions of sessions appear in Appendix 1, p.186)

The additional measures analysis appeared to show much more engagement
than that measured by the codes in the discrete measures analysis. The
children were seen to be engaged even when they were not turntaking or
complying.   Many other activities were introduced in the context of
'meaningful relationships' and which satisfied the characteristics of
co-operative play as defined by Eckerman & Stein (Table 1, p.28).
For example, JOANNE & TIMOTHY's (SG1) third visit scored .48 as a
proportion of time they were engaged according to the discrete measures
criteria, but on additional measures analysis, they were seen to be
engaged throughout the session.

The Variations, including Invitations, which often started the periods
of engagement in the peer sessions were similar to those introduced in
the mother-infant sessions, where they were usually prohibited.   In
the peer sessions, they were mostly ignored, sometimes prohibited, but
more usually they were accepted.   Sometimes they were encouraged with
a smile, or actively joined.   If both partners were attending and
ready to play, however, each Variation appeared to elicit a response
from the partner, which then became an eliciting act again until the
string of connecting behaviours was broken by outside interference, such
as noise or, seemingly, pain; by noisy behaviours which made some of the
younger subjects cry; or by one partner responding in a way which stopped
Play, such as successfully holding the handle down or see-sawing strongly.
Behaviours which started off as attempts to prevent Play could become
prosocial tests of skill, as in Joint Positive Play, or could take on
negative affect.   This sometimes seemed to depend on the reaction of
the partner, but it seemed likely that the basic quality of the peer
relationship was the major deciding factor.

There appeared to be a regular progression from learning the Game to
complex Variations.   It appeared that the children first demonstrated
that they understood how to Play 'correctly'.   They then introduced
Variations using their hands, and finally they used other parts of their
body.

Examples of 'meaningful relationships' as described in Table 1 (p.28) were observed in all the age groups.

In the first and second age groups, although different relationships were observed, they were generally not combined in an engagement episode.

An example of an <u>actor-audience relationship</u> in AG1 is described in Fig. 14, when TIMOTHY executes a complicated Variation while JOANNE watches.

FIG. 14 : AN ACTOR-AUDIENCE RELATIONSHIP (Extract from Fig.42,p.187) AG1 : SG1 : Visit 4 : 00:40:02 (Twins)		
TIME*	**JOANNE (C1)**	**TIMOTHY (C2)**
6.30	Plays	Touches handle with forehead
6.35	Watches C2	Vocalises, rocks back and forth
6.40	Watches C2	Touches handle with forehead, Plays half down with forehead
6.45	Plays	

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

Examples of an early verbal and gestural <u>imitative relationship</u> in AG2 were observed between DARREN and KRIS (Fig. 15).

FIG. 15 : EARLY IMITATIVE RELATIONSHIP (Extract from Fig.30,p.126) AG2 : SG10 : Visit 1 : M 01:34:06 (Singletons)		
TIME*	**KRIS (C2)**	**DARREN (C1)**
10.05		Plays, "Oh,oh", lifts side
	Look at each other	
10.10	Watches C1	Plays and lifts side, "Oh"
	Lifts side, "Oh"	
	Look at each other	
	....	
10.55	Points to dolls on wall, "Baba"	Follows point, "Baba"
11.00		Vocalises, points to mother "Baba"
	Holds pointing gesture, looks at mother, "Baba"	
		"Baba,baba" loudly, pointing

*Relevant 5-second interval is quoted.

By AG3, the types of behaviours were being combined, not always in one engagement episode, but in one session.   JOANNA and ANTHONY showed Imitative and Complementary behaviours, which were interspersed with turntaking Play (Fig. 16).

FIG. 16 : AN IMITATIVE/COMPLEMENTARY RELATIONSHIP (extract from Fig.31,p.128) AG3 : SG11 : Visit 2 : M 02:00:05 (Singletons)	
TIME* JOANNA (C1)	ANTHONY (C2)
11.35 Puts feet on table, removes them, "Feet away", looks at C2	Watches C1 ·
11.40 Looks at C2, lifts table	Slaps handle and licks it
11.45 Leans chin on handle, looks at C2	
11.50 Bangs side down	Vocalises, smiles
	Vocalises
Both smile	
11.55	Vocalises three times, looks at C1, smiles
Look at each other	
12.00 Pushes table	
12.05 Watches C2 intently	Pushes feet against table, chair rocks back
12.10 Looks round at own chair-back	
	Plays, smiling, watching
12.15 Climbs up in chair,"Up"	
	Climbs up in chair, "Up

* Relevant 5-second interval is quoted.

By AG4, complementary and imitative behaviours were combined in a single engagement episode (Fig. 17).

FIG.17 : AN IMITATIVE/COMPLEMENTARY RELATIONSHIP (extract from Fig. 39, p. 144)
AG4 : SG17 : Visit 4 : M 02:13:01 (Singletons)

TIME*	TREVOR (C1)	DAVID (C2)
5.35	Plays, points, "Put the light off", looks at C2	Looks at C1, "Put the light off there"
5.40	Holds side down, looks at C2, "Put the light off there, put the light off"	Looks at C1, tries to Play
5.45	Smiles, looks at C2, still holding side down, "Put the light off", slaps side	Slaps side, lifts hands high, slaps handle down, looks at C1
5.50	Slaps handle down	
	Look and smile at each other	

* Relevant 5-second intervals are quoted.

Because of the nature of the Toy, there were not many examples of concurrent reciprocal relationships, in which each partner does the same thing at the same time. However, some examples were noted. In AG1, PAUL & ANDREW did not show clear signs of enjoyment, but since they did not cry or stop, the affect is assumed to have been positive (Plate 2). In AG2, YOLANDA and NICOLETTE kept the bar level by both slapping at the handle at the same time, or both pulling and pushing at the same time (Plate 3). When concurrent reciprocal behaviours were seen in the older age groups, they were clearly competitive and angry, or else very brief.

Reciprocal turntaking was also clearly seen from AG2. Children in AG1 also pushed down in turn, but it did not usually exceed three turns in a 'run'. From AG2, however, turntaking episodes of four turns and more became frequent (Plates 4 to 7).

Plate 2

Concurrent reciprocal relationships

Plate 3

Plate 4

Plate 5

Plate 6

Reciprocal turntaking

Plate 7

In AG3, <u>reciprocal turntaking</u> using feet as well as hands was observed (Fig. 18).

FIG. 18 : RECIPROCAL TURNTAKING USING HANDS AND FEET :(Extract from Fig. 32, p. 130)
AG3 : SG13 : Visit 4 : 02:10:06 (Twins)

TIME*	CLINTON (C2)	SUSAN (C1)
6.45		Plays with hand
	Plays with foot	
		Plays with hand
	Plays with foot	
		Plays with hand, vocalises
6.50	Plays with hand	
6.55	Vocalises	
		Plays with hand
	Plays with hand	
		Plays with foot
7.00	Plays with foot	

* The relevant 5-second intervals are quoted.

In the older age groups, more frequent and longer engagement episodes were seen in which several types of relationships were used, frequently for the full 2.5 minutes of the sessions. An extract from such a session is described in Fig. 19.

With very few exceptions, the mothers all gave their full attention to the children, and were always ready to Play and to complete the Looking at Each Other and the Smiling at the Same Time behaviour categories. The exceptions will be mentioned in the descriptions of the relevant age groups.

The only children who did not appear to understand how to Play with their mothers were a pair of twins in AG1 (TARRYN and LEIGH, SG3), the girl of a mixed set of twins in AG1 (KAREN, SG5), and one boy in AG2 (SEAN, SG9).

FIG. 19 : SEVERAL TYPES OF RELATIONSHIPS :
AG4 : SG20 : Visit 2 : M 02:21:06 (Singletons)

TIME*	MARC (C2)	SCOTT (C1)	
	(Play quickly with obvious enjoyment from start of session)		
10.55	"What?" Plays very carefully (Variation)	Plays, "Boom" (Variation)	Complementary
11.00	Plays carefully (Joining)	Plays carefully (Joining)	
11.05	Tries to play, unsuccessful (Plate 8)	Plays, holds side down, looks at C2, smiles (Variation)	
11.10	Plays		
11.12		Plays, holds side down by slapping with one hand after the other, smiles, vocalising (Variation) (Plate 9)	
11.20	Joggles handle, then Plays with a bang (handle sticks)		
11.21	Look and smile at each other	Leans back, laughing (Plate 10)	
	Look and smile at each other		Reciprocal
11.25	Plays	Plays, laughing	
11.30	Plays, side sticks and bangs down	Plays	
11.31		Laughs with hands up to face (Plate 11)	
11.35		Plays with a pounce, laughing (Variation) (Plate 12)	
11.40	Plays, smiling		
	Look and smile at each other	Look and smile at each other	
11.45	Looks surprised	Plays with both hands, then lifts side (Variation)	
11.50	Look at each other	Plays, laughing	Imitative
		Look at each other	
11.55	Plays, holding hands up (Variation) (Plate 13)	Plays, holding hands up (Joining)	
	Plays, holding hands up (Joining)		
	Look and smile at each other		
12.00	Slaps down with two hands (Joining)	Slaps down with two hands (Variation)	
	(Continues in similar manner to end of session)		

*Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Plate 8

Plate 9

Plate 10

Plate 11
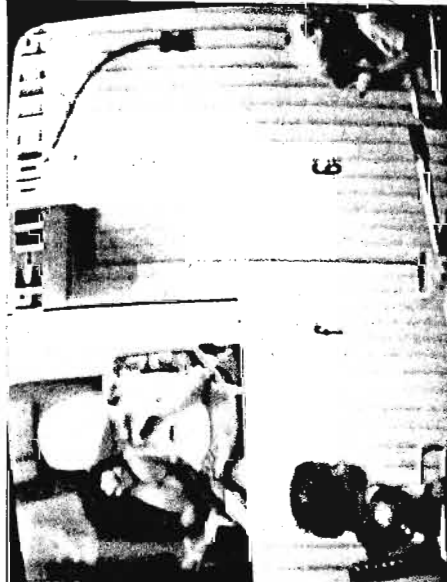
Plate 12

Plate 13

Several types of relationships (Fig. 19)
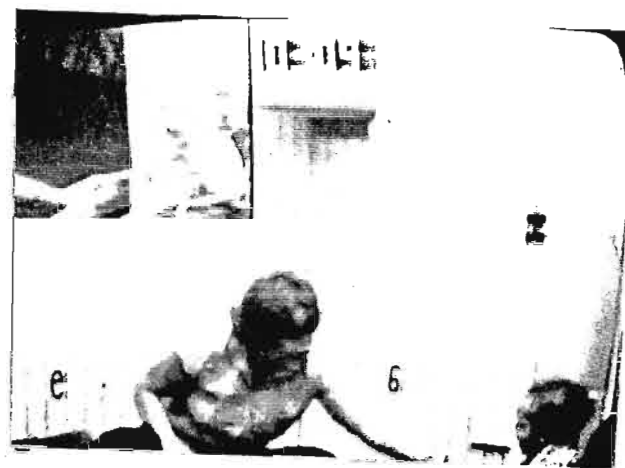
Plate 14

Plate 15

Plate 16

Plate 17

Mothers' helping behaviours and modelling

The category 'Help' (Evoking Co-operation) took different forms over the age groups. Most mothers leaned over the Toy and Played for the child (Plate 14), and some knelt between the two seating positions to Play both sides (Plate 15). This usually occurred during the first few minutes of the first visit, when the mother was explaining the Game to the child. When the mother Played for the child in subsequent visits, it was usually because the child was refusing to continue, or when the mother mistook the child's Variations for lack of understanding of the rules. Another form of the 'Help' category was removing the child's hand from the handle after Play (Plate 16).

The basic strategy was to model the Gameplaying (Plate 17), to instruct verbally and with gestures, and to help the child physically to carry out his part. A rhythm was sometimes set up with a 'My turn, your turn' variety of game. Otherwise, the mother instructed verbally each time it was the child's turn if he did not Play immediately. When mothers introduced games, they were usually started or changed when the child showed signs of wanting to stop Playing. The number of games or gamelike gestures increased over the age groups. In AG1, of 7 mothers, 2 used games. In AG2, of 8 mothers, 3 introduced games (2 mothers used one game each). Of the 11 mothers in AG3, 8 used games, with 2 using one game each. All the 15 mothers in AG4 used games, with 5 using one game each. Except for the mother of the twins in AG4, none of the mothers of twins used games.

All except two pairs of peers were familiar with each other because their mothers were friends. Some of these pairs of friendly mothers appeared to have strikingly similar teaching strategies, and a similar general approach to their children. For example, the mothers of PAUL and ANDREW (SG2) both appeared to be very tentative in interaction with their sons. The mothers of LAUREN and JASON (SG4) were both outstandingly verbal and active, introducing games and gamelike actions. The mothers of CANDICE and LESLEY (SG22) were both friendly but passive. Neither called the child's attention back to the Game when she was looking away, and, in both cases, most of the games came from the children. The mothers of BRIGITTE and SAM (SG21) both insisted strictly on the rules, and they each introduced only one game and no game-like behaviours. Other peer pairs had mothers with strikingly different teaching and relating

strategies. For example, in SG20, MARC's mother was unusually permissive and inactive, and she spoke very little; SCOTT's mother was active and verbal, introducing many games and game-like behaviours.

Two pairs of peers who had chosen each other as friends (DARREN and KRIS (SG10) and GARETH and TYRONE (SG18) had met in creches. Their mothers were not friends. Except for these two pairs of peers, it was not clear how much liking there was between the peers.

More detailed summaries of the four age groups follow. These summaries do not necessarily coincide with the information in the discrete measures tables, since no cases were excluded from the analysis of additional measures.

3.5.1 Age group 1

Teaching

The mothers all gave their full attention to the children. Mothers spoke softly, often using changes in voice pitch, smiles and nods. Physical help was used by most of the mothers, sometimes only once or twice. LAUREN (SG4) objected when such help continued. JASON (SG4), TARRYN and LEIGH (SG3) and KAREN (SG5) appeared to mistake this teaching strategy for the Game itself. KAREN (SG5) gave the impression that the Game was associated with her mother, not with her twin peer (Fig. 20).

Mothers used mainly verbal AGBs. There was only one verbal objection to a variation, and mothers generally accepted or encouraged slapping the handle, mouthing it, or Playing with nose or forehead.

One pair of twins, JOANNE and TIMOTHY (SG1) appeared to need no instruction at all, although JOANNE had teething pain through most of the sessions. A second pair of twins (TARRYN and LEIGH, SG3) and the girl of a mixed set of twins (KAREN, SG5), did not appear to understand what was required.

FIG.20 : GAME ASSOCIATED WITH MOTHER, NOT WITH PEER :
         AG1 : SG5 : Visit 3 : 00:39:06 (Twins)

TIME*	KAREN (C2)	MARC (C1)
	(Peers had been Playing sporadically)	
7.05	Plays (Plate 18)	
7.10		Plays, looks at C2 and tries to lift side
7.13	Plays, smiles and vocalises while looking into adjoining room (Plate 19)	
		Looks at C2
7.20	Both see-saw	
7.21	Smiles and vocalises, looking into adjoining room (Plate 20)	
		Looks at C2, holding handle
7.25	Smiles and vocalises, looking into adjoining room	
		Looks at C2, holding handle
7.30	Pumps handle, smiles and vocalises, looking into adjoining room	
		Looks briefly into adjoining room

*Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Games and Variations

Only the mothers of LAUREN and JASON (SG4) introduced games or game-like
gestures. Two children (JASON, SG4, and TARRYN, SG3) introduced game-
like gestures with their mothers. TIMOTHY's mother (SG1) encouraged a
complicated Variation in which he used his mouth, forehead and nose.

Peers

The peers all appeared to be aware of each other, and many socially
directed behaviours were observed which were not responded to.
Occasionally brief sequences of verbal communication were observed
(TARRYN and LEIGH, SG3). In one session, AGBs resulted in short
sequences of shared vocalisation and Play (Fig. 21), and in another

Plate 18

Plate 19

Plate 20

Game associated with mother (Fig. 20)
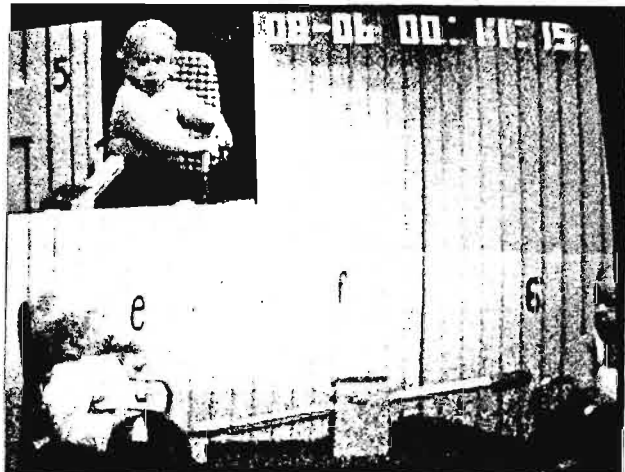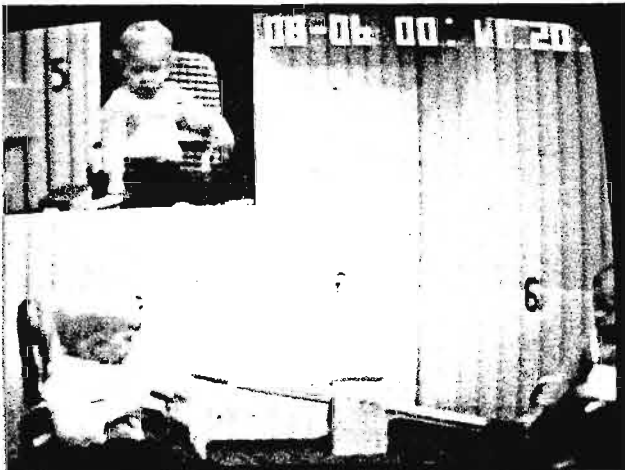
Plate 21

Plate 22

Plate 23

Plate 24
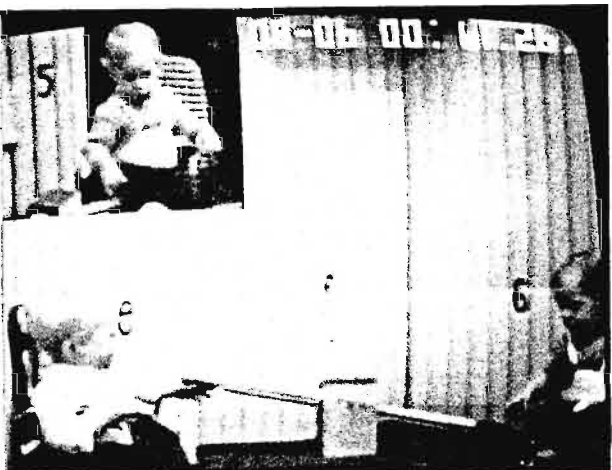
Plate 25
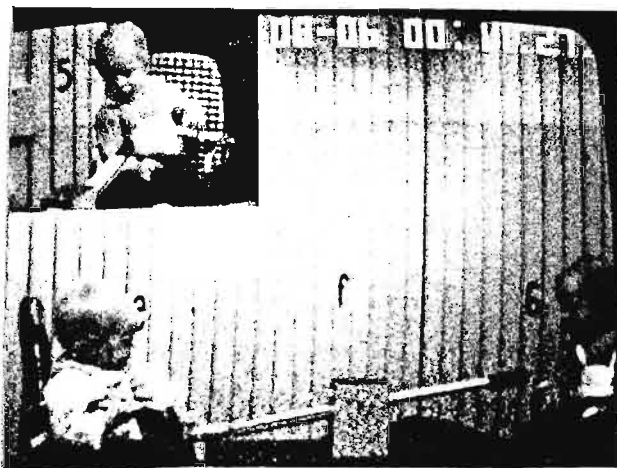
Plate 26

AGBs result in short communication sequence (Fig. 21)

FIG. 21 : AGBs RESULT IN SHORT COMMUNICATION SEQUENCE :
AG1 : SG2 : Visit 1 : M 00:42:00 (Singletons)

TIME *	PAUL (C1)	ANDREW (C2)
11.11		Looking away
	Looks at C2, vocalising with hand on handle (AGB) (Plate 21)	
11.15	Vocalises (AGB)	
		Look at each other (Compliance)(Plate 22)
11.20	Vocalises	
		Vocalises and Plays (Plate 23)
11.22	Vocalises and Plays (Plate 24)	
		Look at each other
11.26		Plays (Plate 25)
11.27	Plays and vocalises (Plate 26)	Looks away
	Looks away	

* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

they appeared to lead to a short co-operative sequence between LAUREN and JASON (Fig. 22).

FIG. 22 : AGBs RESULT IN SHORT CO-OPERATIVE SEQUENCE :
AG1 : SG4 : Visit 4 : M 00:45:00 (Singletons)

TIME*	JASON (C2)	LAUREN (C1)
6.53	Both looking away (Plate 27)	
6.55	Loud vocalisation, leaning forward (AGB) (Plate 28)	Looks at C2 (Compliance)
6.56	Vocalises again, trying to lift side (AGB) (Plate 29)	
6.58		Plays (Compliance), looks at C1, vocalises, smiles (Plate 30)
6.59	Plays (Plate 31)	

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

In spite of obvious pain, JOANNE (SG1) took part in Visit 3 (Fig. 23), coming back to the game after crying interruptions of up to 13 seconds. The whole of the fourth visit was a sequence of Playing interspersed with Variations.

Plate 27

Plate 28

Plate 29

Plate 30
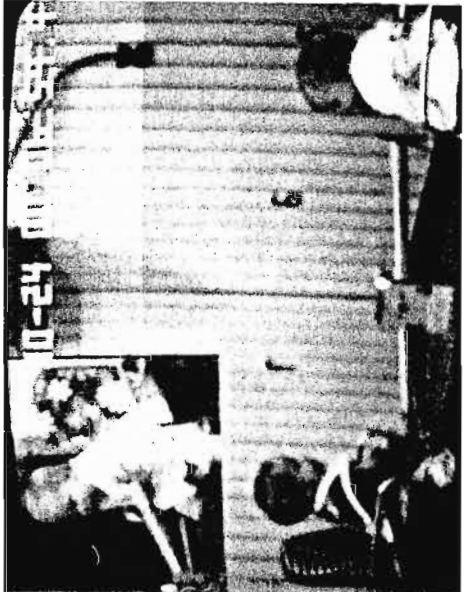
Plate 31

AGBs result in short co-operative sequence (Fig. 22)
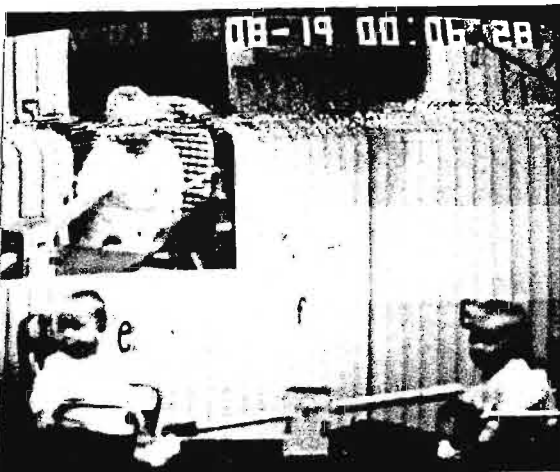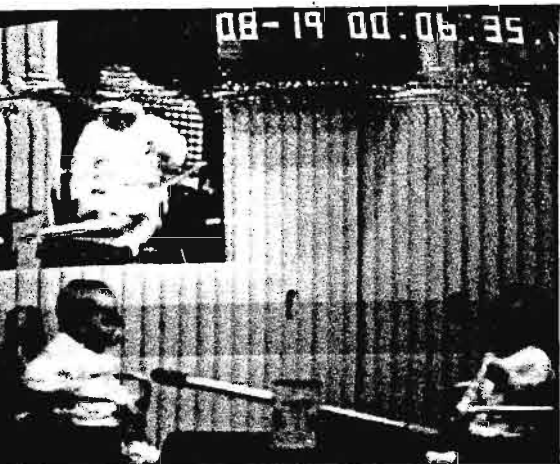
Plate 32

Plate 33

Plate 34
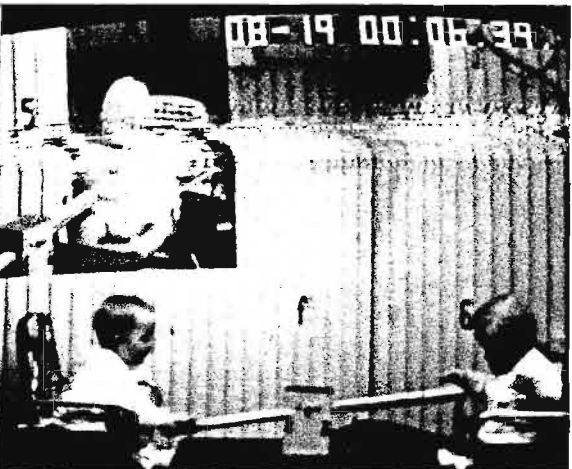
Plate 35
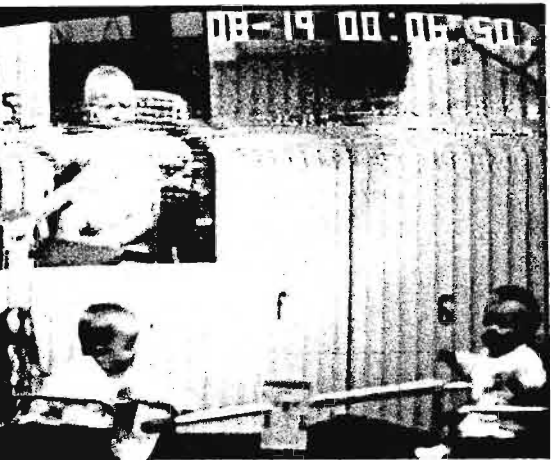
Plate 36
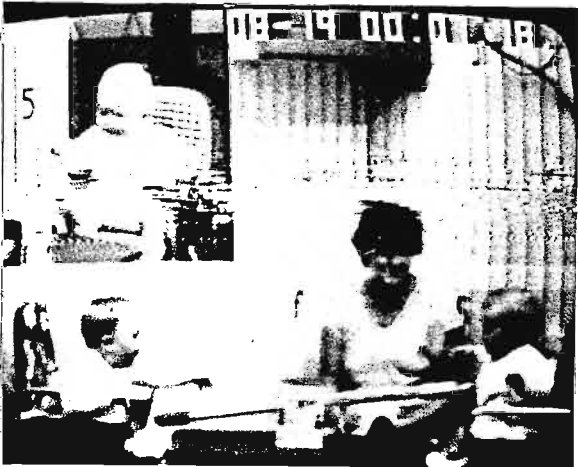
Plate 37

Crying, yet responding to AGBs by Playing (Fig. 23)

FIG.23 : CRYING, YET RESPONDING TO AGBs BY PLAYING :
          AG1 : SG1 : Visit 3 : 00:39:03 (Twins)

TIME *	TIMOTHY (C2)	JOANNE (C1)
6.28	Both looking away (Plate 32)	
6.31	Shakes handle, looking at C1 (AGB) (Plate 33)	
6.35		Looks at C2
		Plays while crying (Plate 34) (Compliance)
6.36		Slaps handle several times (Variation)
6.39	Plays (Plate 35)	
6.41	Shakes handle several times (Variation)	
6.46		Starts crying loudly - to end of session
6.50	Looks at C1 intently while touching handle (AGB) (Plate 36)	
	Mother enters - interruption of game : 13 seconds	
7.00		Plays (Compliance)
7.02		Slaps handle several times (Variation)
7.05	Plays, then watches C1 crying	
7.13		Plays and slaps handle several times (Variation)
7.18	Plays half down and points, looking at C1 (AGB)(Plate 37)	
		Cries
7.25	Shakes and Plays, watching C1 (AGB)	
7.30		Plays (Compliance)

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

Plate 38

Plate 39

Plate 40

Plate 41

'Show of strength' session (Fig. 24)

FIG.24 : 'SHOW OF STRENGTH' SESSION AG1 : SG2 : Visit 3 : M 00:45:00 (Singletons)	
TIME* PAUL (C1)	ANDREW (C2)
5.05 See-saws	
Look at each other	
5.08	Holds side down, looking at C1 (plate 38)
Look at each other	
5.15 Plays	
5.17	Holds side up, looking at C1
Tries to lift (Plate 39)	
5.20	Plays
Plays, then see-saws	
5.25	Catches side when it is down, holds it down
Look at each other	
Plays, holding it down	
	Holds it in up position (trying to Play?)
5.30 Look at each other	
5.35 Releases side	
	Plays and holds side down
Look at each other	
5.40 Both see-saw, trying to get control	
5.45 Plays and tries to lift	
	Watches C1
5.50	Plays and holds down
Both struggle for control (Plate 40)	
looking at each other intently	
6.01 Plays and holds it down (Plate 41)	
(Continues in similar fashion for complete session)	

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

One whole session with PAUL and ANDREW (SG2) appeared to be
competitive (Fig. 24).

AGBs included looking, rattling the handle, sometimes vocalising, and, on one occasion, shrieking. Most peers objected, by crying, to behaviours which prevented Play and to noisy Variations.

ANDREW's mother and his peer PAUL (SG2) used the same AGBs which, as already described, led to a brief communication sequence (Fig. 21, p. 116). However, in a peer session, when ANDREW tried mouthing the handle, which his mother had encouraged, PAUL cried. LAUREN's experience of AGBs from her mother (SG4) was a series of different game-like behaviours. The only AGB from her peer was a loud shriek.

3.5.2 Age group 2

Teaching

The mothers all gave full attention to the children. While a child was in pain, or upset, the mother seemed to be more accepting of 'incorrect' Play. Most mothers used clear instructions, but some used the words of a game, for example 'Mummy's turn' or 'Show me two' to instruct, and as AGBs. This strategy appeared to be ineffective most of the time, but the mothers persisted with it. The children all showed a lot of boredom, and there were a variety of mothers' AGBs, some of them in a string (Fig. 25).

Only one child, a singleton (SEAN SG9) did not appear to understand the Game. All the other children introduced Variations with their mothers and with their peers. Mothers did not show any particular pattern in accepting or objecting to Variations, and all accepted some and objected to others. When a Variation first appeared, some mothers smiled or ignored it, only objecting when the child persisted. Quiet Variations appeared to be more acceptable than noisy ones.

FIG. 25 : 'RUN' OF AGBs BY MOTHER :
AG2 : SG7 : Visit 4 : 01:29:04 (Twins)

TIME*	JULIA (C1)	MOTHER
10.00	Fretting, waving arms	"Come on, come on, darling" (AGB)
10.02		Points to light "Look at the light" (AGB)(Plate 42)
10.05		"Come on" (AGB)
10.06	Frets, points to adjacent room	Taps top of Toy (Plate 43) (AGB)
		Points to light (AGB)
		"Quickly, push your side down" (AGB)
10.15	Frets, points to adjacent room	"Julia, Julia" (AGB) Raps on table with knuckles (AGB)
10.20	Frets, points to adjacent room	"Julia" (Long, drawn-out) (AGB)
		"Push it down, darling, push it down" (AGB)
10.25	Looks at Toy	Pumps handle (AGB)
	Plays (Compliance)	"Clever girl" (Encouragement)

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

Games

Only two mothers used more than one game, or game-like behaviours. Half the children initiated games with their mothers. Some games were encouraged, others were objected to or ignored, but none were joined, even though some were verbal games.

Plate 42

Plate 43

'Run' of AGBs by mother (Fig. 25)

FIG. 26 : SEQUENCE OF AGBs :
AG2 : SG6 : Visit 3 : 01:28:00 (Twins)

TIME*	NICOLETTE (C2)	YOLANDA (C1)
		Looking away
5.40	Plays and vocalises (AGB) (Plate 44)	Looking away
5.45	Vocalises, looks at C1, rattles handle (AGB)	Looking away
5.47	Shakes handle several times, looks at C1 (AGB) (Plate 45)	Looks at C2 (Compliance) frets, and looks away
6.00	Loud vocalisation (AGB) (Plate 46)	Plays (Compliance)

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

Peers

All the peer sessions contained some periods of Play, but in each too there were periods when one peer wanted to Play while the other was disengaged. AGBs usually included vocalisations, and sometimes were persisted with (Fig. 26).

In one instance, a vocalisation to a mother acted as an AGB to the peer partner (Fig. 27). This incident also suggested that MARK may have associated the game of 'Down' with his mother only. The children's vocalisations were clearer than in AG1, and there were three verbal objections. There were instances of occasional shared communication in the sessions of one pair of twins (JULIA and SALLY, SG7).

Plate 44

Plate 45

Plate 46

Sequence of AGBs (Fig. 26)

Plate 47

Plate 48

Plate 49

Plate 50

Plate 51

Repetition of 'mother's game' starts peer game (Fig. 27)

FIG. 27 : REPETITION OF 'MOTHER'S GAME' STARTS PEER GAME :
AG2 : SG8 : Visit 4 : M 01.23.01 (Singletons)

TIME*	KIRSTY (C1)	MARK (C2)
	Holding handle, watching C2	
7.06		Looks at mother, says "Down" (Plate 47)
7.07	Plays (Plate 48)	
7.09		Laughs at mother (Plate 49)
7.12		Starts to Play, using hands (Plate 50)
7.14		Plays with foot (Variation)(Plate 51)
	Watches C2	
7.20	Plays (Encouraging)	
		Plays with foot, vocalises (Variation)
7.25	Looks at C2, vocalises and Plays (Encouraging)	
		Holds handle with both hands, laughing; looks at C1 and at mother
7.30		Looks at C1, vocalises twice; Plays, smiling and looking at C1.

* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Three pairs of peers joined game invitations.   YOLANDA and
NICOLETTE (SG6) showed co-operation even when joining proved to
be physically impossible (Fig. 28).
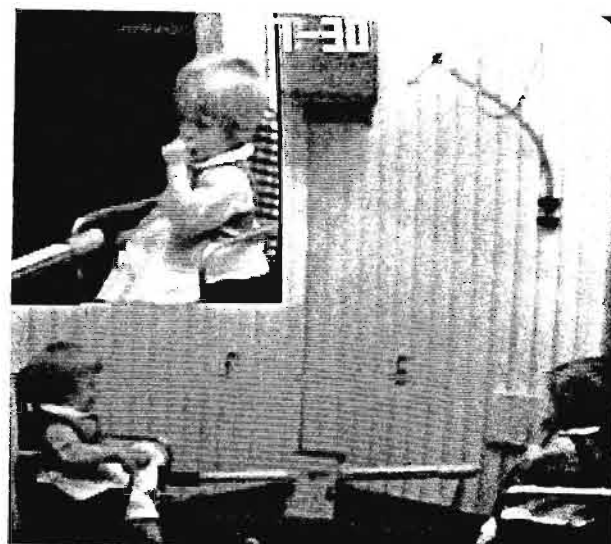
Plate 52
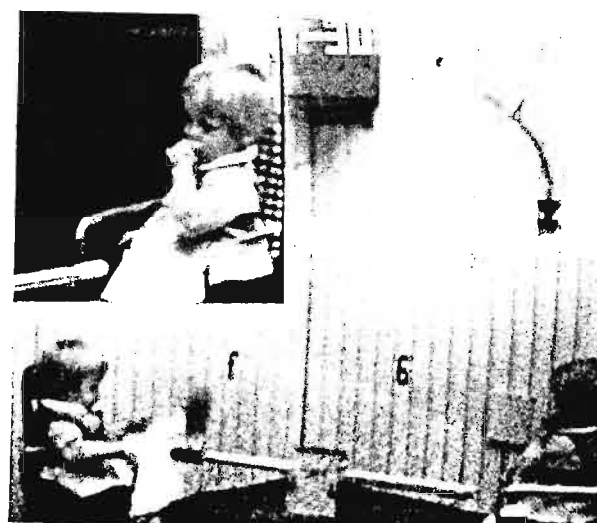
Plate 53

Plate 54

Accepting, Joining and Encouraging Variations (Fig. 28)

FIG. 28 : ACCEPTING, JOINING AND ENCOURAGING VARIATIONS : AG2 : SG6 : Visit 2 : 01:26:06 (Twins)		
TIME*	YOLANDA (C1)	NICOLETTE (C2)
11.06	Foot on handle; takes it off; screaming vocalisation (Plate 52)	Watches C1 (Accepting)
	Look at each other	
11.07	Plays with foot (Variation) (Plate 53)	Watches C1 (Accepting)
11.12		Plays by hand; tries to get foot up, unsuccessful (Joining) (Plate 54)
11.15	Plays with foot, then touches handle with hand.	Watches C1

	(Later in the same session)	
12.10		Looks away
	Kicks bar (AGB) (Variation)	Plays by hand (Compliance)
12.15	Kicks down a little (Variation)	Plays by hand (Encouraging)
12.20	Kicks handle half down (Variation)	Plays by hand (Encouraging)
12.25	Abandons attempt	

* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Plate 55

Making a game out of a startling event (Fig. 29)

FIG. 29 :   MAKING A GAME OUT OF A STARTLING EVENT :
            AG2 : SG7 : Visit 4 : 01:29:04 (Twins)

TIME*	JULIA (C1)	SALLY (C2)
6.00	Frets, reaching to light	
		Plays - arm of Toy sticks and comes down with a bang
6.01		Look at each other, startled
	Looks at mother (Plate 55)	
6.05	Bangs side down (Joining)	
		Bangs it down (Joining)
6.10	Plays	
		Plays
	Plays, vocalising and Smiling	

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

JULIA and SALLY (SG7) joined over the startling crash of a sticking handle (Fig. 29).

A long interaction sequence with positive affect occurred in this age group between 2 singletons who attended the same creche.   In spite of maternal prohibition, DARREN and KRIS (SG10) continued to play their own game with great pleasure.   It involved Playing, lifting, vocalising, laughing, pointing to the light and to the dolls on the wall, and clapping (Fig. 30).

Plate 56

Plate 57

Plate 58

Creche friends use Variations (Fig. 30)

FIG. 30 :   CRECHE FRIENDS USE VARIATIONS DESPITE MOTHER'S
            OBJECTION   : AG2 : SG10 : Visit 1:M 01:34:06
            (Singletons)

TIME*	KRIS (C2)	DARREN (C1)
10.00	Watches C1	Looks at mother, "Oh"
10.05		Plays, "Oh,oh", lifts side (Variation)
	Look at each other	
10.10	Watches C1	Plays and lifts side, "Oh" (Variation)
	Lifts side "Oh"(Joining)	
	Look at each other	
10.15		Plays by hand, looks at mother
	Look at each other (Mother : "Kris' turn" - an objection to the lifting variation)	
		Looks at mother
	Plays a little way down, then lifts (Variation)	
10.20	Mother:"Kris' turn" (Objection)	
	Looks at mother	
	Look at each other	
		Lifts side, glances at mother, Plays (Joining)
	Watches C1	
10.27		"Oh, oh" Bangs handle down Looks at mother "Mama?" lifts handle (Variation)
	Watches C1, smiling, lifts side with effort (Joining)(Plate 56)	
	Look and smile at each other	
10.35	Looks at C1, "Oh"	
		Lifts side (Joining)
	Laughs	
	Look and smile at each other	
	Lifts side (Joining)	
	Look at each other	
		Lifts side (Joining)
	Look and smile at each other	
10.40	Both seesaw	
	Points to light and vocalises	
		Looks at light
10.45	Looks at C1 and vocalises	
	Both seesaw	
10.52	Points to dolls on wall, "Baba"	
10.54	(Plate 57)	
		Follows point "Baba" (Plate 58)
	(Continue interacting to end of session)	

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

3.5.3 Age group 3

Teaching

The mothers did not all appear to be in touch with their children's changes of mood, and several did not get the children's attention consistently before giving instructions.   Non-compliance followed by boredom appeared to be a feature of half the mother-infant sessions.

Verbal AGBs ranged from whispers to shouts.   Three of the mothers exercised control by using verbal statements suggesting an external locus of control, for example, 'The lady will be cross' (SUSAN, SG13), 'Ireme's laughing at you' (KYLE, SG16), '...... will bite you' (LORRAINE, SG16).

Games and Variations

Four of the children had no games introduced by their mothers (JOANNA and ANTHONY, SG11; and SUSAN and CLINTON, SG13).   All the children, however, introduced Variations.   Two of the mothers objected to them all, but the other mothers accepted some and objected to others with no apparent pattern.   No Variations were joined by the mothers. The mother-infant interactions appeared to be happiest when many varied games and game-like gestures were introduced and the children's conversational overtures were consistently responded to (CATHERINE, SG12;   SHANI and DAVID, SG14).

Peers

The peer sessions differed considerably between the dyads and between the visits.   Unlike what was observed in younger age groups, a pair of peers who both showed considerable non-compliance in the mother-infant sessions, showed more action and interest when they Played together and joined each others' Variations (Fig. 31).

FIG. 31 : PEERS SHOW MORE CO-OPERATION THAN EITHER SHOWED WITH MOTHER : AG3 : SG11 : Visit 2 : M 02:00: (Singletons)

TIME*	JOANNA (C1)	ANTHONY (C2)
		(Interact from 10.20)
10.45	Plays, "Down" (Variation)	
10.50		Plays, "Down" (Joined)
10.55	Plays and holds side down (Variation)	
11.00		"Down", Plays with diffi-culty
11.01	Both looking intently at Toy	
11.05		Pulls bar ; table moves (Variation) Looks at C1
11.10	Pulls table (Joining), Plays	Pulls handle level
	Look at each other	
11.15	Plays	Plays, "Up..Now ..Whoo" (Variation)
	Look at each other	
	Mouths handle (Variation) (Plate 59)	Watches C1
11.16	Watches C2	Tries to mouth handle (Joining)(Plate 60)
11.25	Loud vocalisation, climbs in chair (Variation)	Vocalises and Plays
	Look at each other	
11.30	"More Mummy"	Smiles, watching C1
11.35	Puts feet on table and removes them "Feet away", looks at C2 (Variation)	Watches C1
11.39		Slaps handle and licks it (Variation)(Plate 61)
11.42	Looks at C2, lifts table (Variation)	Leans chin on handle, looks at C2 (Variation)(Plate 62)
11.50	Bangs side down (Variation)	Vocalises and smiles
11.55	Both smile	Vocalises
		Vocalises three times, looks at C1, smiles
	Look at each other	
12.00	Pushes table (Variation)	Pushes feet against table, chair rocks back(Plate 63)(Variation)
12.01	Watches C2 intently	
12.06	Looks round at own chair-back (Plate 64)	Plays, smiling, watching
12.13	Climbs up in chair (Variation)	Climbs up in chair, "Up" (Joining)(Plate 66)
12.15	Climbs up in chair (Plate 65) "Up"	
	(Continue interacting to end of session)	

*Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

Plate 59

Plate 60

Plate 61
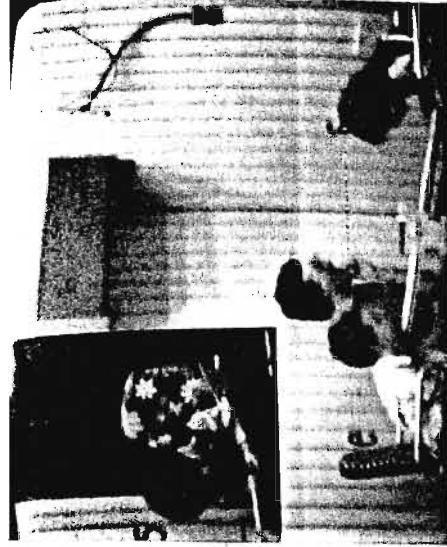
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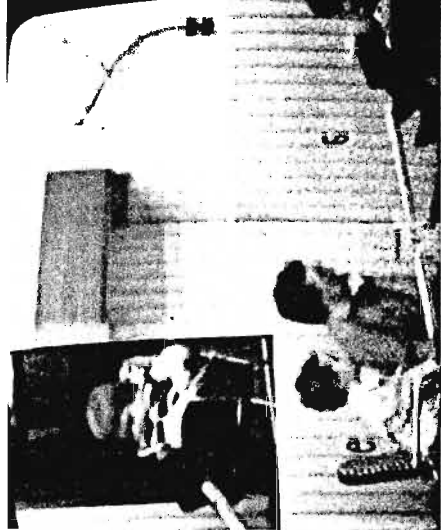
Plate 63
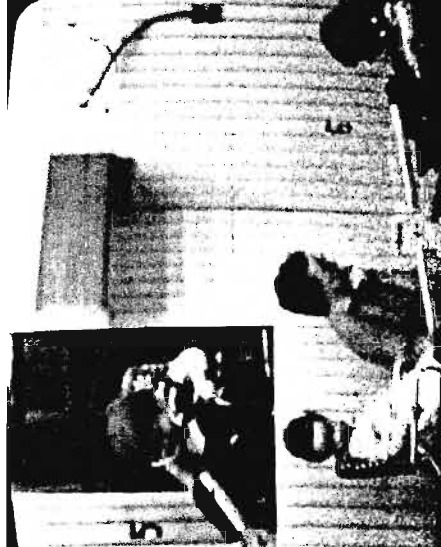
Plate 64

Plate 65
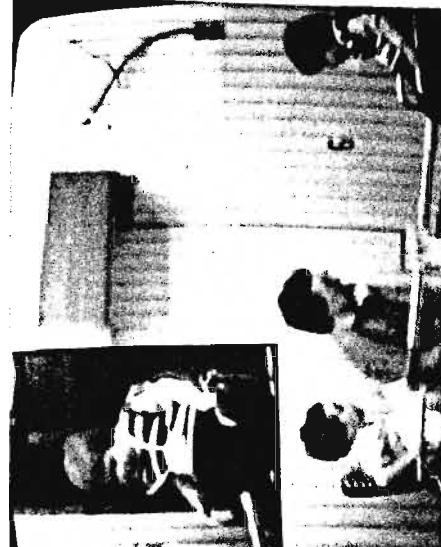
Plate 66

Peers show more co-operation than either showed with mother (Fig.31)

The only pair of twins in this age group appeared to communicate well when the handle did not stick early in the session. They appeared to enjoy being openly non-compliance (Fig. 32), as though they were not so much playing a game as working through some issue with their mother.

A pair of peers whose mothers were both very verbal and used many games and game-like behaviours showed that they could co-operate and communicate well throughout a session, although they were not occupied with the Game all the time (Fig. 33).

Peers whose mothers both encouraged an external locus of control (KYLE and LORRAINE, SG16) were involved in sessions with the most negative affect.

DAVID A. and LEE (SG15), except for brief sequences, did not appear to be communicating at all in or out of the laboratory.

The pattern that emerged overall appeared to be that when mothers had more similar strategies, the children appeared to communicate more positively, for example JOANNA and ANTHONY (SG11), SHANI and DAVID (SG14) and, of course, the twins SUSAN and CLINTON (SG13).

FIG. 32: TWINS USE VARIATIONS DESPITE MOTHER'S OBJECTIONS :
AG3 : SG13 : Visit 4 : 02:10:06 (Twins)

TIME*	CLINTON (C2)	SUSAN (C1)
	(Play from start of session)	
6.20	Feet on table (Variation)	
	Both look at mother, who shakes her head (Plate 67)(Objection)	
6.39		Play with foot (Joining) (Plate 68)
	Mother: "Get your feet off" (Objection)	
	Vocalises and looks at C1	
		Loud vocalisation, smiles
6.42	Plays with hand	
		Looks briefly into adjacent room (Plate 69)
		Plays with hand
6.45	Plays with foot (Variation) (Plate 70)	
	Mother taps foot (Objection)	
		Plays with hand
	Plays with hand, vocalises	
6.50	Plays with hand	
6.55	Vocalises	
		Plays with hand
	Plays with foot, looks at mother (Variation)	
7.00	Mother shakes her head (Objection)	
		Smiles
	Plays with foot (Joining)	
7.02	Look and smile at each other (Plate 71)	
	Mother shakes her head	
7.05	Vocalises, looks at C1	
		Vocalises, glances briefly into adjacent room
7.10	Tries to lift side, leans forward to touch light (Variation)	
7.14	Vocalises, looks at mother, touches light (Variation)	
		Gestures to light, smiles, vocalises (Joining) (Plate 72)
	(Continue to end of session)	

*Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Plate 67

Plate 68

Plate 69

Plate 70

Plate 71

Plate 72

Twins use Variations despite mother's objections (Fig. 32)

FIG. 33: A RANGE OF CO-OPERATIVE ACTIVITIES :
AG3 : SG14 : Visit 1 :M 01:46:00 (Singletons)

TIME*	DAVID (C2)	SHANI (C1)
10.05	Plays, lifts side, smiles	Looks at C2, points, "wait, wait, we playing"
	Look at each other	
10.09		Plays, gestures "Play"(Plate 73)
	Vocalises,smiles,Plays(Compliance)	
	Smile at the same time	
10.15		Plays,gestures, vocalising
	Plays, looking at C1	
	Smile at the same time	
10.20	Touches handle,looks at C1,	Plays,vocalises,looks at C2
	Vocalises	
	Look at each other	
		"Go on"
	Plays (Compliance)	
	Both see-saw handle	
	Holds hands at shoulder height (Variation)	
		Gestures, "Go on"
	Vocalises	
10.31		Look and smile at each other (Plate 74)
10.35		Shakes handle (Variation)
	Both look across the room	
10.40		Gestures in direction of gaze, vocalises, looks at C2
	Looks in direction of gesture (Plate 75)	
10.44		Shakes handle (Variation)
10.45	Vocalises	
		Repeats pointing gesture and looks across room,vocalises
	Follows gaze	
10.50		Looks at C2,vocalises
	Vocalises,smiles,Plays, hand at shoulder height (Variation)	
10.55		Plays, lifts side(Variation)
	Plays Look and smile at each other	
11.00		Plays,vocalises,covers mouth in playful gesture,looks at C2
	Smiles,Plays,"Here"	
11.05		Plays,points and looks at C2, "Play, play"
	Plays (Compliance)	
11.10		Plays, "Now Shani. Oh!" Covers mouth again
	Look at each other	

/Continued

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

Plate 73

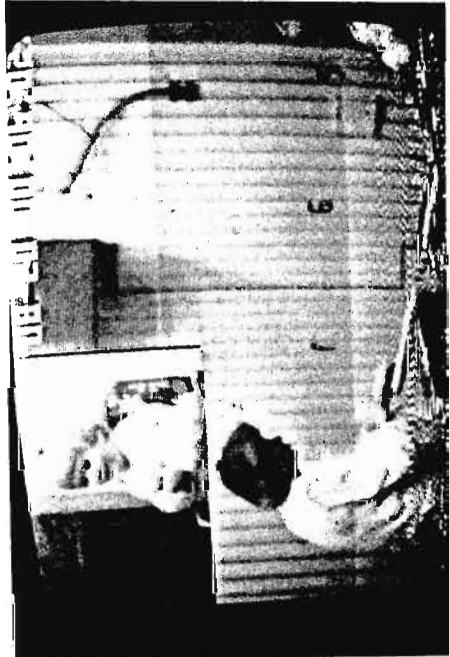
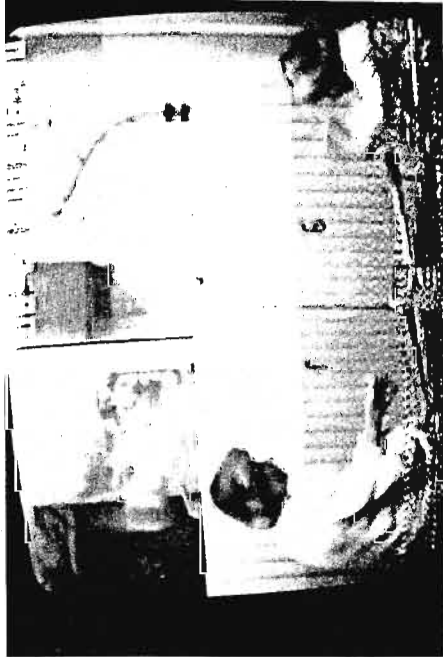Plate 74

Plate 75

A range of co-operative activities (Fig.33)

FIG. 33   Continued.

TIME	DAVID (C2)	SHANI (C1)
11.15	Reaches for light, "That is the light", points to side of Toy, vocalises	
11.16		Lifts, follows gaze (Plate 76)
11.20	"There's a button there, there's a button there", leans over, points, "See the button there"	
		See-saws, looking at C2, follows gaze
11.25	"See there's a button there"	
11.30	Both try to get closer to Toy	
	Look at each other	
	Both try to get closer to Toy	
11.35	Tries to get feet under himself on chair, "I can get ...I can't.."	Watches C2
11.40	Looks at C1, "I can't, Shani", Looks underneath himself in chair, "I can't .."	
	Look at each other	Watches C2 (Plate 77)
11.45	Holds up counter used in 'posting' game, "Money"	
	Look at each other	Watches C2, "Money?"
11.50	"Yes"	
11.55		Watches C2, vocalises
	"I've got some in my pocket. Want some?"	
	(Continue on similar topic until end of session)	

Plate 76

Plate 77

A range of co-operative activities (Fig.33)

3.5.4.   Age group 4

Teaching

The mothers in this group used far more speech and fewer gestures
than in the younger age groups.   Several mothers explained verbally
how the Toy and light operated, and encouraged experimentation
(NIALL, SG23; TARYN, SG19; MARC, SG20).   Modelling and physical help
were rare after the first few seconds of the initial session, and
sometimes made the recipient angry (STUART, SG23).

Five of the 15 mothers asked for help, or showed helplessness in
other ways, such as saying they would cry if not Played with, looking
apprehensively over their shoulders when the child Played roughly,
or referring to the expectations of the author, or of their husbands
(TREVOR, SG17; SCOTT, SG20; TYRONE, SG18; DAVID L. & MICHAEL, SG24).

Games and Variations

There were considerable differences between the number and types of
games used by the mothers.   Five of the mothers introduced one game
each (GARETH, SG18; ANDREA, SG19; BRIGITTE and SAM, SG21; CANDICE, SG22).

Variations in this age group were not clearcut.   For example,
sometimes non-compliance itself appeared to be a Variation (Fig. 34).
SCOTT kept doing the prohibited actions while verbalising that they
were examples of what not to do (Fig 35, p. 135).

FIG. 34 : NON-COMPLIANCE APPEARS TO BE THE GAME :
AG4 : SG21 : Visit 3 : 02:32:02 (Singleton)

TIME*	SAM (C2)	MOTHER
	(At first, Same refuses to Play)	
10.46	Lifts foot to handle (Variation)(Plate 78)	
	Look at each other	
		Shakes head, "Not with your feet" (Objection)
10.50	Plays with his foot (Non-compliance)	Gestures, "Not with your feet"; removes foot,"No, you'll break it with your feet" (Objection)Plays
10.54	Hands to ears, Plays with foot (non-compliance)	"Uh, uh! With your hands", Plays (Objection)
11.01	Plays with foot (non-compliance)(Plate 79)	
	Look at each other	
		"Sam" (Objection)
11.05		"With your hand, not with your feet" Removes foot (Objection)
	Look at each other	
11.10	"Please?"	
	Look at each other	
		"No, you can't do it with your feet" (Objection)
11.15	Plays (compliance)	Gestures,"Come on,push it down".
11.20	Plays, keeps hands on "Say 'Take your hand off'"	"That's it, Mommy's turn", Plays. Gestures, "Sam's turn"
	Look at each other	
11.25		Gestures,"yes, you must take your hand off", Plays (compliance)
11.28	Plays with foot,smiling (non-compliance)(Plate 80)	"No,with your hand,with your hand", gesturing (objection)
11.35	Plays	Removes his foot,"Mommy's turn", Plays
11.40	Bangs down (Variation)	"No, nicely" (objection)
	Look at each other	
	Bangs down (non-compliance)	"No", Plays for him,"Like that see?" (Objection)
	'Forces handle up (Variation)	"Uh,uh!Down",Plays for him."Mummy's turn" (objection)
11.45	Forces side up, shakes it, lifts leg (non-compliance)(Plate 81)	(Continues in similar manner to end of session)

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

Plate 78

Plate 79

Plate 80

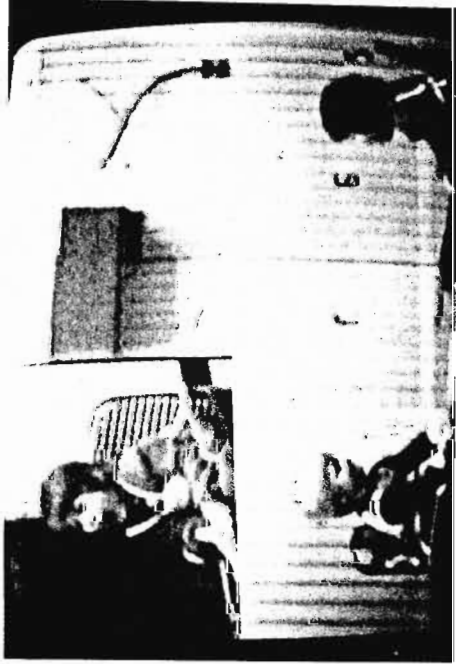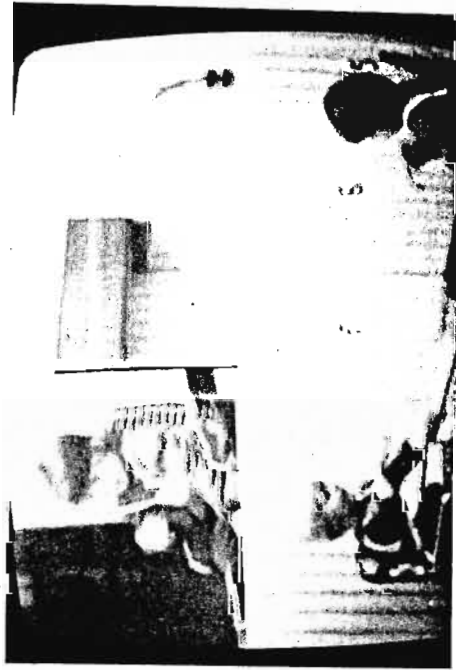Plate 81

Non-compliance appears to be the game (Fig. 34)

FIG. 35 : DEMONSTRATING AND VERBALISING WHAT NOT TO DO: GETS BORED :
AG4 : SG20 : Visit 4+: M 02:23:06 (Singleton)

TIME*	MOTHER	SCOTT (C1)
7.35	Vocalises, models flat palm	
		Plays
	Plays	Plays, keeps hand on handle
7.40	"Hands up like Mummy, gently", Plays, lifts hands to ears (Objection)	
		Plays, clasps hands over chest (Compliance)
7.45	Plays, "Do it like Mummy, let's see, that's it, hand off"	
	Look at each other	
		Plays carefully, watching mother (Compliance)
7.50	Plays, smiles, gestures to him to remove hand	Smile at the same time
		Plays with one finger (Variation) (Compliance)
7.55	Plays	Smile at the same time
	Plays carefully (Joining)	Plays carefully (Variation)
		Smile at the same time
8.00	Dismissive gesture, Plays, "That's not like Mommy, that's like a baby (Objection)	
		Slaps side down, smiling, looks at mother (Variation)
		Slaps side down (Variation)
8.05	Gestures again, "That's not like Mommy", Plays (Objection)	
		Plays carefully with one finger, watching mother (Compliance) (Variation)
		(Demonstrating), vocalises
8.10		Plays, looks at C1, smiles
		Shakes head, "I do it not hard" (Verbalising)
8.15	Shakes head "Mm, mm, do it gently like Mommy does it"	
		Shakes head, "And not hard, not hard" (Verbalising)
	Points to C1, "It's your turn. No, not hard, not nice to do it hard"	
	Look at each other seriously	
		/Continued

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.
+ Tape unsuitable for photographs.

FIG. 35   Continued.

TIME	MOTHER	SCOTT (C1)
8.20	"Gently"	"Gently now (Verbalising)"
		Plays seriously with one finger (Demonstrating)
		(Variation), keeps finger on
	Models open hand, "that's right, take your fingers off" (Objection)	
		Watches mother, takes finger off (Compliance)
8.25	Plays, points to light, "You make the light come on"	
		Plays (Compliance)
8.30	"You see, if you do it gently, the light comes on", Plays	
		Smiles, looks at mother, slaps handle down (Variation)
8.35	"No, no" (Objection)	
		"Must do it gently", looks at mother, lifts handle, Plays (Verbalising) (Variation)
	"I never do that", making slapping motion, Plays	
		Watches mother, slaps down "You never do that" (Verbalising) (Demonstrating)
8.40	"No", Plays gently, looks at C1	
8.45		"Must not do it hard, but gently", shakes handle (Variation) (Verbalising)
		Lifts, forcing it (Variation)
8.50	Look at each other	
	"Don't pull it up, gently"	
		Plays, "That's it" (Verbalising) (Compliance)
8.55	Nods, "That's it", Plays carefully	
		Plays carefully
9.00	Plays	
		Plays, it sticks and bangs down
9.05	Plays	
		Slaps handle down, shakes head "I didn't do it like that, I didn't do it like that" (Verbalising) (Demonstrating)
9.10	"You just did", Plays (Objection)	
		Plays, serious
	Plays, "That's right. Take your hand off. Now Mommy"	
		Slaps handle down, smiling, puts hands on head (Variation)
9.15	Keeps her eyes on Toy, Plays	
		/Continued

FIG. 35 Continued		
TIME	MOTHER	SCOTT (C1)
9.20		Looks at mother,"No,I don't want to play"
	"Play with Mommy. I'll get upset if you don't play with me. It's my turn to Play.	
9.25	"Quickly, it's your turn to go, quick"	
9.30		"I don't want to play with you (Non-compliant)
9.35	"It's your last turn to play this with me, it's your last turn"	
		Looks at mother, "No",Plays, holds side down (Variation)
9.40	Tries to Play, holds up finger admonishingly (Objection)	
		Lifts side up,looks at mother vocalises,Plays(Variation)
9.45	Touches handle, looks away with helpless gesture (Objection)	
		Forces side up, Plays,looks at mother (Variation)holds handle
9.50	"Take your hands off",gestures, "Finish your turn,please" (Objection)	
		Watches mother, "No" (Non-compliant),holds handle
9.55	Gestures (Objection)	
		Removes hand (Compliance)
	"Then I have my turn",Plays	
	Look at each other	
		"Want to get down"
10.00	"Come on,come on"	
		"I don't want to" (Non-compliant)
	(End of session)	

Several children seemed to try to verbalise or indicate that they
wanted their mothers to join their games, for example :

GARETH (SG18, Visit 2)   :   'Now I push down quickly.'
                                'Come on, come on, push.'

LESLEY (SG22, Visit 2)   :   Mother :   'Let me.'
                                Lesley :   'No, let's both do it.'

TARYN (SG19, Visit 4)   :   Mother :   'It's my turn.'
                                Taryn :   Shakes head and tries to lift.

NIALL (SG23, Visit 4)   :   Mother :   'It won't come up.'
                                Niall :   'You can.'

The mothers generally ignored these indications.   At other times,
they explained and modelled the rules of the Game again (Fig. 36),
or helped them physically again (SCOTT, SG20; SAM, SG21).

TIME*	MOTHER	GARETH (C1)

FIG. 36 : CONTINUOUS ATTEMPTS TO VARY WITH ATTEMPTED VERBALISATION: AG4 : SG18 : Visit 2 : M 02:17:00 (Singleton)

TIME*	MOTHER	GARETH (C1)
5.10	"Now, don't forget"	
		Holds side down (<u>Variation</u>)
5.15	"Now, wait,wait,take your hand off, my boy"(<u>Objection</u>)	
		Removes hand (<u>Compliance</u>)
5.20	"Mummy push down, see", Plays exaggeratedly with flat palm	
		"Now I push down quickly",slaps down (<u>Variation verbalised</u>)
5.25	"No,wait,wait,push harder, see" (<u>Objection</u>)Plays	Plays (<u>Compliance</u>), "Come on,come on,push down", holds side down (<u>Variation verbalised</u>)
	Look at each other	
	"No,no,let go,Mummy push" (<u>Objection</u>)	
	Look at each other	
	Plays	Takes hand off (<u>Compliance</u>)
5.30	Look at each other	
		"Gareth push"
	"Gareth push",pointing, speaking very slowly	
		Plays, removing hand(<u>Compliance</u>)
5.35	Look at each other	
	"Softly,my boy,look like Mummy does, look" Plays gently (<u>Objection</u>)	
		Touches handle, then removes hand, looking into adjoining room, vocalising
5.40	Follows gaze,"Gareth, you push down now, see" (<u>AGB</u>)	
		Turns back, Plays quickly (<u>Compliance</u>)
	Look at each other	
5.45		Tries to lift handle(<u>Variation</u>)
	"Take your hand off" (<u>Objection</u>)	Removes hand (<u>Compliance</u>)
	Plays	
5.50		Plays, holds handle (<u>Variation</u>)
	"Handy off"(<u>Objection</u>)	
		Removes hand (<u>Compliance</u>)
	"That's right",Plays	
5.52		"Look",points to light(Plate)
	Smile at the same time	(<u>Variation</u>)
		/ Continued

* Exact times appear when there is an illustrating Plate. Otherwise the relevant 5-second interval is quoted.

FIG. 36   Continued.

TIME	MOTHER	GARETH (C1)
5.55	"Yes, there's the light; you put the light off, you push down" (Joining)	
6.00	"Put the light off", Plays	Plays, "Light off" (Compliance)
6.02		Smiles, Plays, laughs, claps hands, shouts "Light off, Mummy", looks at mother (Variation) (Plate 82)
6.05	Plays seriously	Slaps down with laughter (Variation)
6.10	Plays seriously, gestures "Gareth, softly now" (Objection)	"Light off, Mummy"
	Look at each other	
		Plays halfway down, while looking into adjoining room
6.15	Look at each other	
		"Put the money, put the money, Mommy"
6.20	Plays seriously	Vocalises, slaps handle down (Variation)
6.25	"Softly, boy, gently, like Mummy does it. Look how Mummy does it, down" Plays (Objection)	
6.30	"That's right, handy off, down", Plays slowly	Looks at mother, Plays slowly (Compliance)
		Pounces forward excitedly, slaps handle down (Variation) (Plate 83)
6.35	Serious, "Phew" (Objection) Plays, "Now go"	Slaps down hard (Variation)
6.40	"No, softly, by boy, softly, like Mummy does it, like this", Plays	Slaps down with both hands, looks at mother (Variation)
	(Continues in similar manner to end of session)	

Plate 82

Plate 83

Continuous attempts to vary (Fig. 36)

Peers

All the peers gave some evidence of enjoyment. They were more verbal that in younger age groups, both in their AGBs and in their conversation.

There were indications that the children knew that with their peers they were not behaving according to the rules insisted on by their mothers. For example, when they did something 'wrong', several of them looked quickly into the adjoining room where their mothers were. MARC and SCOTT (SG20) made this verbally explicit at the end of Visit 4 (Fig. 37).

Except for a few brief sequences, BRIGITTE and SAM had interactions with the most negative affect (Fig. 38, p.143).

TIME*	MARC (C2)	SCOTT (C1)

FIG. 37 : PEERS VERBALISE THEIR AWARENESS OF CHANGING MOTHERS' RULES:
AG4 : SG20 : Visit 4[+]: M 02:23:06 (Singletons)

(Marc's mother sits alongside Toy; peers play well
from start of session; very quick Play - up to 8
'Plays' in a 5-second period)

5.50   Look and smile at each other

                      Plays

Plays

                      Plays, lifts side,smiles
                      (Variation)

      Look at each other
Serious, hands to mouth, looks
at C1

      (Mother smiling at Toy)

6.00   Plays slowly, smiles,holds
                   side down (Variation)

Tries to Play

                   Lifts side,Plays,smiles
                   (Variation)

6.05 Slaps side down hard,looks at
C1 (Variation)

                   Slaps down hard (Joining)

Slaps down hard

      Smile at the same time

                   Smiles at mother, slaps down

Slaps down,looks at mother

                   Slaps down

   (They get out of turn,smile at each other,continue
with very fast Play. C1 lifts side three times)

7.25 Holds side down, using two hands
(Variation)

                   Vocalises, slaps side down,
                   looks at C2 (Variation)

Plays

                   Vocalises

7.30   Plays,smiling at mother,
                   "He likes playing like I do"

(To mother) "I just love it,
Mommy", Plays

                   Plays
      (End of session)

+ Tape unsuitable for photographs.
* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

143

FIG. 38 : SESSION WITH NEGATIVE AFFECT :
AG4 : SG21 : Visit 3 :M 02:32:05 (Singletons)

TIME*	SAM (C2)	BRIGITTE (C1)
	(Bar is level - both shake handles and prevent Play)	
		Look at each other
		Slaps side but cannot move it
5.10		
	Forces side down	Lifts side, whole table tilts
		Look at each other
5.15		Forces side down
5.20	Looks at C1	
		Both hold bar level
5.25		Looks at C2, shouts very loudly, seesaws rapidly, gets control of Toy
5.30	Shouts loudly, "I've got it, I've got it, leave hands off"	
		Both hold bar level
5.35	"My turn, my turn, my turn"	
		Heads forward, staring at each other
		slaps handle, screams
5.40		(Quietly) "My turn", forces it down
	"It's now my turn", forces it down	
5.45	"your turn, there, there, there"	
		Plays
		Look at each other
	Shouts "You must leave it", teeth clenched	
5.50	Shouts, stamps feet on step of chair, pulls at handle	
		Hangs on, screams, looks into adjoining room (Plate 84)
		Look at each other
5.55	"My turn too, my turn too, hey Ma?"	
		Flaps hand at C2,"My turn"
5.57	Flaps hand at C1 (Plate 85)	
		Look at each other
6.05	"Don't say that"	
		Nods head several times
	(Continues in similar manner to end of session)	

* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Plate 84

Plate 85

Session with negative affect (Fig. 38)

Plate 86

Plate 87

Plate 88

Plate 89

Long co-operative sequence (Fig. 39)

FIG. 39 : LONG CO-OPERATIVE SEQUENCE AFTER THREE PEER SESSIONS
WITH NEGATIVE AFFECT :
AG4 : SG17 : Visit 4 : M 02:13:01 (Singletons)

TIME*	TREVOR (C1)	DAVID (C2)
5.05	Smiles, Plays	Plays
	Plays	Plays
	Plays	Plays, holds side down (Variation)
	Slaps handle several times, does not get it down	
5.10	Smiles, looks at C2, Plays with little slaps (Variation)	
		Plays
	Plays	Plays
5.15	Vocalises, tries to lift (Variation)	
	See-saw, look at each other	
	Smiles, Plays	
5.20		Smiles, Plays
	Plays	
		Plays, hits handle a few times (Variation)
5.25		Tries to lift, hits handle a few times (Variation), smiles, looks at C1
	Slaps handle down (Variation)	
5.30		Plays
	Smiles, Plays	
		Plays
	Points to side of Toy (Plate 86)	Looks to other side of Toy, then
5.32	Holds side down (Variation)	follows gesture (Plate 87) Plays with difficulty
5.35	Plays, points, "Put the light off", looks at C2 (Invitation)	Looks at C1, "Put the light off there" (Joined)
5.40	Holds side down (Variation) Looks at C2, "Put the light off there, put the light off"	
		Looks at C1, tries to Play
5.45	Smiles, looks at C2, still holding side down, "Put the light off", slaps side	
5.46		Slaps side, but can't Play down. Lifts hands high (Plate 88)
5.50		Slaps handle down, looks at C1 (Invitation)
	Look and smile at each other (Plate 89)	
		/continued

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

FIG. 39	Continued.	
TIME	TREVOR (C1)	DAVID (C2)
5.50	(Continued)	
	Slaps handle down (<u>Joins</u>)	
		Slaps down
	Slaps down	
		Slaps down
	Folds hands under chin, screams (<u>Variation</u>)	
	Look and smile at each other	
5.55	Holds side in 'up' position <u>(Variation)</u>	
		Tries to lift, looks at C1
6.00	Plays	
		Plays
	Plays and smiles at C2	
		Plays, holds side down (Variation)
	(Fast, intense Play continues to end of session, with a 45 second interval in which they both call their mothers.)	

TREVOR started the first session with antagonism, which appeared to make DAVID cry. He refused to Play with TREVOR during visits 2 and 3. The final session was enjoyed by both of them, and the affect was positive (Fig. 39).

TYRONE and GARETH (SG18) were the only peers in this age group whose parents were not friends. The boys had chosen each other as friends in the creche they attend. They appeared to enjoy their first session, which was much more verbal than those of the other peers, and which showed little variety in the Variations (Fig. 40). After that, they became bored very quickly.

FIG. 40 : CRECHE FRIENDS - COMMUNICATION MAINLY VERBAL :
AG4 : SG18 : Visit 1 : M 02:16:00 (Singletons)

TIME*	GARETH (C2)	TYRONE (C1)
10.00	Both see-saw	
10.05	Look and smile at each other	
10.10	Both see-saw	
	Gets side down, smiles	
		"I'm going to break it"
10.15		Gestures, "Going to break it now", twists handle (Variation)
10.20	Looks at C1	
		Vocalises
10.25	"Break it" (Joining)	
	Both look at Toy	
		"Break it"
	Tries to lift side (Variation) "What, going to break it"	
		Smiles, watching C2
10.30	Plays, "Ooh, I'm going to break it"	
		Plays
	(Continue in this manner, with a short break when C1 calls his mother who responds verbally)	
11.40	Slaps down (Variation)	
		Looks at C2, Plays
	Slaps handle down, looks at C1 (Variation)	
		Plays, "Don't bash" (Objection)
11.45	Slaps handle down (Variation)	
		Gestures, looks over shoulder, "Gareth broke this" (Objection)
11.50		"You're going to break it"
		Plays
	Look and smile at each other (Plate 90)	
	(Continues in same manner until interaction peters out at 12.10)	

* Exact times appear when there is an illustrating Plate.
Otherwise the relevant 5-second interval is quoted.

Plate 90

Creche friends (Fig. 40)

FIG. 41 : TWIN PREVENTS PEER FROM LIFTING SIDE : AG4 : SG24 : Visit 3 : 02:09:04 (Twins)		
TIME*	DAVID L (C1)	MICHAEL (C2)
5.15		Holds side down, looks at C1 (Variation)
	Tries to Play, seesaws	
5.20	Bangs side down, then lifts just before C2 can Play (Variation)	
	Look and smile at each other	
5.25	Glances into adjoining room	
		Taps handle, looks at C1, smiles (AGB)
	Look and smile at each other	
	Plays and lifts side (Variation)	
	Look at each other, laugh, and both glance into adjoining room	
	Plays and lifts side (Variation)	Holds handle
5.30	Plays, tries to lift	
		Prevents the lifting by banging side down. Glances into adjoining room
	Smile at the same time	
	Plays, tries to lift side	
		Catches handle, bangs side down
	Smile at the same time	
	Glances into adjoining room, Plays	
	Smile at the same time	
	(Observed intermittently throughout the rest of the session)	

* Exact times appear when there is an illustrating Plate.
  Otherwise the relevant 5-second interval is quoted.

In a session with the only twins in this age group, MICHAEL was
able to prevent DAVID L. from monopolising the Game by constant
Playing and lifting (Fig. 41).

3.5.5   Comparison of twins and singletons over AG1 and AG2

The children in AG1 who appeared to be the most immature physically were the twins KAREN and MARK (SG2), who appeared to have difficulty in carrying out the physical acts needed to Play. It seemed as though MARK was not always capable of voluntary hand release. TARRYN and LEIGH (SG3) did not appear to understand what was required, but appeared to communicate with each other several times in the peer sessions with vocalisation and gesture (Plate 91). The one singleton who did not appear to understand what was required was SEAN (SG9) in AG2. However, he was physically capable of Playing.

The mothers of the twins in these two age groups used no games at all.

In AG1, the children who understood the Game soonest appeared to be the twins JOANNE and TIMOTHY (SG1), in spite of the fact that JOANNE was having a painful teething episode (Fig. 23 p.118). The interaction sequence with the most Variations in this age group occurred in one of their peer sessions (Fig. 14 p. 108).

Over both age groups, the twin peer sessions showed the most positive affect.

3.5.6   Comparison of boys and girls over AG3 and AG4

No sex differences were observed.
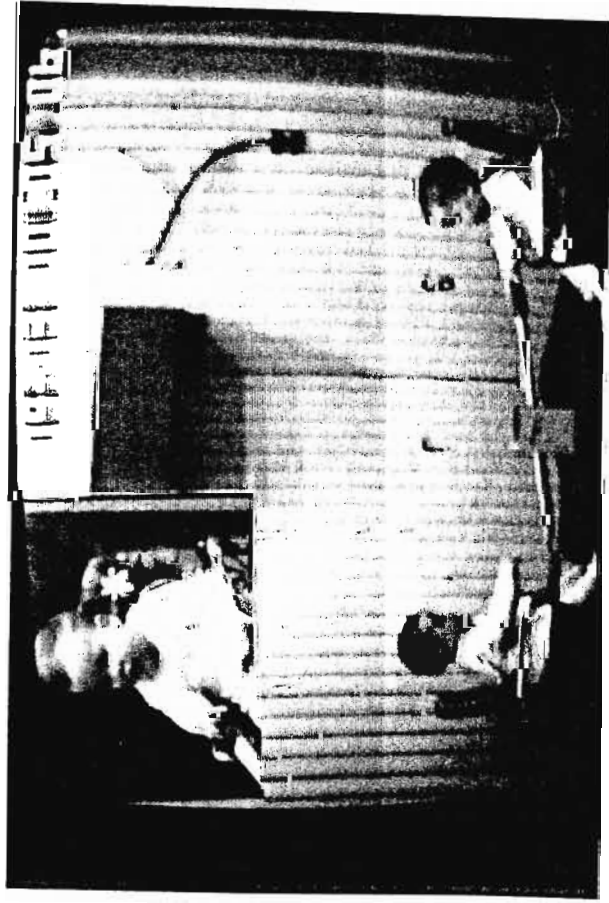
Plate 91

Communication in AG1 twins

3.6   DISCUSSION

3.6.1   Mothers and peers

As already mentioned, when designing this study, it was felt to be important not to decide ahead of time (a priori) on specific behaviours to be observed, but to allow the choice to emerge from the data itself (post hoc).   The final coding was decided on after viewing many of the videotape recordings several times each.   The amount of turntaking (defined as pushing down the handle in turn, at least two turns by each player) and the amount of compliance that occurred were chosen to indicate the amount of engagement between dyads.

When the analysis of additional measures was undertaken, it became clear that although turntaking and compliance were indeed co-operative activities that appear to have relevance in the mother-infant sessions, in the peer sessions they made up only a small part of the co-operative activity taking place.   It is therefore considered likely that Turntaking and Compliance are not sufficiently representative of the different behaviours that make up Engagement.

As anticipated, the discrete measures analysis showed significant differences between the behaviours in the mother-infant and peer situations.   Behaviours leading to interaction were more frequent in the mother-infant sessions, and solitary and disengaged behaviours were less frequent.   This is understandable, since the mothers were generally fully involved throughout the sessions, using their superior ability as communicators and 'engagers' of their children's interest to encourage as much co-operation as possible.   As anticipated, too, significant differences in infant behaviours over the age groups were found, as the children became more active or began to vocalise more, for example.

However, among results which were not anticipated, were the patterns of game Initiations and game-playing.   Not all the mothers introduced games as a strategy to encourage co-operation from their children. When they did, the games could be verbal, like 'see-saw' or 'your turn,

my turn', they could involve whispering or imaginative stories, or
they could involve game-like gestures.   The children could not always
join in because they were sometimes too young to have the physical or
verbal skills.

What became noticeable over the age groups was that the children, too,
tried to introduce variations and games.   Whereas originally the
variations observed were considered to be interruptions of turntaking,
further examination showed them to be indications of more complex
interaction than simple turntaking.   Unlike seemingly irrelevant
manipulating which decreased with age in both mother-infant and peer
situations (as also found by Hubley & Trevarthen, 1979), variations
only occurred after the children had demonstrated that they understood
how to Play 'correctly' by pushing the handle down in turntaking fashion.
The turntaking mode was often maintained, but a variety of styles of Play
were introduced using hands or other parts of the body, and verbal
turntaking games were also observed.

Variations was the only behaviour which showed no significant difference
over the age groups or between the mother-infant and peer sessions
(Table 15, p.85).   This does not tie in with the findings by Escalona
(1973) that more game initiations occurred in children below the age
of one year than in those between one and two years.   The discrepancy
may be due to the fact that she was looking at familiar, well rehearsed
games such as 'peek-a-boo', not at original variations.

However, the responses to those variations were different in the two
situations.   Variations were prohibited significantly more often in
the mother-infant situation and were joined significantly more often
in the peer situation (Table 14, p. 84).

It seemed that, although the same Toy was being used, different
activities were being carried out in the two situations.   Speier
(1973) points out that the setting in which interactions occur provides
a frame for understanding them.   For example, sitting in a chair
would be interpreted as 'working' if the setting were an office, and
'relaxing' if the setting were a garden.   Perhaps we have a children's

culture side by side with an adult culture, so that children's behaviours need to be interpreted differently from the same behaviour performed by adults. For example, as Speier points out, when a child sits on a pavement watching a street scene, it is not unusual, whereas it would be unusual for an adult. In the same way, when a mother plays a game with her child, perhaps it would be more accurate to interpret it as 'teaching', whereas when two children play together, perhaps that could be interpreted as 'playing'.

The difference between these two activities can be seen more clearly by referring to Eckerman & Stein's Four Essential Characteristics of Co-operative Play (Table 1, p. 28). In the mother-infant situation, the sessions were task-oriented. Communication often became serious, and at times regressed to the level of demand and counter-demand. Although the mother had greater skill in engaging the child's attention, it was used to get him to do something that she wanted him to do. As Youniss put it, there was 'reciprocity by complement'. One person was in charge, and the other had to act in accordance with demands if he wanted approval (Youniss, 1980). The child had no control, which is one of the satisfying features of social play (Garvey, 1974).

In the mother-infant situation, therefore, the first characteristic of Table 1 was generally satisfied, since the mothers had skill in engaging the attention of the children. The relationships (characteristic 2) were largely reciprocal ones, with each actor doing the same thing in turntaking fashion. The tone generally satisfied the requirements of co-operative play (characteristic 3). However, it was not always clear that the engagement was for its own sake (characteristic 4). In the large majority of cases, the child appeared to be involving himself because he was required to do so. This relationship is considered to be a co-operative one, since compliance is seen as a co-operative act. However, it does not appear to be game-playing, because freedom to play or not to play would seem to be a basic requirement of game-playing.

In the peer sessions, co-operative game-playing appeared to be occurring, but not necessarily in the expected turntaking fashion.

What Youniss describes as 'direct reciprocity' was seen. That is, each child appeared to be free to contribute the same act or a different act. They were also free not to play at all. Significantly less engagement was seen compared to the mother-infant situation. However, when the children were engaged, all the characteristics set out in Table 1 were satisfied, and examples of all the different types of meaningful relationships were observed.

As suggested by Vandell & Wilson (1983), interactions of longer duration did appear to be indicative of greater social interest and ability. The short interaction duration of peers in AG1 ties in with Sheridan's suggestion that children of that age operate on short-term memory, since long-term memory only starts building up then (Sheridan, 1977). It is not clear whether the constant variations in the older age groups are also related to short-term memory, short attention spans, or to creativity, but the sessions certainly did not appear to be 'task-oriented'.

Bronson (1981) suggests that learning with mother must be a forerunner of communication with peers, since the child must have feedback to understand what his behaviour means to others, and peers rarely provide feedback. The play that kept the children engaged, however, were not re-enactments of the game as taught by the mothers, but were mainly new games which the children generated themselves. This ties in with Youniss' observation that early opportunity for co-operative play could bring out the infants' creativity. Eckerman & Stein (1982) comment on the skill this kind of play shows in a 2-year old, which was the age group they studied, but examples were observed in this study with peers from the age of 40 weeks. Furthermore, in reporting on turntaking in 10-month olds, Eckerman (1979) reported an average lag of 20 seconds between the actions of the two children. In this study, responses were recognised only if they occurred within five seconds. Therefore the results could be under-estimating the true level of behaviour possible.

According to Trevarthen (pers. comm.), a mother usually offers the level of instruction the child is ready for. This observation applied to

very young infants observed with their mothers in a free-play situation.
It did not appear to apply to the majority of mothers in this study.
The Game, as taught, did not seem to provide sufficient novelty or
difficulty to keep the children's attention for long after they had
learned how to Play.   As already mentioned, the children's apparent
boredom and non-compliance were features of the AG2 and AG3 mother-
infant sessions.   Escalona (1973) found this as well, and suggested
that at 15 to 18 months, oppositional behaviour appears to become
important in its own right.   Children in her study became less compliant
even though prohibitions did not increase, as they tended to do for those
age groups in this study (Table 12, p. 80).   Physical Activity in this
study increased significantly from AG1 to AG2, as can also be seen from
Table 12, and this tends to support Escalona's suggestion that non-
compliance at this age could be based on developmental changes.
However, the positive correlations found between Engagement and Evoking
Co-operation behaviours for singletons in AG3 only, suggests that these
behaviours may not have been appropriate in the other age groups.

Some mothers in each age group did indeed appear to be sensitive to the
needs of their children, using 'shaping' behaviours in the youngest age
group, praising the children appropriately throughout the age groups,
responding to their conversation and game initiations where possible,
and changing their own game patterns when the child's interest flagged,
as was found by Greenbaum & Landau (1979).   Other mothers did not show
such awareness.   For example, focussing on the light in the older age
groups often became an important way of attracting and holding attention.
When a mother in AG1 tried it, however, the child apparently confused
references to the light on the Toy with probably familiar references to
the light in the centre of the ceiling (SG3).   The child's attention
was therefore diverted from the Toy each time the mother said, 'Where's
the light'.   Yet she continued with this self-defeating strategy
throughout all the sessions.

Also, the language of several mothers in AG2 appeared to be at a very
simple level.   For example, several mothers persisted in the use of
phrases such as 'Mummy's turn' when it was proving ineffective in
motivating the child to Play.   The absence of more complex language
may mean that the mother's requirements were not difficult enough to

be stimulating, and ties in with the finding by White et al (1979) that the caretaker's language was judged to be too simple for the child one fifth of the time. This finding referred to children in the 10 to 11-month age range, but appeared to be more noticeable in this study in the 15 to 20-month age range.

The introduction of games by 5 children in AG2 and all the children in AG3 may have been their way of indicating that they were ready for more stimulating and complex interactions. The fact that these indications were not generally taken up by the mothers may have been due to lack of sensitivity. On the other hand, it may have been a function of the task the mothers were given. They were required to be demanding on one hand in order to teach, yet appropriately responsive on the other hand to the fluctuating interest, immaturity, and sometimes physical discomfort of the child. Although mothers always do have these two aspects of child-rearing to deal with, it is not generally necessary to condense them into the short space of 2.5 minutes.

Wells (1975) found that mothers of 15-month olds taught them a task by getting their attention and then giving verbal instructions with gestures. The task was one which could be carried out by one person, such as putting a lid on a basket. These techniques appeared to work at an earlier age in this study, possibly because it involved turntaking. The few mothers who did not obtain and hold their children's attention consistently, all had children who were among those who either did not appear to understand the Game, or who did not retain interest in it for long (TARRYN, SG3; SEAN, SG9; JOANNA, SG11; DAVID A, SG15; LORRAINE, SG16). It is possible, therefore, that not getting the child's attention may have contributed to lack of understanding or to boredom.

Mothers who helped physically for longer than the first few 5-second intervals tended to help a lot throughout the sessions. In some cases, the children appeared to consider the physical help as being the whole point of the Game (JASON, SG4; TARRYN, SG3; LEIGH, SG3). This ties in with a similar finding by Hubley & Trevarthen (1979), who concluded that it may occur because the help or 'demonstration' completed the act, so that the child did not identify his own role in the activity.

Helping the child to Play or to remove his hand from the handle could be seen as a teaching strategy or as a prohibition. The children appeared to differentiate between the help received at the beginning of the first session, and the help that was given later. The children all accepted the former. The latter was responded to differently. Children objected by crying (LAUREN, SG4 in AG1), and they objected verbally (STUART, SG23 in AG4). At least one child in AG4 appeared to use his mother's later physical help as part of a sequence of variations (Fig. 34, p. 134). When the children were most verbal in AG4, they also tried to make it clear that the variations were intended as such, and were not a reflection of their lack of understanding (Fig. 37, p.142).

The ability to Play the Game does not appear to have depended entirely on the mother's teaching style. A pair of twins in the youngest age group were among those children who appeared to need no instruction at all (JOANNE and TIMOTHY, SG1). Another pair of twins in this age group (TARRYN and LEIGH, SG3), the girl from a mixed set of twins (KAREN, SG5), and a singleton in AG2 (SEAN, SG9), did not seem to understand what was required throughout the full four visits. Other children required various amounts of teaching. These differences may have been contributed to by different previous experience. Although it was considered to be important to devise a task that would be unfamiliar to all the children, no enquiries were made as to previous experience with seesaw-type toys.

Mothers made clear verbal or gestural requests with even the 9-month olds, and these were often complied with, suggesting that this was not a completely new method of instruction. This does not entirely tie in with a finding by Kaye (1977) that mothers of 8-month olds did not use instruction at all. The number of mothers' requests to singletons did not show a significant increase with age (Table 11, p. 78). However, compliance with those requests did increase significantly, especially between AG2 and AG3 and between AG3 and AG4 (Fig. 2a, p. 80). This does not tie in with the finding by Escalona (1973) that the frequency of compliance depended largely on the frequency with which requests were made.

It appeared as though some of the children considered the Game to
be one to be played with their mothers only.   Possibly it was confused
with caretaking experiences which become a ritual over time and which
are carried out with caretakers in exactly the same way each time.
For example, SHANI gave DAVID (SG14) verbal instructions similar to
those given to her by her mother, and when he did not comply, she
complained to her mother.   Later, she sat in prim silence as DAVID
continued to Play in his own way.   In AG2, MARK (SG8) appeared to be
surprised when KIRSTY Played apparently in response to his saying
'Down' to his mother (Fig. 27, p. 123).

Some children refused to Play without their mothers present.   Others
refused to Play with them present.   Lewis & Rosenblum (1979) suggest
that the presence of an adult has an indirect effect on the peer dyadic
relationship.   It is likely therefore that the tone of the mother-
infant relationship and that of the relationship between the two
mothers will have affected the peer sessions as well.

Furthermore, some mothers went to the children as soon as they called.
Others said it was better if they did not go, and that the children
would settle down on their own.   This sometimes proved to be correct,
but at other times the children fretted for the whole session.

Familiarity could be an asset or a liability in assessing peer interaction,
and it is generally agreed that a child's prior social history has an
important effect on his reactions to current social cues (Ispa, 1977;
Lamb, 1978d; Parke, 1979).   Some of the peers in this study did not
seem to like each other, for example DAVID A. and LEE (SG15).   MARC's
mother reported that he was afraid of SCOTT (SG20).   PAUL was reportedly
afraid of ANDREW (SG2).   The peer sessions of KYLE and LORRAINE (SG16)
and BRIGITTE and SAM (SG21) were strongly negative in affect, although
this may have been contributed to by the differences in sex (Dunn &
Kendrick, 1979).   The children generally played together regularly
because the mothers were friends.   The only two pairs of children who
had chosen to be friends were GARETH and TYRONE (SG18) and DARREN and
KRIS (SG10), who became friends at the creches which they attend daily.
Possibly more or different interaction would have occurred if the peer
pairs could all have been selected from social groups, where they had

already made their peer preferences clear. Examples did occur of peers not co-operating over the task, possibly because of different teaching experiences, but still co-operating in other ways because they appeared to enjoy each other's company (Fig. 33, p. 131). Friendships therefore appear to be important in their own right, since they appear to add a different dimension to certain aspects of development. However, Riesman (1962) warns that they can become too important, leading to a conformity to peergroup standards that can undermine other values, such as individual skills, tastes, ideals and commitments. Too much emphasis on 'relating to others' can result in superficial congeniality and not real intimacy. Therefore, the quality of children's social relationships may be more important than their quantity. In this study, the affective quality of the peer interactions were particularly striking, and suggests further research areas.

Whether or not the parents were friends may also have been a confounding factor. Some parents obviously were friends, and sometimes teaching strategies were similar in subject groups, for example SHANI and DAVID (SG14), LAUREN and JASON (SG4) and CANDICE and LESLEY (SG22). In other cases, the mothers were hardly acquainted, for example GARETH and TYRONE (SG18) and DARREN and KRIS (SG10).

Other variables that were not controlled for may have affected the study. For example, there was no way of knowing how much turntaking practice was done at home after the first session. Birth order was not used as a criterion for inclusion in the study, and it therefore varies. This variable has been found to be associated with differences in childrearing practices (Fox, 1977; Jacobs & Moss, 1976; White et al, 1979). The amount of general peer experience was not considered, nor was the amount of experience beyond the stipulated minimum with the particular peer partners used in this study. This was found to be important by Bronson (1981).

Although it was beyond the scope of this study to deal with the mothers' sensitivity in detail, this variable appears to be of crucial importance in teaching children, as already discussed. According to the transactional model of interaction, the lack of an apt response by one

partner would tend to affect the subsequent action of the second
partner. As found by Ainsworth et al (1971), a history of such
transactions creates a behaviour pattern in the first year of life
which affects an infant's response to new events in his environment.
Therefore, unless the histories of the dynamics of the mother-infant
relationship are reasonably similar, the responses of the children to
a task such as presented in this study are not comparable. The
sensitivity of mothers may also have an important effect on the rate
at which children pass through levels of intellectual functioning, as
already discussed (Uzgiris, 1977). Possibly, when observing the
development of an intellectual function such as co-operation, it may
be helpful to control for this variable by grouping mothers, for example,
by a sensitivity-insensitivity scale (Ainsworth et al, 1971). It is
possible that children of the same age, having comparably sensitive
mothers, may be more similar in level of intellectual functioning than
is generally found by selecting children by age alone. Not only could
the observation of such matched peers prove valuable in studying the
development of co-operation, but it may also reveal possible effects of
mothers' sensitivity on such development.

Since several behaviours were found to differ significantly in frequency
over adjacent age groups, it is possible that the age groups covered too
wide an age range in this study. More age groups covering the same
total age range may help to identify where the differences actually occur.
Alternatively, the concept of stages rather than ages may be a fruitful
area for future research.

3.6.2   Comparison of twins and singletons

The mothers of twins initiated and played significantly fewer games
with their children than the mothers of singletons did (Fig. 16, p. 88).
As discussed, this suggests a greater sensitivity by mothers of
singletons to their children's fluctuating interest. This could be
explained by the finding by Clark (1980) that mothers of twins develop
a pattern of disrupted communication with each twin because of the
constant presence and interference of the other twin. It is possible

that this could affect the 'match' of the mother-child relationship
which, as already discussed, is seen to be of first importance by
Hunt et al (1976) in the development of the mother's understanding of
her infant's needs in the different stages of growth.

As anticipated, the dyads in this study who appeared to have achieved
the lowest motor maturity were twins.   For example, MARK (SG5) at
nearly 10 months of age appeared not to have achieved voluntary hand
release which, according to Sheridan (1976) is normally already
developed by 7 months.   Yet confirmation of Hypothesis (b) (Table 26,
p. 104) suggests that twins are more socially competent than singletons.
From the earliest age, examples of the most advanced social competence
came from twins in the form of Variations performed with parts of the
body other than hands, more complex AGBs and episodes of verbal
communication with peers.   For example, the verbal dialogue observed
between TARRYN and LEIGH (SG3) at 50 weeks (p.189) ties in with
previous findings of early social competence in twins (Dickman, 1979).
TIMOTHY's Actor-Audience performance at 40 weeks has already been
discussed (SG1) (Fig. 14, p. 108).   Since JOANNE was fretting when
TIMOTHY began his Variation, and since her interest in his performance
resulted in the cessation of the fretting, the Variation can be seen
as an AGB.   AGBs are considered to be one of the earliest interactive
skills (Eckerman & Stein, 1982), since a socially directed behaviour
without the partner's attention is meaningless.

The early ability of twins to gain a partner's interest may tie in
with the only correlation suggesting possible continuity between
mother-infant and peer situations.   This was a positive correlation
between mothers' Evoking Co-operation behaviours and similar behaviours
by the twins in the peer situation (Table 16, p. 88).   According to
Escalona (1973) such output occurs approximately 3 months after the
child has begun to discriminate the input.   This study showed that
mothers used more Evoking Co-operation behaviours with twins than with
singletons in AG1, particularly game-like verbal behaviours (Table 16,
p. 88).   A more fine-grained study of this area could be helpful in
highlighting the particular behaviours which are so discriminated by
a young infant.   This finding suggests that at an early age, twins

may be more ready than singletons to begin to discriminate certain
varieties of behaviour such as those under discussion, while singletons
may be more ready to discriminate other behaviours, such as Speech.
On the other hand, their exposure to the same parental teaching
strategies may make it easier for them to communicate with each other,
using these strategies in the peer situation.

Although the twins also showed boredom and irritation in the peer
sessions, there was a prosocial easy relationship between them.
This, too, may be a reflection of their exposure to the same maternal
parenting and teaching strategies, which could result in less of the
confusion that was frequently seen between singleton peers.

However, as anticipated, twins did appear to be less stimulated by
the dyadic peer situation than singletons were, as was shown by their
higher Disengagement score (Table 18, p. 92), and by the confirmation
of Hypothesis (a) (Table 26, p. 104). This suggests that they were
not motivated to interact to their fullest ability with their twin
peer in unfamiliar surroundings, and the complexity of their behaviour
may therefore be under-estimated. A more valid study would perhaps
be for twins each to have their own familiar and liked peer partner,
and then to compare their social behaviour with than of singleton
peers having the same length of experience with each other.

Lytton (1980) found that the proportion of compliance and the speech
rate of twins was lower than that for singletons, and suggested that
there was a correlation between the two. However, this is not seen as
necessarily valid, in the light of Savic's finding that a lower speech
rate for twins is not automatically symptomatic of lower cognitive
ability or lower social competence (Savic, 1980). This study confirms
Savic's findings. As can be seen from Table 17 (p. 90), the twins'
vocalisations to mothers were significantly lower than those of
singletons. However, Compliance with Requests was higher for twins
in AG2.

3.6.3 Possible continuities between mother-infant and peer sessions

According to Schaffer (1977a) and Newson (1975), the concept of turntaking originates in early mother-infant interaction. This appears to have been confirmed in this study. Since all the children engaged in turntaking, whether in game-playing or in verbal communication, it would appear that it was an established pattern of behaviour before 9 months, most likely based on previous interaction with their mothers.

According to Lieberman (1977), maladaptive maternal attitudes appeared to be associated with socially incompetent behaviours in 3-year old children. In the present study, clear statements cannot be made because of the age of the subjects and the short time they were observed in an artificial environment over a task which limited their freedom of social expression.

However, the following observations were noted :

1. Mothers who did not make clear requests had children who did not appear to understand the game (TARRYN and LEIGH, SG3; SEAN, SG9).

2. Mothers of singletons who used strategies suggesting their own external locus of control or personal helplessness, appeared to have children whose peer friends were reportedly afraid of them, or who had peer sessions with negative affect (KYLE and LORRAINE, SG16; TREVOR, SG17; TYRONE, SG18; SCOTT, SG20). Although mothers of twins also used these strategies, the twin peer sessions did not show negative affect (SUSAN and CLINTON, SG13; DAVID L. and MICHAEL, SG24).

3. There were positive correlations both for boys and for girls between game Initiations by mothers and Variations introduced by the children with peers, but only for age groups 3 (Table 22, p. 96).

4. There was a positive correlation between Evoking Co-operation by mothers and similar behaviour directed to peers, but only for twins in AG2 (p. 105).

Very few other continuities were noted which were observed as having started in the mother-infant sessions, and which continued usefully into the peer sessions. At times it appeared that the reverse was occurring. For example, ANTHONY and JOANNA (SG11) who both appeared to have frustrating mother-infant sessions, were much more active in the peer sessions where they generated their own games. When mothers' strategies were very different, the children appeared to have difficulty in playing together co-operatively. For example, BRIGITTE and SAM (SG21) tried to impose the rules on each other with decidedly negative affect. NIALL (SG23) showed concern and often glanced into the adjoining room as though for help when STUART infringed the rules. Often, peers who were playing together with enjoyment showed by their smiles and quick glances at their mothers that they were aware that they were not Playing as taught by their mothers (SUSAN and CLINTON, SG13; DAVID A. and LEE, SG15; TYRONE and GARETH, SG18). MARC and SCOTT (SG20) also verbalised this awareness (Fig. 37, p. 142).

This confirms a similar finding by Vandell & Wilson (1982b), who reported that continuities were found in the infants' behaviour over time, but not from mothers' behaviour to infants' behaviour. As already mentioned, Escalona (1973) reported having observed such continuities. These reports may not necessarily be conflicting. Escalona found that output occurred approximately 3 months after input, whereas Vandell & Wilson observed their subjects twice 3 months apart. Their second observation may therefore have been too early for the relevant behaviours to have emerged. In this study, too, the interactions were not examined over a sufficiently long span of time, and Escalona's results cannot therefore be commented on.

3.7   SUMMARY AND CONCLUSIONS

This study appears to suggest that competence in co-operative play
with peers may possibly only be achievable through interaction with
peers.   There was no indication that the skills taught by the mothers
were carried over entirely without modification to the peer situation,
except for a positive correlation which was found between mothers'
Evoking Co-operation behaviours and similar behaviours between twin
peers in AG2.

The children's learning about the Game did appear to come from the
mothers, but their own 'game' appeared to be the result of their own
creativity.   Even in the case of twins who were exposed to the
same maternal strategies, the children did not continue for long to
play together in the way taught by their mothers.   It was as though
the whole concept of 'co-operative' game-playing with mothers and with
peers may have been quite different experiences for most of the infants
involved.   It is not suggested that one experience is 'better' than
another.   In this study, the mothers had the task of teaching a game
according to certain rules.   With very few exceptions, they succeeded
in this.   However, their concept of co-operative turntaking was that
each turn had to be identical.   When the peers played co-operatively,
it appeared that each turn could be the same as the previous one or
different, it could be verbal, or it could be an act which did not
involve the Toy at all.

Mothers appeared to use different teaching strategies for children of
different ages.   Helping the child physically was observed significantly
more often in AG1, game-like verbal strategies in AG2, and other speech
strategies in AG3.   Except for 3 children in AG1 and one child in AG2,
all the children from the youngest age of 00:37:02 appeared to understand
what was required within the first few minutes.   While learning, they
showed concentration and enjoyment, and were compliant.   Having
demonstrated their ability to Play as required, the children introduced
creative Variations.   They were usually not joined in these by their

mothers, and their capacity to co-operate thereafter appeared to depend on the skill of the mothers in engaging their interest and attention. Some mothers were very successful in doing this, but large individual differences were observed in mothers' introduction of verbal and physical games, and even in the creation of a playful ambience. Over the age groups, most of the children became more compliant, but showed increasing boredom. It is concluded that mothers may not always be sensitive to their children's need for challenge and variety, or to the valuable contribution that a playful environment can make to the maintenance of attention in infants.

Possible continuities from the mother-infant to the peer situation which may act as pointers for future research may be contained in the indications that mothers who did not make clear requests appeared to have children who did not appear to understand the Game; and that the apparently more aggressive children were singletons who had mothers who gave the impression of personal helplessness, or who appeared to encourage an external locus of control. Twins whose mothers showed these behaviours did not appear to be aggressive with each other.

Children's capacities for co-operation with peers were seen from the youngest age group, generally in brief attention-getting interactions or communication sequences. One peer pair in AG1 and one in AG2 were able to sustain a co-operative sequence for the whole session of 2.5 minutes. In AG3 and AG4, co-operative sequences became longer overall, and the children became more verbal with speech becoming clearer.

It was clear that although the peers were all familiar, they did not all enjoy each other's company equally. The earliest forms of sustained peer co-operation were observed between twins aged 00:40:02, and between a pair of singleton peers whose mean age was 01:34:06 and who had chosen each other as friends. It is therefore possible that apart from the teaching by their mothers, greater peer experience and the quality of the peer relationship may have made important contributions to their advanced skill.

Twins in AG1 appeared to be less physically mature and less active in all behaviours than singletons. However, in AG2, both with peers and with mothers, they exceeded singletons' performance in behaviours associated with social maturity.

It is possible that, compared to singletons, twins are given little social stimulation. Their mothers appear to play fewer games with each of them separately, and they may not have many experiences of playing in a dyadic situation with different peer partners. This may affect the development of their creativity, which appears from this study to be associated with stimulating dyadic peer relationships.

Lack of social stimulation for twins may also affect the development of their social maturity. This study found that twins appear to have advanced social competence compared to singletons, and this confirms similar findings by Savic (1980). However, it is possible that this early social advantage may be lost because twins generally are not considered to need different social partners since they have each other to play with.

It is possible that the advanced social competence that twins display with each other may be contributed to by the fact that they are exposed to similar parental strategies. This study found that when singleton peers were exposed to very different maternal strategies, they appeared to find difficulty in communicating with each other. It is not therefore clear whether twins would display the same advanced social competence with other peer partners.

Mothers tended to be more active with boys than with girls, and helped them physically significantly more often. Mothers and daughters looked at each other significantly more often than mothers and sons did. Boys tended to be more active than girls, and produced significantly more variations both with mothers and with peers. It is not clear therefore whether the differences found are due to nature or nurture.

The results of this study appear to confirm the advisability of observing a wide range of behaviours at the same time, so that patterns may be seen which may show areas of accelerated development as well as deficits. Similarly, by observing different age groups at the same time, stages of development may emerge which are not necessarily related to age.

The positive correlations found between mothers' Evoking Co-operation, Looking at Each Other, and Smiling at the Same Time , with Engagement for AG3 only, suggests that mothers in other age groups may not be aware of appropriate motivating behaviours for those age groups. Possibly a greater shift of emphasis in the application of child development findings from age levels to stage levels may eventually help mothers to become more sensitive to the individual needs of children for optimum cognitive and emotional growth.

As found in a previous study (Dickman, 1979), it is concluded that the observation of overall patterns of behaviour appears to be more suitable than the observation of discrete interactions for the understanding of complex behaviours such as engagement.

As already mentioned, it appears that children pay less attention to playmates when they are away from their own homes. A laboratory environment will therefore probably under-estimate the amount of interaction of which the infants are capable. Furthermore, it is an artificial context for human interaction. Results of a laboratory study therefore need to be interpreted with caution. Co-operative behaviour observed in the limited sense of this study is not necessarily associated with responses in the free play situation. It is also possible that tests are rendered insensitive by the low frequencies of some of the behaviours upon which the analyses are based.

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3.13   APPENDIX

SUMMARISED DESCRIPTIONS OF SESSIONS

3.13.1 Age group 1
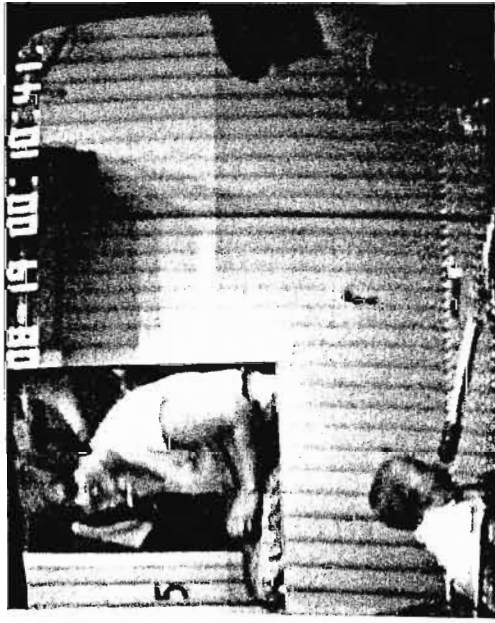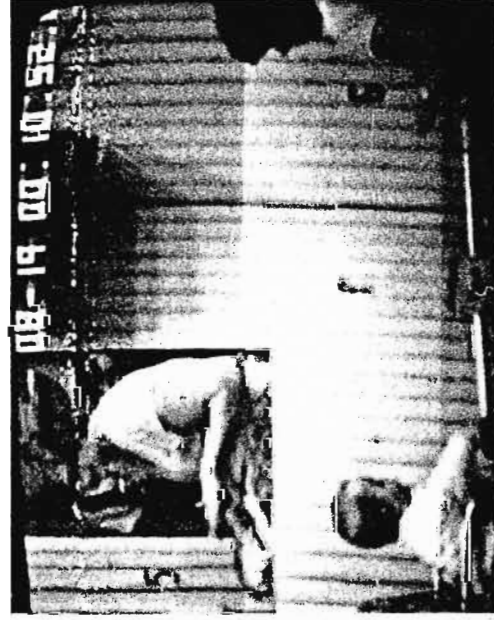
SG1   TWINS : JOANNE and TIMOTHY : 00:37:02

These mixed-sex twins started to Play correctly from the beginning, and did not appear to need teaching. They only needed to be encouraged to attend and to continue, which the mother did by speaking very quietly, using smiles, and changes in voice pitch. She requested co-operation verbally, by gestures (Plate 92), by touching her own handle, and she waited for attention before continuing. JOANNE was teething and appeared to be in pain throughout most of the sessions. She Played well, however, and with interest, even when crying. Both children at times flailed their arms as though needing to balance themselves that way.

Games and Variations

The mother introduced one verbal game ('boom' or 'bang'). JOANNE slapped the handle as she Played, and her mother accepted this. During visit 3 with his mother, interspersed with correct Playing, TIMOTHY managed to touch the handle with his mouth, his forehead and his nose. This episode appeared to require great effort for over a minute. His mother encouraged him with smiles (Plates 93 to 97).

Peers

Both children appeared to want to Play, but two sessions were completely marred because JOANNE cried all the time. In visit 3 she was still apparently in pain, but they Played nevertheless, achieving engagement for one minute which included Play from each and one slapping Variation which was imitated and repeated. JOANNE interrupted the 'run' twice for approximately 13 seconds each while she cried, but each time she continued the sequence again. One of these interruptions is shown in Fig. 23 p. 118. The entire peer session in visit 4 was one sequence of interaction, in which TIMOTHY introduced 6 variations and JOANNE repeated the same slapping Variation, while they both kept up the turntaking Play (Fig. 42).

Facing Page 186

Plate 92 : Evoking Co-operation in AG1 : JOANNE SG1

Plate 93

Plate 94

Plate 95

Plate 96

Plate 97

Variations with mother in AG1 : TIMOTHY SG1

FIG.42 : SEQUENCE WITH VARIATIONS IN AGE GROUP 1 :
        AG1 : SG1 : Visit 4[+]: 00:40:02 (Twins)

TIME*	JOANNE (C1)	TIMOTHY (C2)
5.20		Plays
5.25		Slaps handle, smiles (Variation)
	Look at each other	
5.30		Holds side down (Variation)
	Tries to Play three times	
		Looks at C1, releases side
5.30	Plays	
5.40		Touches handle with forehead (Variation)
5.45	Shakes handle (Variation) Looks at C2	
5.50		Tries to touch handle with forehead (Variation),vocalises, Plays with hand
	Watches C2	
	Look at each other	
6.05	Plays	
		Plays, holds side down (Variation)
6.10	Tries to Play	
		Releases handle
	Plays	
6.15	Shakes handle (Variation)	
6.20		Touches handle with forehead (Variation),vocalises,Plays
	Plays	
		Plays, holds side down (Variation)
6.25	Tries to Play, frets (Objection)	
		Looks at C1,releases handle
6.30	Plays	
		Touches handle with forehead (Variation)
6.35	Watches C2	
		Vocalises, rocks back and forth
6.40	Watches C2	
		Touches handle with forehead, Plays half down with forehead (Variation)
6.45	Plays	
6.50		Plays with forehead (Variation)
	Slaps handle (Variation)	
6.55		Frets, looking at C1(Objection)
7.00	Plays	
7.05	Slaps handle (Variation)	Starts leaning forward, looks at C1, Plays with hand
7.15	Plays and slaps handle (Variation)	
7.25		Looks away
7.30	Looks at C2, slaps handle (AGB)	
	(End of session)	

+ Tape unsuitable for photographs.
* Exact times appear when there is an illustrating Plate.

Age Group 1 (Continued)

SG2   SINGLETONS : PAUL and ANDREW :   00:42:00

Both children had their hands on the handle for most of the mother-infant sessions, so that it was not clear whether they were Playing or see-sawing.   They both Played only in short episodes during the first and second visits.   In the third and fourth visits, ANDREW Played almost all the time.   PAUL's handle came off, which distracted him (Plate 98).   The mothers both helped physically, especially PAUL's mother.   They also rattled the handle and called the children by name to get attention.   Neither mother insisted on correct Play.   They spoke to the children quietly and often apparently tentatively.

Games and Variations

Neither mother introduced games.   ANDREW mouthed the hand, which his mother encouraged (Plate 99).

Peers

On several occasions, PAUL used the same AGBs as ANDREW's mother did: that is, he rattled the handle and vocalised, and in the first visit this resulted in what appeared to be a communication sequence (Fig. 21, p. 116).   When when ANDREW tried mouthing the handle, which his mother had encouraged, PAUL cried (Plates 100 and 101).   He also cried when ANDREW banged his side down.   These were the only peers in this age group to show competitive affect.   The mothers reported that ANDREW frequently attacked PAUL when they played together at home.
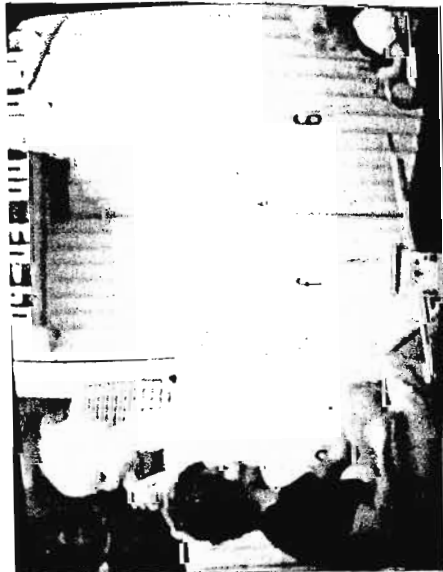
Plate 98
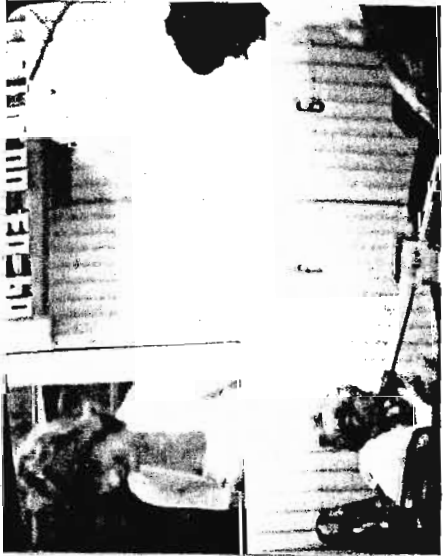
Plate 99

Plate 100

Plate 101

PAUL and ANDREW SG2

Plate 102

Plate 103

Plate 104

Plate 105

Plate 106

Plate 107

Plate 108

TARRYN and LEIGH SG3

Age group 1 (Continued)

SG3   TWINS :   TARRYN and LEIGH :   00:50:05

These twin girls were among those who did not appear to understand the Game.   Although they Played in turn at times, neither child showed the concentration shown by the other children at some time during the sessions.   The mother spoke very quietly, smiled most of the time, and used no games, although there was a happy game-like atmosphere.   She helped most of the time (Plate 102) and encouraged with 'That's a clever girl' or similar when the child touched or patted the handle of the Toy (Plate 103).   She also occasionally pointed (Plate 104) and touched the handle, but in each case she almost immediately Played for the child.   These teaching strategies sometimes appeared to be 'shaping' strategies, but from the children's relaxed and smiling behaviour, it appeared possible that they believed that the mother wanted those actions and no more.   For example, the children Played more in Visit 4 than in Visit 1, but they showed the same delight when they Played as when they only touched the handle. The mother gave TARRYN no clear encouragements for correct Play and she gave LEIGH very few.   Clear requests ('Push it down') were not frequent at from once to three times a session.

Games and variations

The mother's main strategy was referring to the light, which both children responded to by looking at the ceiling of the room (Plate 105), suggesting that this was a well-known game which referred to the ceiling light.   This suggestion is reinforced by TARRYN introducing another obviously familiar game, that of pulling funny faces, which the mother joined (Plate 106).

Peers

During three peer sessions, the children sat peacefully with no apparent attempt to communicate with each other in any way, and with occasional manipulation of the handle.   In the fourth peer session, they appeared to communicate briefly vocally and by gesture on a few occasions (Plates 107 and 108).

Age group 1 (Continued)

SG4   SINGLETONS : LAUREN and JASON :   00:42:06

In the first visit, LAUREN accepted help to remove her hands from the handle (Plate 109).   In the second visit, she removed her hand herself just as her mother reached over to help her (Plate 110).   In the fourth visit, LAUREN accepted 'Hands off' as a game.   In the fourth visit, however, attempts to help her to remove her hand made her cry and stop Playing.   LAUREN's mother used a series of AGBs comprising gesture (Plate 111), patting the handle and then adding a game-like 'pum, pum, pum'.   Since LAUREN had a pacifier in her mouth for some of the sessions, she had to remove it in order to laugh properly (Plates 112 to 114).

JASON seemed to believe that the Game centred around his mother removing his hand.   After the first 15 seconds, he was Playing well and enthusiastically, but although his mother used different strategies to explain that his hand must be removed (Plates 115 to 117), he seemed to make a game of it, even removing his hand just before she reached him, with obvious enjoyment (Plate 118).   By the third session, his mother instructed verbally, and he complied.   JASON was engaged all the time and his mother therefore used no AGBs.

Games and Variations

JASON's mother made a continuous game of each session with game-like actions.   She also started a verbal game ('boom') which JASON joined.   When JASON mouthed the handle, she encouraged it.   LAUREN's mother also introduced game-like teaching gestures, one of which LAUREN joined.   When LAUREN slapped the handle down, it was objected to verbally.

Plate 109

Plate 110

Plate 111
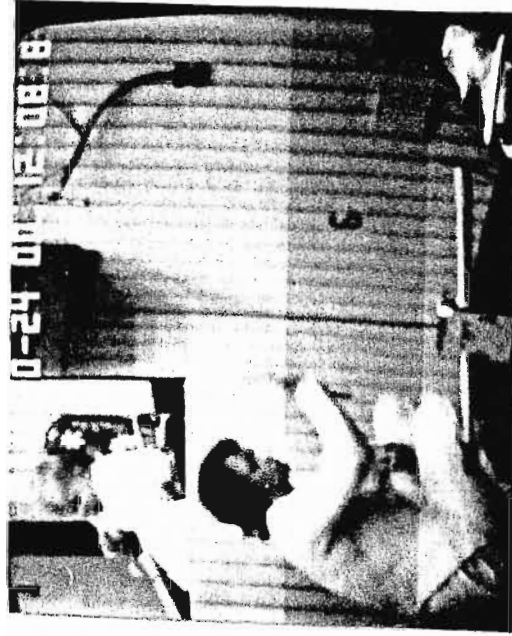
Plate 112
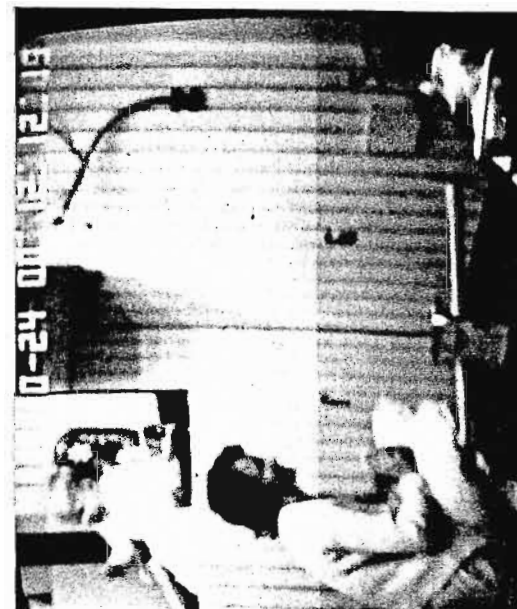
Plate 113
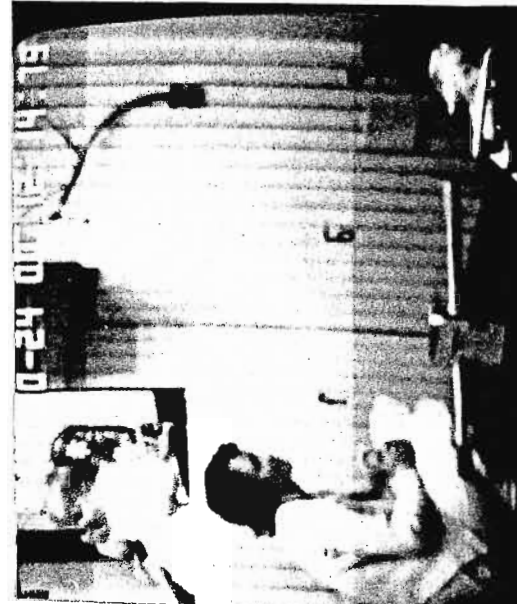
Plate 114

LAUREN and JASON SG4

Plate 115

Plate 116

Plate 117

Plate 118

Plate 119

Plate 120

Plate 121
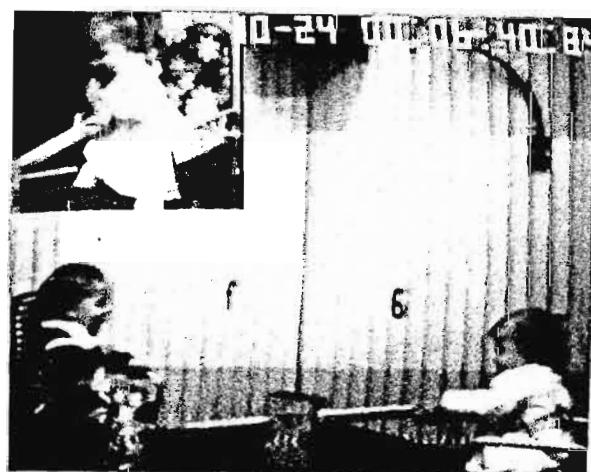
LAUREN and JASON SG4

Age group 1 (Continued)

SG4   Singletons : LAUREN and JASON (Continued)

Peers

JASON used one AGB in the form of a loud shriek, which was successful (Plates 119, 120).   When LAUREN tried the Variation of holding the handle down, thus preventing Play, JASON tried to Play, then cried. A sequence occurred in the last peer session which appeared to be co-operative (Fig. 22, p. 117).   Both children were active (Plate 121), but they did not manage to co-ordinate their actions.
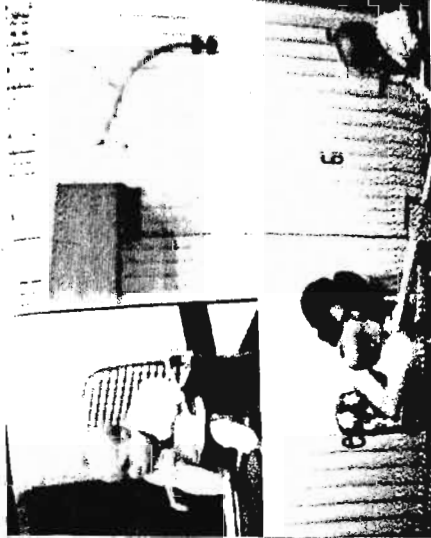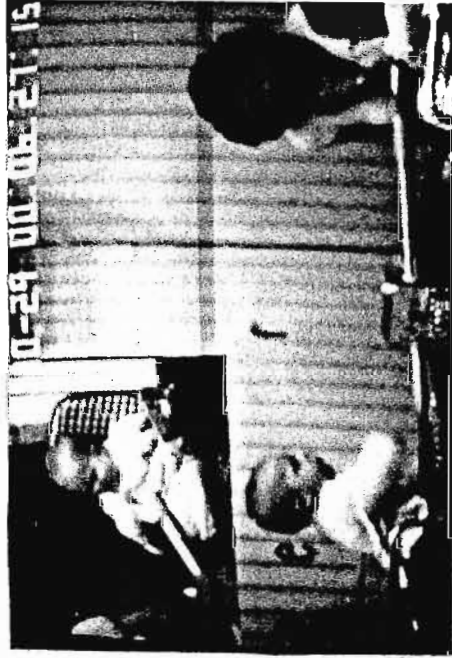
Age group 1 (Continued)

SG5   TWINS : MARK and KAREN : 00:39:02

KAREN appeared to believe that the Game included her mother helping her to Play, and she waited for this to happen and then smiled happily when it did (Plates 122, 123). However, the Toy did not work smoothly during her early visits, and this may have dissuaded her from trying to Play on her own until the third visit. MARK did not remove his hand from the handle at all, in spite of consistent instructions, help and gestures from his mother (Plate 124). Moreover, when he used his left hand for Playing, he always lifted the handle again afterwards.

Games and Variations

The mother introduced no games. KAREN introduced no Variations when Playing with her mother, while MARK Played with a series of little slaps which his mother encouraged.

Peers

During most of the peer sessions, each child appeared to show awareness of each other (Plate 125). For example, they each Played and looked at the partner as though expecting him/her to Play (Plates 126 to 128). MARK watched KAREN most of the time, making a crying vocalisation when she prevented Play by holding the handle down. However, KAREN often looked at her mother rather than at MARK and gave the impression that she was sharing the Game with her mother (Fig. 20, p. 115). On the whole, their socially directed behaviours did not coincide.

Plate 122

Plate 123

Plate 124

Plate 125

Plate 126

Plate 127

Plate 128

MARK and KAREN SG5
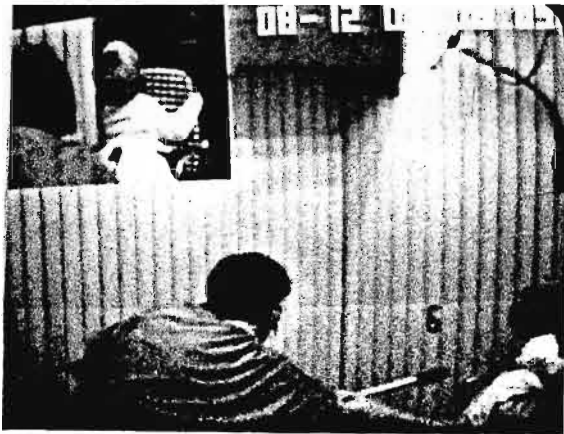
Plate 129

Plate 130

Plate 131

Plate 132
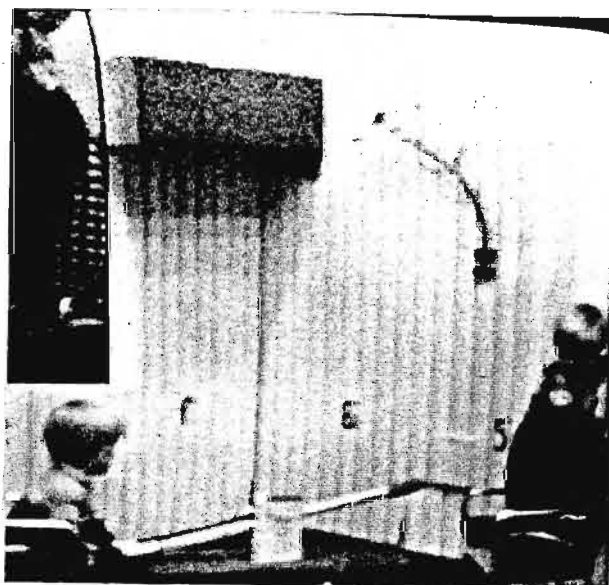
Plate 133

Plate 134

YOLANDE and NICOLETTE SG6
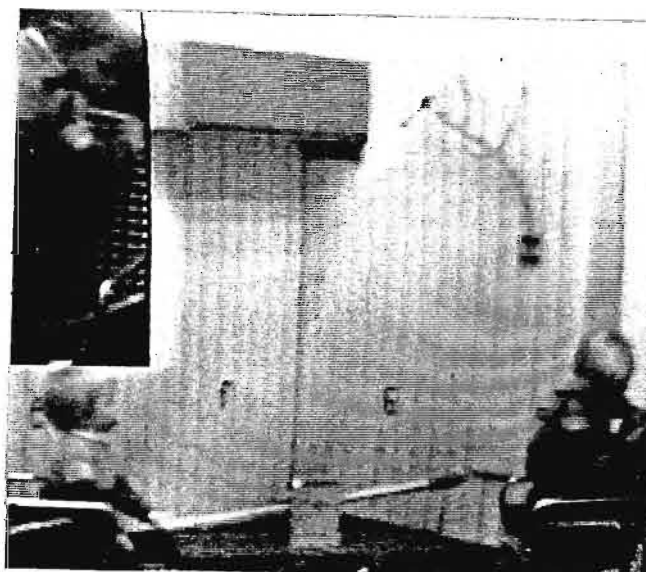
3.13.2   Age group 2

SG6   TWINS : YOLANDA and NICOLETTE :   01:25:00

The mother spoke softly, but gave clear repeated instructions throughout. She insisted that the children kept on Playing and attracted their attention verbally, by tapping on the table, and by tickling their legs (Plate 129).   The children Played with interest in the first sessions, but thereafter became bored easily.   The mother's instructions remained repetitive, but were successful in re-engaging the children.

Games and Variations

The mother used no games or game-like gestures.   The children introduced many Variations, and reactions to them were inconsistent.   For example, when YOLANDA Played with her foot in visit 2, her mother objected (Plate 130).   In visit 4, when YOLANDA appeared to be bored with the Game and Played with her foot while looking and smiling at her mother, it was encouraged with a smile, and objected to only when YOLANDA persisted with it.   When NICOLETTE banged the handle down in visit 3, it was objected to with a frown, while holding the handle down immediately afterwards was encouraged.   In visit 4, when accompanied by a look and a smile, banging the handle down was encouraged with a smile (Plate 131) and holding the handle down 20 seconds later was objected to.

Peers

In each peer session, one child was 'not interested' for the whole time and the other used AGBs, so that each session was a series of Play sequences interrupted by periods of AGBs.   In visit 1, YOLANDA kept looking away.   Nicolette attracted her attention on three occasions by looking at her and rattling the handle (Plates 132 to 134) and on one

Plate 135

Plate 136

Plate 137

Plate 138

Plate 139

Plate 140

YOLANDA and NICOLETTE SG6
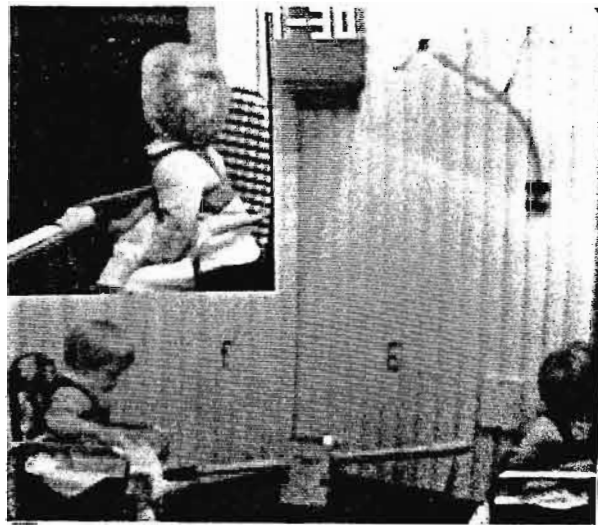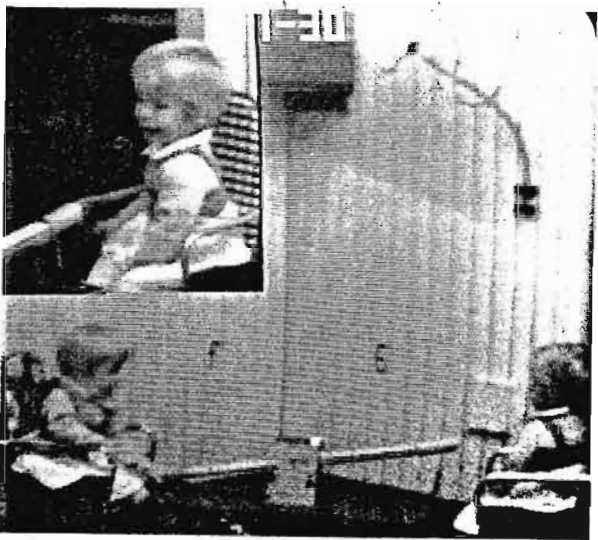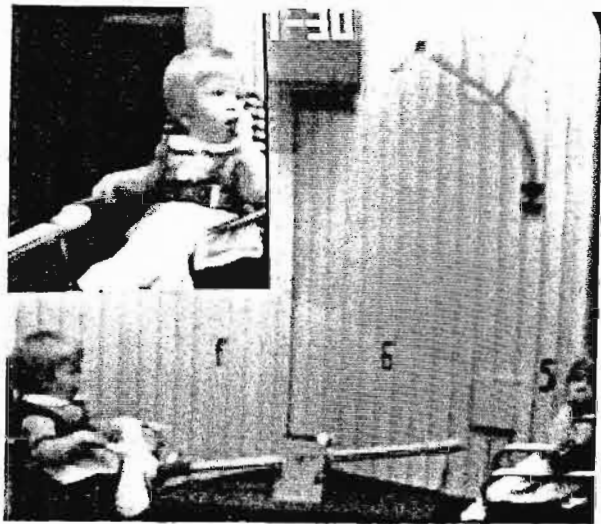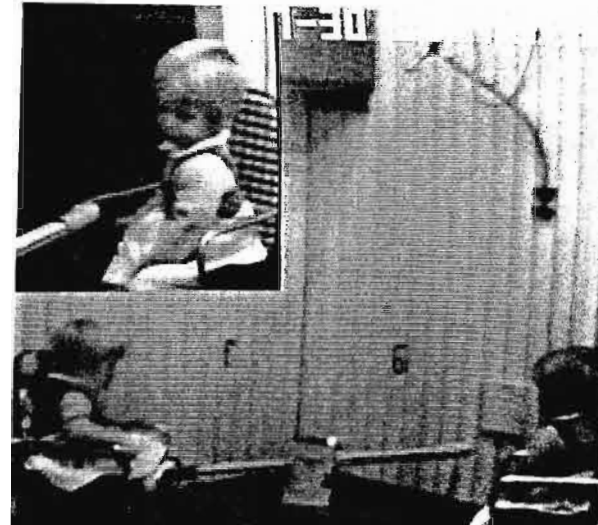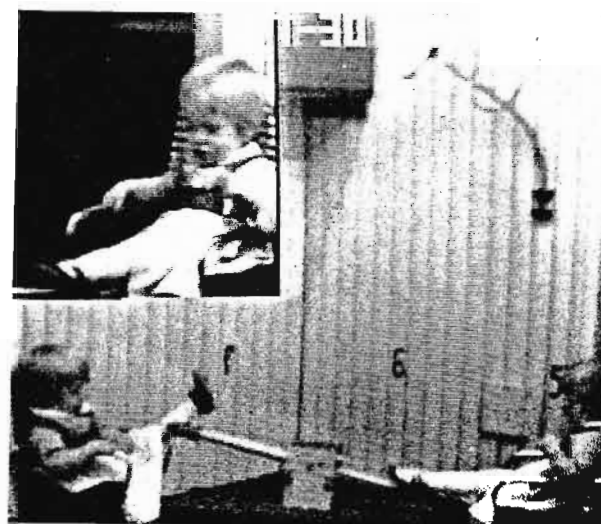
Age Group 2 (Continued)

occasion by holding the handle and tapping with her other hand.
During visit 2, it was NICOLETTE who was easily bored, and YOLANDA
kept trying to distract her, usually successfully.   At one point,
she vocalised, lifted her foot and then shook the handle (Plates
135 to 138). On another occasion, she kicked the handle, whereupon
NICOLETTE Played by foot (Plates 139 and 140).   In visit 3, NICOLETTE,
in succession, vocalised, looked at YOLANDA and rattled the handle,
rattled it again while looking, then vocalised loudly.   No Variations
were objected to, and most were encouraged and joined.   For example,
in visit 2, YOLANDA looked at NICOLETTE and kicked the handle with
her foot.   NICOLETTE immediately joined by trying to do the same, but
was not successful.   Later, YOLANDA repeated the Variation, vocalising,
and NICOLETTE encouraged by Playing immediately by hand (Fig. 28, p. 124).
In visit 4, NICOLETTE lifted the handle and rattled it, while looking and
smiling at YOLANDA, who smiled back.   Also in visit 4, there was one
instance each of Joint Positive and Joint Negative Play.

Plate 141

Plate 142

JULIA and SALLY SG7

SG7   TWINS :   JULIA and SALLY :   01:25:00

Each child Played well in her first mother-infant session.   In
subsequent sessions, they were soon bored.   The mother used voice
changes and different AGBs, sometimes in a 'run'.   For example, when
JULIA became bored, her mother referred to the light, tapped the Toy,
rapped the table, called Julia and pumped the bar (Fig. 25, p. 121).

Games and Variations

The mother introduced no obvious games.   She objected more to Variations
in the first two visits than in subsequent visits.   She objected to the
children lifting the handle, and when they tried to hold it down
(Plate 141).   In visits 3 and 4, she encouraged slapping down from
JULIA and pouncing and banging from SALLY until she repeated it several
times.

Peers

The girls Played well and with interest only in the last session
together.   In the other sessions, they often appeared to be bored.
In visit 2, JULIA fretted frequently, and SALLY kept the game going
for 40 seconds by rattling the handle each time JULIA stopped.   There
were frequent soft vocalisations, and a brief sequence suggesting verbal
and gestural communication (Plate 142).   The twins did not appear to
introduce Variations.   When SALLY's handle stuck and banged down in
visit 4, the children at first looked startled, JULIA glanced at their
mother, then turned it into a game by banging down her side violently,
with SALLY repeating the action on her side (Fig. 29, p. 125).
Overall, the affect was bored, but positive.

Plate 143
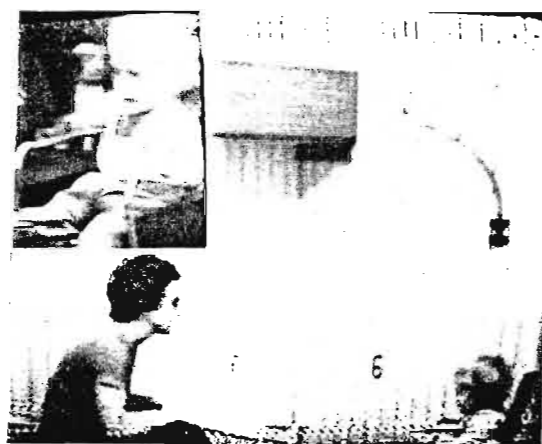
Plate 144

Plate 145

Plate 146

Plate 147

Plate 148
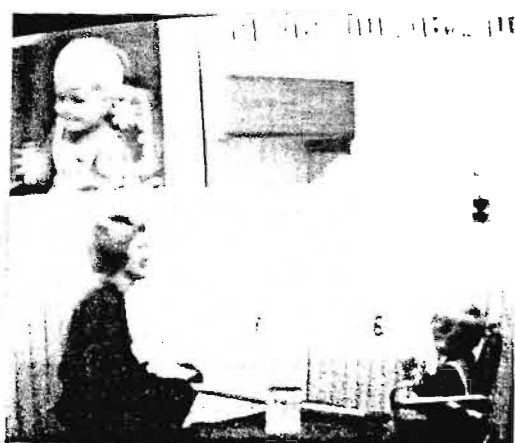
Plate 149
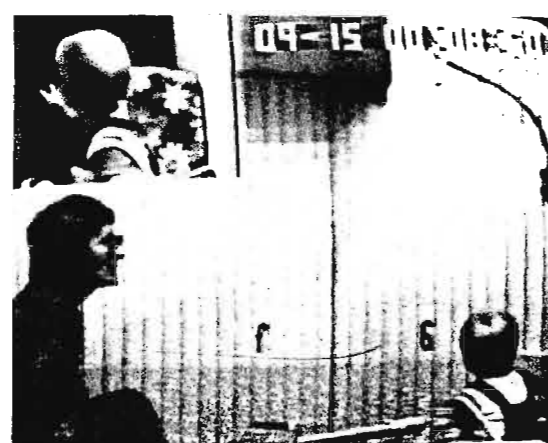
Plate 150

KIRSTY and MARK SG8

Age group 2 (Continued)

SG8   SINGLETONS : KIRSTY and MARK : 01:20:05

KIRSTY's mother used mainly verbal attention-getting behaviours of a repetitive type, for example 'Mummy's turn' repeated up to six times. ·She also tapped the handle.   She consistently objected to KIRSTY's attempts to use her foot (Plate 143) or to lift the handle, but encouraged it when KIRSTY held a hand up to ear level while looking at her mother (Plate 144).   KIRSTY showed immediate disinterest in the Game when her Variations were objected to.

Games and Variations

KIRSTY's mother introduced one verbal game, 'Mummy's turn' and no gamelike behaviour.   MARK's mother taught MARK and gained his attention by introducing different games.   She used exaggerated physical movements throughout the visits, saying 'Down' each time she leaned forward (Plate 145).   MARK appeared to enjoy this (Plate 146) and repeated 'Down' a few times, but did not always Play at the same time. He also lifted his hand high, perhaps to imitate his mother (Plate 147) and joined in a clapping game (Plates 148 and 149).   MARK also appeared to initiate games of his own.   After saying 'Down', he said 'Up' many times, but this was not responded to by his mother.   He also made car noises, but this was objected to by his mother with a shake of her head. An attempt at verbal communication, when he pointed to the adjoining room and said 'Play, play' was ignored (Plate 150).   There were several instances of apparent non-compliance when MARK refused to Play, and said 'No'.   However, this was accompanied by smiles, so it was not clear whether it was a Variation.

Plate 151

Plate 152

KIRSTY and MARK SG8

Peers

KIRSTY appeared to try to attract attention 5 times, sometimes successfully. For example, in visit 2, MARK looked away and KIRSTY rattled her handle. MARK Played and said 'Down' (Plates 151 and 152). KIRSTY repeated this on several further occasions, but MARK only once again responded by Playing in visit 4. Later in the same session, he said 'Down' to his mother and KIRSTY Played, which seemed to surprise MARK (Fig. 27, p. 123). KIRSTY and MARK each introduced a Variation which was accepted by the peer partner. KIRSTY held the handle down, and MARK Played with his foot. When KIRSTY lifted the handle, however, MARK said 'No' and looked into the adjoining room. Overall, KIRSTY appeared to be more \socially directed than MARK, who most times seemed to prefer his mother's company.

Age group 2 (Continued)

SG9   SINGLETONS : GRANT and SEAN : 01:11:02
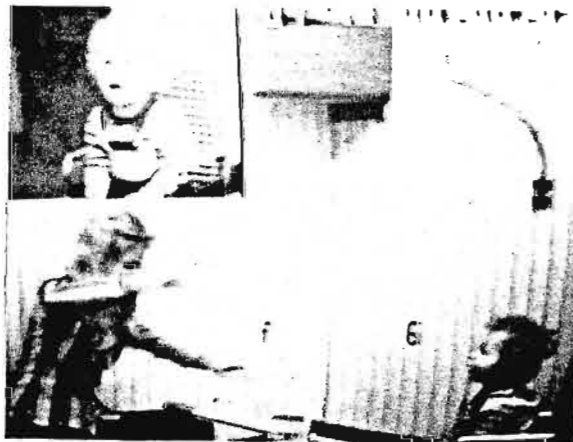
GRANT was the only child who was given extensive physical help in this age group.   He appeared to be in pain during the first and fourth visits, and kept holding a small cloth up to his mouth, which he had apparently hurt a few days before the first visit.   GRANT appeared to understand the Game after 5 seconds (Plate 153).   When he Played incorrectly after that in the first visit, his mother did not always insist on correct Play, encouraging all his efforts, except for lifting the handle, which she objected to.   In visit 2 she also objected to his attempts to use his feet to Play with.   Throughout the visits, she used verbal games which GRANT occasionally joined. In visit 4, she also introduced physical games such as hand-clapping and Playing with little slaps.

SEAN was the only child in this age group who did not appear to understand the Game.   His mother used different strategies and gestures, but they were all vague and non-specific.   When he Played correctly, she did not specifically encourage, but smiled constantly, even when objecting to 'incorrect' Play.   SEAN tried many kinds of manipulations with the Toy, such as slapping, lifting the handle and seesawing it, and seemed to take no notice of his mother's instructions at all, whether verbal or gestural, even when he looked at her (Plate 154).   It is not clear whether he did not learn the Game, or whether he learned it quickly and then became bored, and whether non-compliance was his normal communication pattern with his mother.   His mother did attract his attention on one occasion by clicking her fingers (Plate 155).   She used no games.

Peers

In the peer sessions, GRANT seemed to try to gain SEAN's attention on one occasion by looking at him and shaking the handle (Plate 156). He also looked very intently at SEAN at times (Plate 157).   In visit 2,

Plate 153

Plate 154

Plate 155

Plate 156

Plate 157

GRANT and SEAN SG9

the peers appeared to Play with enjoyment for 15 seconds.   For the
rest of the time, the sessions were characterised by SEAN's manipulating
and see-sawing the handle, and GRANT's attempts to Play.   GRANT seemed
to object twice.   On each occasion, when SEAN prevented him from
Playing, GRANT made a crying vocalisation to his mother (Plate 158).
Overall, SEAN appeared to prefer playing on his own.
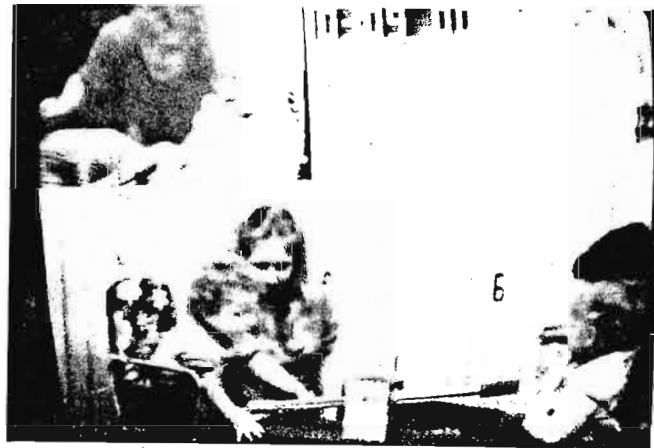
Plate 158

GRANT and SEAN   SG9

Age group 2 (Continued)

Plate 159

Plate 160

Plate 161

Plate 162
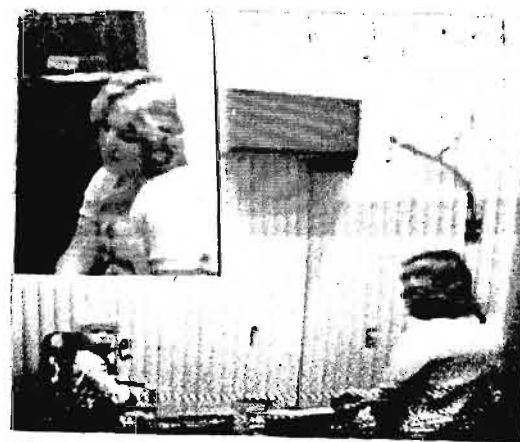
Plate 163

DARREN and KRIS   SG10

SG10   SINGLETONS : DARREN and KRIS : 01:34:06

DARREN cried excessively compared to others in this age group.   He did not appear to be in physical pain, but he had his arms stretched out to his mother much of the time during the first and fourth visits (Plate 159).   He also cried before and after the sessions, whether or not he was clinging to his mother.   DARREN Played well from the start of the second visit, and then appeared to become bored.   This pattern was repeated in the third visit (Plate 160).   His mother gave clear requests and used voice changes.   She objected to his lifting the handle and to his Playing with his foot, but encouraged a pouncing Variation (Plate 161).   She distracted him by calling him by name, and by tapping on the Toy.   KRIS' mother insisted throughout on correct Play, smiling when he complied.   After the first 30 seconds he Played correctly.   Although his mother objected consistently when KRIS tried lifting the handle, she encouraged him when he slapped the handle, or Played with several little strokes (Plate 162).

Games and Variations

DARREN's mother focussed on the light, which he found of interest at times, and introduced one verbal game, 'Show me one, show me two', which she continued to use when it stopped being effective.   KRIS' mother used one verbal game, 'Kris' turn, Mummy's turn', and continued with it when he became bored and said 'finished' (Plate 163).

Peers

DARREN and KRIS attended the same daily creche.   During the peer sessions, DARREN was still very involved with his mother, wanting her to sit by him constantly.   In the first session, the mother twice interrupted their session with instructions when they started lifting, but after a short interruption, they resumed their own way of Playing, with many vocalisations and positive affect (Fig. 30, p. 126).   In the second peer session, KRIS prevented Play by see-sawing strongly without pausing for DARREN to take a turn.   DARREN tried from time to

time to join the Game, and fretted and protested to his mother. In the third peer session, DARREN was fretful and not ready to Play. KRIS Played on his own for a while, then said to his mother, 'Won't play, Mommy', while pointing to DARREN (Plate 164). In the fourth session, DARREN again refused to Play. KRIS moved the handle from time to time, looking at DARREN, and said to his mother, 'Help me do'.

Plate 164

DARREN and KRIS   SG10
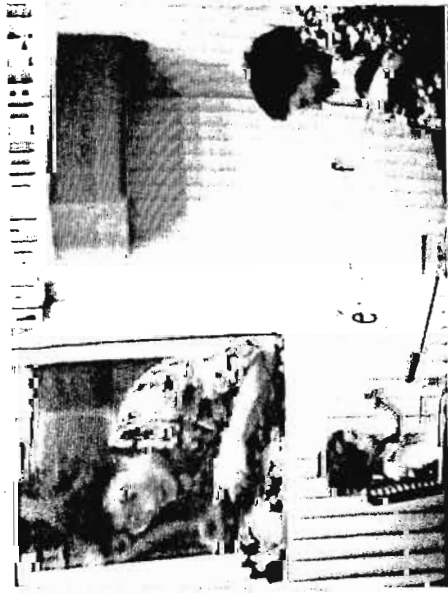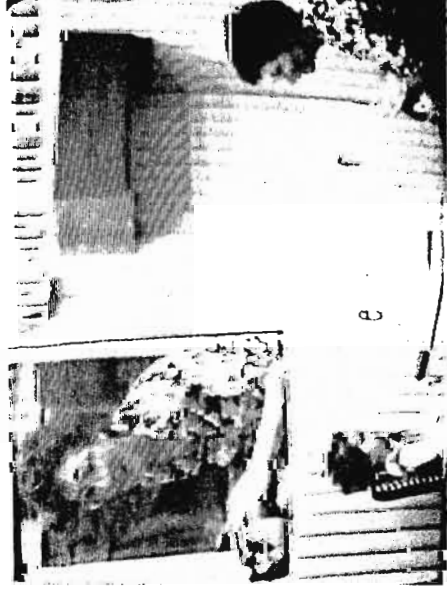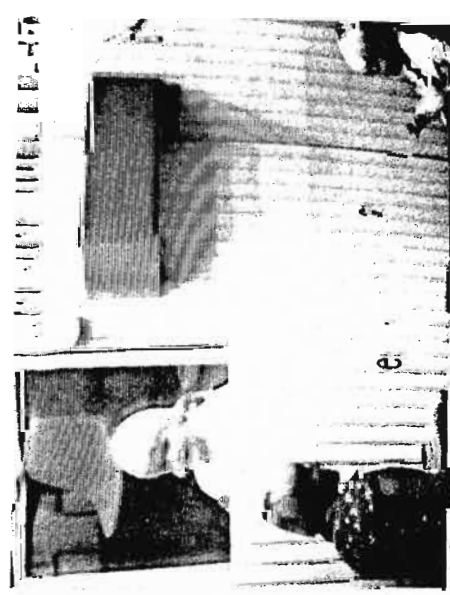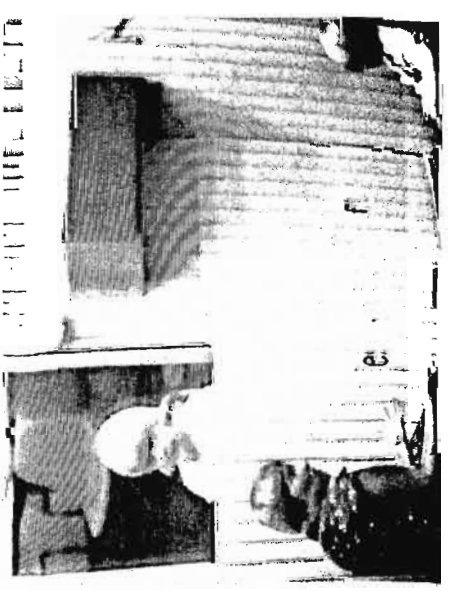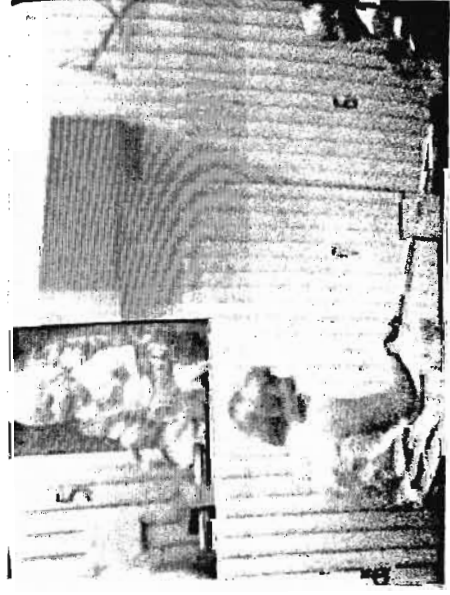
Plate 165

Plate 166
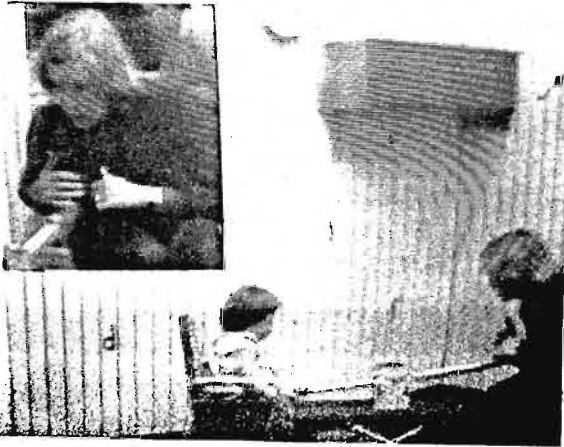
Plate 167

Plate 168

Plate 169
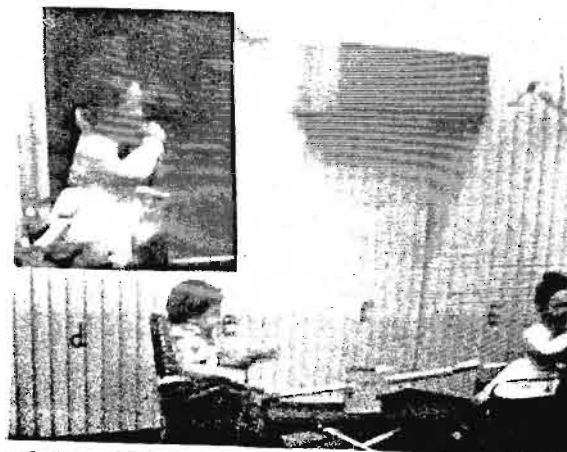
Plate 170

Plate 171

JOANNA and ANTHONY SG11

3.13.3   Age group 3

SG11   SINGLETONS : JOANNA and ANTHONY : 01:51:03

JOANNA's sessions with her mother showed a great deal of non-compliance, which her mother appeared to enjoy as much as her compliance, and which was therefore mostly overlooked.   Instructions and most of the AGBs were verbal. The light was focussed on, and this was effective at times. However, the strategies used were continued even when they proved ineffective.   Occasionally gesture was used to attract attention, but the mother did not always wait for the attention before Playing. The mother used no games, but JOANNA started a verbal game ('Ah, boom') in visit 2.   This was encouraged by her mother, but mouthing the handle was discouraged each of the 5 times it occurred (Plate 165).   JOANNA appeared to understand the Game, and occasional short bursts of happy Play occurred, but on the whole she appeared to be bored and/or used to non-compliance (Plate 166).

ANTHONY's mother insisted on getting his attention before she Played (Plate 167).   She used verbal instructions and no game-playing, and repeated the same instructions when he was non-compliant.   She tried to draw his attention to the light (Plate 168), but he did not show interest.   She objected to his slapping the handle down, but ignored the repetition of the behaviour when he was non-compliant.   She encouraged his banging down of the handle, his Playing with a fist and with a foot.   His attempt at communication in visit 4 ('Light - hot - matches') was ignored.   In each session he became tired of the Game earlier (Plate 169).   When he refused to Play in visit 3, they sat in angry silence.

Peers

In the first peer session, JOANNA cried for her mother, while ANTHONY touched the handle, gestured and said 'Play' (Plate 170).   She did not, and he tried shaking the handle and looking at her at times throughout the session (Plate 171).   At the start of the second peer session,

Age group 3 (Continued)

JOANNA once again wanted her mother, while ANTHONY looked at her and
rattled the handle.   JOANNA took a greater part in this session.
She started a verbal game ('Down'), and her mouthing of the handle was
joined by ANTHONY.   In this session, there was a series of game
Variations involving joining as well as different responses (Fig. 31,
p. 128).   In session 3, there were also two series of Variations and
Invitations accepted and joined.   In session 4, a short exchange of
negative behaviours was observed, a Variation by ANTHONY was joined by
JOANNA, and JOANNA tried to get ANTHONY to Play by gesturing and saying
'More'.   Overall, the peer sessions showed more active behaviour by
the children than they displayed in the mother-infant sessions.

Age group 3 (Continued)

SG12   JULIE and CATHERINE : 02:07:01 : SINGLETONS

JULIE started Playing from the start, and her mother ensured that
she was attending before instructing (Plate 172).   The mother appeared
to insist on rules verbally, by gesture ('Hands in lap' Plate 173), and
by physically removing hand (Plate 174).   However, she did not always
see the objection through.   For example, she instructed 'Hands off',
tapped the handle, and then Played although JULIE had not complied.
She also objected to manipulation of the Toy and to slapping it down,
although at times she smiled while objecting.   The mother used the
verbal game of see-saw which was joined by JULIE in two sessions, and
ignored in the third session.   The mother also made a game of 'hands
on knees' with which JULIE joined (Plate 175).   One game Invitation
by JULIE when she put her knees on the handle, was ignored by her
mother.   JULIE was often non-compliant and appeared to get bored
easily.

CATHERINE's mother used a variety of strategies to keep CATHERINE
interested throughout the sessions.   She used voice changes, verbal
games such as 'Down', changes of pace of the Play, counting, 'waking
baby', all of which CATHERINE joined with enthusiasm.   When CATHERINE
initiated a 'Playing faster' game, it was accepted by her mother.
Other games that CATHERINE initiated, such as banging the handle and
slapping the handle were objected to (Plate 176).   Playing with little
hits was encouraged, and when CATHERINE produced a toy animal at the
end of the last session and used it to Play with, this was encouraged
for a few times, after which it was objected to.   When CATHERINE's
handle stuck in the second session, and banged down, her mother made
an exaggerated game-like vocalisation.   CATHERINE's communications
were consistently responded to (Plate 177).   Both mother and child
appeared to be very happy during the sessions (Plate 178), and
CATHERINE complied throughout.

Plate 172

Plate 173

Plate 174

Plate 175

Plate 176

Plate 177

Plate 178

Age group 3 (Continued)
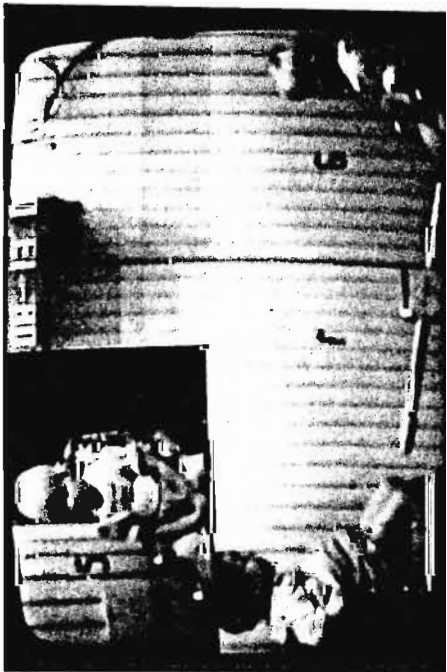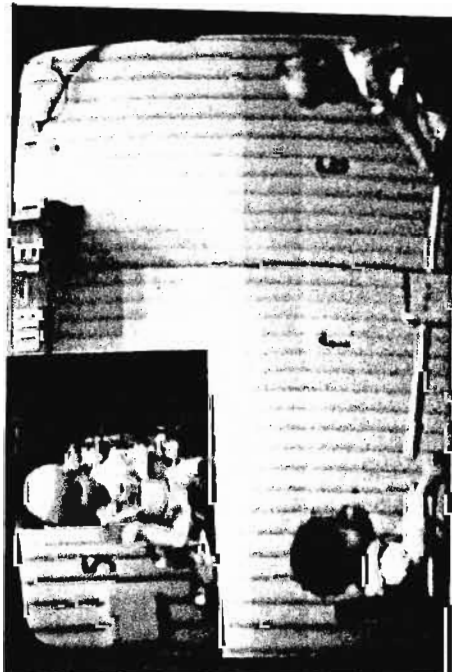
Peers

Both children cried throughout the first peer session. The second session started with enthusiasm (Plate 179) but JULIE soon began trying to stand up in her chair (Plate 180). Over the next minute, CATHERINE appeared to use AGBs 6 times, when she looked at JULIE and shook the handle (Plate 181). Later, a sequence of game-like behaviours appeared to start when CATHERINE forced the handle down, thus making JULIE stop manipulating the light. Among the Variations in the final session, JULIE prevented Play by lifting the handle and see-sawing. CATHERINE objected by calling her mother and by saying 'No'. She also objected by crying when JULIE stood up in her chair. Overall, JULIE was more active, whereas CATHERINE appeared to be more socially directed.

Plate 179

Plate 180

Plate 181

JULIE and CATHERINE   SG12

Plate 182

Plate 183
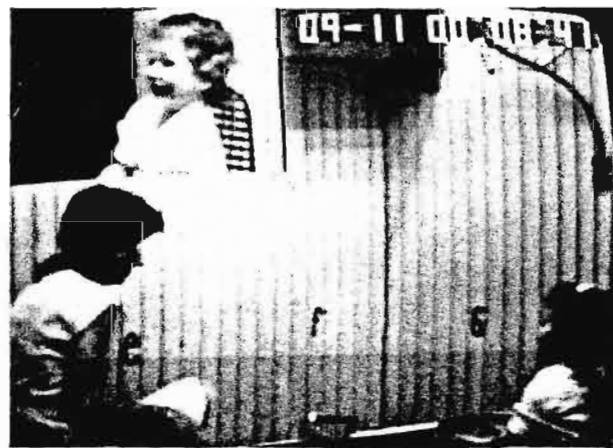
Plate 184
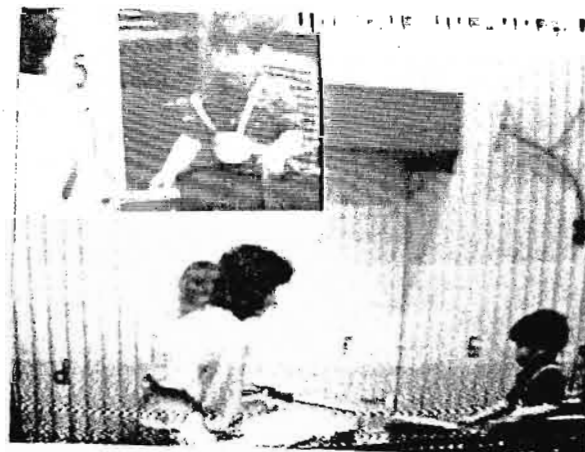
Plate 185

Plate 186

Plate 187

SUSAN and CLINTON   SG13

Age group 3 (Continued)

SG13   TWINS : SUSAN and CLINTON : 02:07:05

SUSAN was very anxious in the strange environment, and refused to leave
her mother even to play with her twin brother.   Only in the final visit
was she able to sit a few feet away from her mother to play the posting
game with the author.   SUSAN enjoyed Playing at the beginning (Plate 182),
and she Played correctly and very quickly from the start.   She soon
started Playing automatically, however, often while looking away
(Plate 183).   In the first session, when the handle stuck and banged
down, SUSAN seemed to get a severe fright.   When the same thing occurred
in the fourth session, she smiled.   SUSAN's mother used no games or
game-like gestures, and very little speech, except for 'Push it down'.
She looked at SUSAN's hands, but very seldom at her face.   Smiles
seldom matched.   SUSAN looked at her mother for long periods.   The
mother insisted on correct Play, objecting and attracting attention
verbally and occasionally with gestures.   An occasional attempt at
communication by SUSAN was ignored.   SUSAN introduced Variations
including holding the handle down, banging it down and lifting it, and
Playing with two hands, all of which her mother objected to (Plate 184).
She did, however, accept a Variation whereby SUSAN Played with one
finger of each hand.

When CLINTON Played with his mother, SUSAN stood or sat nearby for
three of the four visits (Plate 185).   After a few seconds of teaching
by his mother, CLINTON Played well and quickly, occasionally Playing
while looking elsewhere (Plate 186).   From the start, he tried
Variations, such as holding the handle down, slapping it, trying to
Play while pressing the bar, peering into the centre of the Toy
(Plate 187).   None of these were objected to in the first and second
sessions.   His attempts to lift the handle and to use his foot were
objected to throughout.   In the final session, holding down and
banging down were also objected to.   Objections were not generally
complied with, and the non-compliance was often ignored.   At the end
of the final session, the mother's objection to the use of feet twice
took the form of 'the lady will be cross', at which CLINTON quickly

Age group 3 (Continued)

complied. The mother used no games or game-like gestures, but CLINTON showed enjoyment several times.

Peers

In the first peer session, the children started Playing quickly and well until CLINTON's handle stuck and banged down. After a few more attempts at Play, CLINTON cried for the rest of the session. The children showed hardly any interest in the Toy in the second session either. SUSAN's handle stuck early on in the session, and CLINTON tried to distract her by looking at her, shaking the handle and putting his hands on the table. Later, SUSAN appeared to try to distract CLINTON by looking at him and Playing. The third and fourth sessions were brisk. The children each tried lifting the handle, which was accepted or joined. An invitation by CLINTON to use the foot was not objected to, but not joined. There was a sequence of over 45 seconds when it appeared that the children were challenging their mother by Playing with their feet. She objected several times although she had been asked not to intervene. The children showed several instances of enjoyment and joint interest in these sessions (Fig. 32, p. 130). They also appeared to show concern about being watched from the adjoining room, especially when the handle banged down (Plate 188). Overall, the children appeared to enjoy the last two sessions. The Game, however, did not appear to be the only issue. They appeared to be playing out a problem with their mother as well.

Page 188

SUSAN and CLINTON SG13

SG14   SINGLETONS : SHANI and DAVID : 01:46:00

Plate 189

Plate 190

SHANI and DAVID SG14

SHANI's mother was very active throughout. She insisted on attention, used speech and gestures (Plate 189), and gave clear requests. She used the light to keep interest and this appeared to be effective, SHANI repeating the game-like reference later. She also used many games. Some involved physical activity, such as 'hands on head', which SHANI joined and later initiated in a different session. Other games were verbal, such as whispering, and see-saw, both of which SHANI joined, and counting, which she did not join. The mother objected to SHANI's lifting, see-sawing, playing with one finger, manipulating the bar, banging and lifting the table. However, she did not always insist on compliance. There was a lot of noise from the adjoining room, which encouraged SHANI to look away from the Game. Her mother distracted her by tapping the Toy, by calling and pointing, and by referring to the light. Although SHANI appeared to be very interested in what DAVID was doing next door, she Played with interest and apparent pleasure.

DAVID's mother insisted on correct Play, but did so in a game-like manner throughout. She used instruction and gestures which DAVID joined several times (Plate 190) and initiated later himself, to which the mother joined in. She also used verbal games, 'Down', 'My turn', your turn', which he also joined several times. At times, she accepted Variations such as pouncing, slapping and see-sawing; at other times she objected to them. She always objected to manipulation of the handle, and to lifting the handle. In the third session, DAVID tried a whole series of Variations in quick succession. Later in the session, he said, 'All finished' and stopped Playing. When his mother Played for him, he became angry and said, 'I'll do it, I'll do it'. Later on, he Played with his knees, which was objected to. He then held the handle with his knees, but Played with his hand. His mother objected, but they looked at each other and smiled. In the final session, DAVID appeared to become bored with the Game, and his mother's clapping and verbal games were ineffective.

Age group 3 (Continued)

He also did not object when she Played for him. DAVID tried to communicate verbally at several times throughout the session. Each time, the mother answered him (Plate 191) and brought his attention back to the Game. Overall, both partners gave evidence of enjoyment.

Peers

In the first peer session, the children Played for only short periods during which SHANI was very directive. The rest of the time, they communicated about other things and seemed to be totally engaged with each other (Fig. 33, p. 131). Both children initiated similar games to those initiated by their mothers, and gave similar instructions. For example, in one short sequence, SHANI pointed to DAVID, saying 'Play, play', and when he complied, she said, 'Now Shani'. Later, when DAVID was not Playing, SHANI Played and said 'Play down'. DAVID initiated his mother's game of 'hands up', but this was objected to by SHANI (Plate 192). SHANI objected to many of DAVID's variations, although he ignored similar Variations made by her over the session. When he see-sawed on his own, she said, 'David, you'll break it'. When he embarked on a series of lifting the handle and Playing, while saying 'and down', she complained to her mother. In a long interaction in the third session, DAVID tried to instruct to start with, after which SHANI tried, both seeming to use the techniques employed by their mothers. In the fourth session, DAVID appeared ready to Play with his usual Variations, but SHANI sat rather primly and watched him silently. Brief verbal communication sequences occurred, started sometimes by SHANI and sometimes by DAVID. The tenor of all of them appeared to be friendly. Overall, the sessions appeared to give enjoyment. Even when they were not agreeing on how to Play, they communicated verbally in a friendly, easy way.
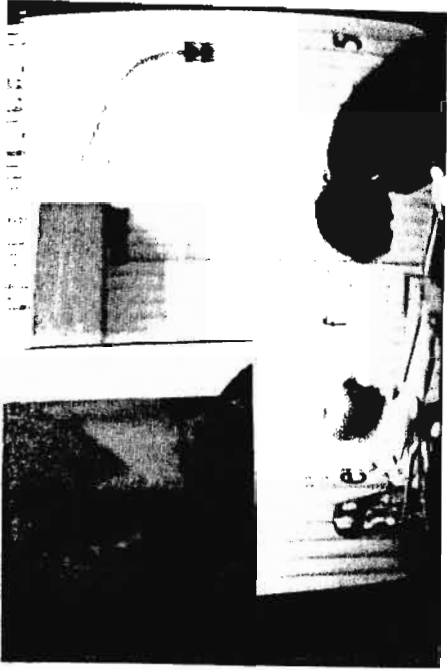
Plate 191

Plate 192

SHANI and DAVID SG14

Plate 193
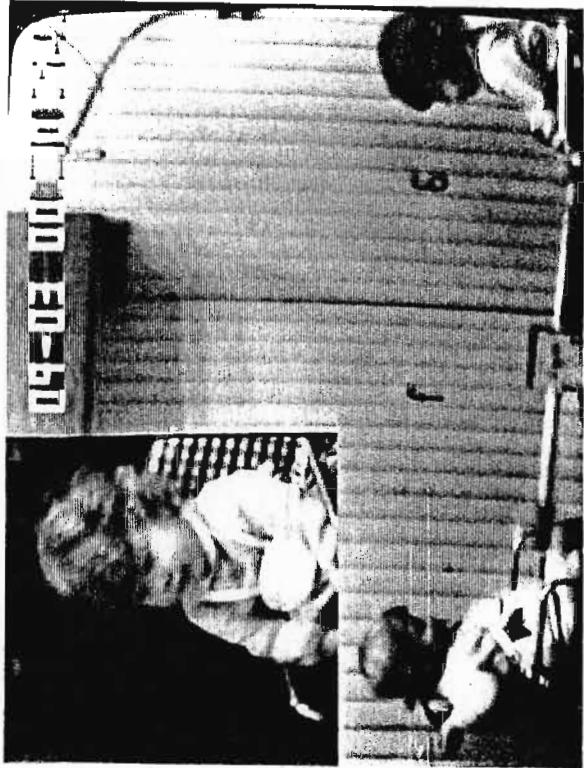
Plate 194

Plate 195

Plate 196

DAVID A. and LEE   SG15

SG15   SINGLETONS : DAVID A. and LEE : 01:48:00

DAVID A's mother did not always seem sure about how to Play.   For example, she started the first session by Playing and then trying to lift the handle.   She then called to the author to find out how to lift the handle, while DAVID A. vocalised, gestured and pointed to his own handle (Plate 193).   Later in the session, she once again showed confusion and asked, 'Do I go?'   DAVID A. answered 'Yes'.   The mother used a high, artificial voice when teaching, used gestures and clear instructions, but did not always make sure that she had compliance. She did not look at DAVID A. often and, perhaps as a result of this, she occasionally encouraged with 'Good boy' before he had actually Played.   She also occasionally said 'Mommy's game' when it was DAVID A.'s turn to Play.   The mother initiated one game which she used throughout. It was a verbal 'Mommy's game, David's game', with exaggerated actions, or hands moving at each side as though she were balancing.   She objected to his holding the handle down, and to banging the handle, but accepted lifting the handle.   She accepted his non-compliance in these instances as well.   His Variation of Playing with one finger was ignored, as was his attempt at communication in visit 2.   DAVID A. insisted on an answer by holding down his handle and repeating his message for 15 seconds, after which she answered.   At other times, she answered him immediately in a friendly tone.   In visit 3, when he wanted to Play in the adjoining room, although she answered him each time, he insisted on repeating his message continually for 75 seconds.   Although DAVID A. appeared to enjoy Playing in the earlier sessions (Plate 194), he became bored earlier each time.   In visit 4, he refused to Play at all, vocalising and pointing to the other room throughout the visit.   His mother tried insisting, shouting and gesturing, to no avail.

LEE started Playing from the start.   He also started with Variations almost from the start, although his mother helped him to understand what she wanted by Playing for him and removing his hands throughout the visits.   She objected when he tried holding on, and insisted on compliance (Plate 195).   She also objected to his lifting the handle (Plate 196).   However, she laughed when his handle stuck and he banged it involuntarily.   She used voice changes and verbal games such as

Age group 3 (Continued)

'Mummy's turn, Lee's turn' and see-saw. She also introduced physical games, such as 'Hands in lap' and clapping hands, which LEE joined. LEE's mother answered his verbal communications throughout the visits. He offered several invitations to join him in lifting the handle, and in pouncing down on it, but these were objected to. The mother occasionally sat looking at the Toy for several seconds, which disturbed the pace of the action. Several times during the sessions, however, both partners gave evidence of enjoying the activity.

Peers

In the peer sessions, LEE manipulated concentratedly, trying to reach the light. DAVID A's behaviour sometimes appeared inconsistent. For example, he appeared to use AGBs by pointing and vocalising and by tapping his hand, but when LEE finally Played, DAVID A. did not. Soon after that, when LEE tried to get out of the harness, DAVID A. seemed to be trying to encourage him to Play by see-sawing while looking at him. DAVID A. seemed to understand how the game worked and how to control LEE's Play. For example, in a later session, LEE tried to lift the handle, and this time DAVID A. prevented this by holding the handle down on his side. Later, while LEE was trying to inspect the light, DAVID A. forced him to Play by shaking the handle (Plates 197 and 198). On another occasion, LEE did not find it easy to lift the handle, and DAVID A. Played with one finger each time, so that LEE could lift it. When DAVID A. stopped Playing, LEE could no longer continue to lift, and he tried to make DAVID A. Play by shaking the handle, pointing and vocalising. DAVID A. Played for a while until LEE started lifting it again and preventing Play by holding it down. In the fourth session, after a short period of Play when DAVID A. appeared to struggle to Play, although LEE tried to get DAVID A. to Play by pointing and saying 'Play', DAVID A. did not comply. LEE spent the whole time lifting the handle and Playing, while DAVID A. sat sucking his thumb, or with his hands up to his face, looking at LEE occasionally. Overall, this dyad appeared to communicate hardly at all. LEE's constant taking over of the Toy for comparatively solitary activities gave the sessions an air of negative affect.
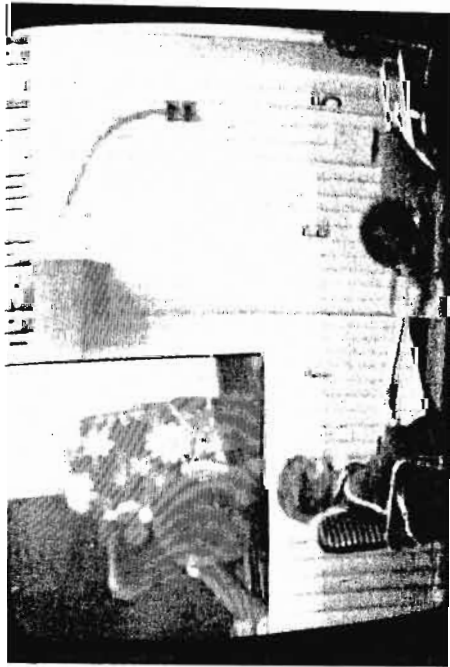
Plate 197

Plate 198

DAVID A. and LEE SG15

SG16   SINGLETONS : KYLE and LORRAINE : 01:51:05

KYLE started Playing from the start.   His mother instructed verbally, by gesture, getting his attention and then modelling.   She objected to his lifting the handle, Playing quickly and holding down his side, but she did not always insist on compliance before she Played in turn. She introduced a verbal game of 'Kyle have a turn, Mummy have a turn', which KYLE joined.   She also drew his attention to the light, which he made into a game by pretending to blow it out like a candle.   She did not join this game, but used voice change and exclamations throughout the session, which KYLE appeared to enjoy.   In the following session, \the mother started with quick, excited speech, focussing on the light. Although she used voice changes in a game-like way and tapped the bar, he firmly held the handle down and refused to allow her to Play (Plate 199).   She referred to his peer's mother, 'Irene's laughing at you', which caused him to check by looking into the adjoining room. She begged in a childlike way to be allowed to Play, but he continued to shout 'No', and to prevent her (Plate 200).   In visit 3, KYLE cried and refused to Play.   His mother pretended ignorance of the Game and asked him how to Play it.   She lifted the handle and showed surprise. KYLE started holding the handle down again and refused to let her Play, saying 'Not you'.   She tried a whispering game and begged, to no avail. When he became interested in manipulating the light, she said, 'The fairy light's getting cross with you', and then was able to interest him in a game of see-saw, which he Played while looking and smiling at the light.   KYLE refused to Play with his mother during the last visit. Overall, the second and third sessions showed strong negative affect and non-compliance.

LORRAINE began to Play from the start.   Her mother did not insist on attention or on correct Play, nor did she appear to be consistent in her objections.   For example, when LORRAINE pulled the handle off, her mother smiled while saying 'No'.   She objected to most of LORRAINE's Playing with her feet, encouraged slapping down and Playing with several little strokes, and ignored it when LORRAINE Played with two fingers.   She distracted verbally, by tapping the Toy, pointing

Plate 199

Plate 200

KYLE and LORRAINE   SG16

Age group 3 (Continued)
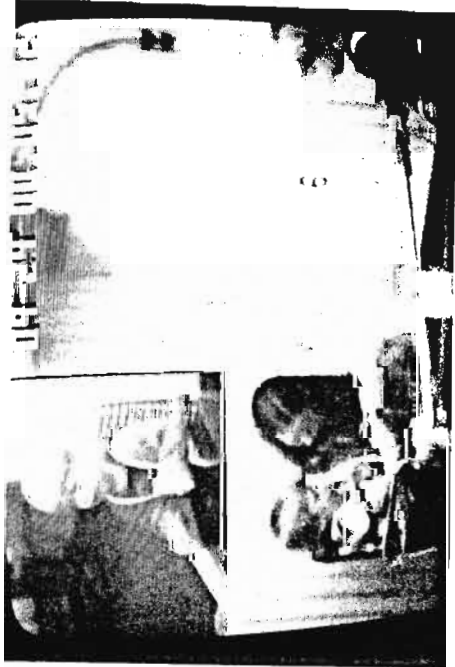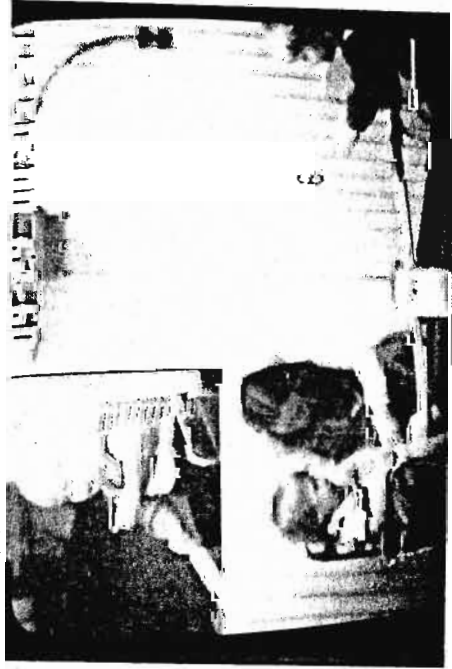
and shaking her handle. She introduced no games, but focussed on the light, which LORRAINE touched, saying 'Hot'. In a later session, LORRAINE shouted and pointed to the light, which later became the focus of a game of 'Off, on' (Plate 201). When LORRAINE refused to Play in visit 3, her mother pointed to the light and said, 'There's a man in there'. Again, in visit 4, when LORRAINE refused to Play, her mother whispered ' ... will come bite you', whereupon LORRAINE cried and insisted on being hugged. There was a lot of crying in the adjoining room during the third and fourth sessions, and LORRAINE looked in that direction several times.

Peers

In the first peer session, KYLE and LORRAINE Played happily for 5 seconds when the handle came off. This started an interaction over the handle and there was no more Play. KYLE cried throughout the second and fourth sessions, although his mother tried to comfort him and LORRAINE tried to distract him by calling his name, joggling the handle, and pointing to the light (Plates 202 and 203). KYLE continuously tried to prevent Play, and a sequence of Joint Negative Play was observed. KYLE showed what appeared to be a great deal of negative affect and bullying behaviour, both to his mother and to LORRAINE.

Plate 201

Plate 202

Plate 203

KYLE and LORRAINE   SG16

Plate 204

Plate 205

Plate 206

Plate 207

TREVOR and DAVID SG17

3.13.4 Age group 4

SG17 SINGLETONS : TREVOR and DAVID : 02:10:02

TREVOR started Playing right away with obvious enjoyment. His mother instructed verbally and by gestures, which she turned into a game which he joined. At the start of the last visit, she asked who was first, and he said 'Mummy'. The mother looked at the Toy a lot of the time, so although she appeared to insist on correct Play, she did not seem to notice when TREVOR did not carry out instructions. For example, when TREVOR manipulated the centre of the Toy, his mother objected and let his non-compliance pass. Later, when objecting to the same thing again, she removed his hand, saying 'You'll break it'. When he slapped the handle, she allowed it twice, then objected, saying 'You'll break it'. Later, she ignored a series of slaps. The mother also ignored TREVOR's feet on the table the first few times it happened (Plate 204 and 205) but objected when he Played with his feet (Plate 206). The first two times he did not comply. The next time, while objecting, she looked quickly over her shoulder. He then complied. Thereafter, she ignored his feet on the table, but objected when he Played with them. At the end of the last session, she suggested that he kept his feet off the table because it was ugly. Besides the game already mentioned, the mother introduced a verbal game, 'My turn', which TREVOR joined. Another two which TREVOR joined were a speed competition between them, and another which involved helping his mother to lift the handle, which he did by Playing his side down. He refused to join a competition to turn off the light, which was not going off at all that day. When she pretended to cry, he banged the handle down. One sequence of game-playing showed Variations introduced by each in turn and joined by the other. For example, the mother joined TREVOR's game of Playing with one finger (Plate 207). Overall, the mother kept TREVOR's interest by introducing different games and playing them enthusiastically. Her participation was childlike, and seemed to be emphasised by her requests for help, for him to tell her who was first, and her glances over her shoulder apparently to see if anyone was noticing that he was using his feet.

Age group 4 (Continued)
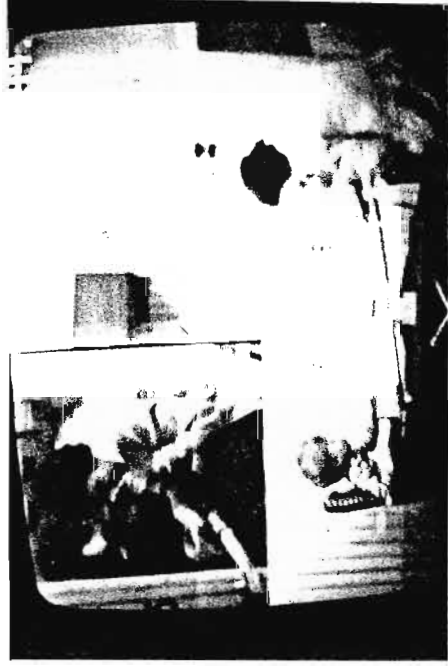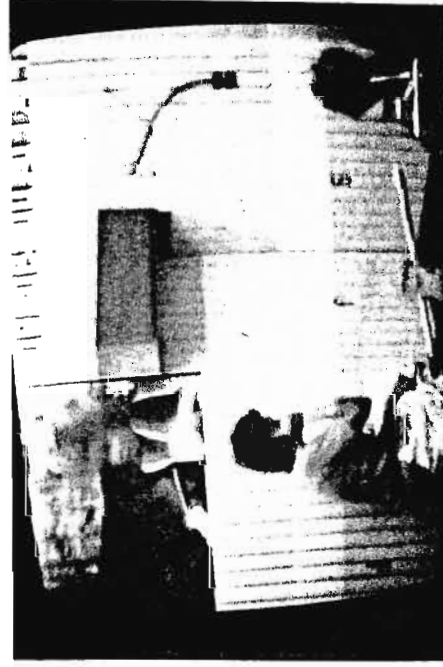
DAVID's mother gained his attention and instructed verbally and with gestures. She prompted action at times by touching his handle, modelled the correct Play, and occasionally Played for him to attract his attention. Other AGBs she used were verbal, clapping, tapping and pointing and touching his bar. She insisted throughout that he took his hand off, removing it if he did not. She encouraged his manipulating the handle to get the light to work, and banging the handle down, which sometimes became a game. When DAVID talked, his mother gave him attention and responded suitably. For example, she looked where he asked her to and adjusted his halter which he said was too tight.

However, when he complained about a sore finger, she responded with game-like Play instructions, which became a game. Games were a feature of these sessions. The mother introduced many different ones and combined games to keep up interest. Some were verbal, such as 'whee', 'Aha', and 'Mommy's turn, David's turn'. One involved putting on and putting off the light. When the light stopped working, that became a game too. There were more active games, such as one about prancing horses and exaggerated actions which themselves became games (Plates 208 and 209). DAVID occasionally did not respond to a game, and the mother then changed it immediately, sometimes by introducing another factor. However, he usually accepted the games with interest, and wherever possible, he joined (Plate 210). He introduced a verbal game of 'Bee-baa', which his mother joined, and he also introduced Variations to her games. His mother was sensitive to his suggestions and joined with his Variations. For example, the mother's game about horses encouraged DAVID to tell a story about an elephant which the mother listened to and joined. She then turned it into a game about the light.

Peers

The peers started their first session together with a competitive sequence which gave the impression that TREVOR was antagonistic. Later in this session, TREVOR appeared to be distracting DAVID who was

Plate 208

Plate 209

Plate 210

TREVOR and DAVID SG17

Age group 4 (Continued)

crying, but even this usually prosocial behaviour appeared to be
antagonistic.   In the second visit, TREVOR's single AGB appeared
·more friendly.   He joggled the handle and said, 'Play now, David,
play now'.   In the third session, both children cried throughout.
The final session started with a long sequence which showed several
Variations started by DAVID, and game Invitations by each which were
all joined and varied in turn (Fig. 39, p. 144).   This sequence appeared
to have a strong competitive element to it, but it did not appear to be
antagonistic.   A later sequence in the same session, again started by
DAVID, also showed each child varying the behaviour of the other.
A quiet, apparently friendly communication sequence also occurred in
this session.   Overall, it appeared that TREVOR was more antagonistic
and DAVID protested more, but they communicated verbally in a friendly
way.

Age group 4 (Continued)

SG18   SINGLETONS :   TYRONE and GARETH :   02:16:00

TYRONE's mother used extravagant verbal and gestural teaching behaviours
(Plate 211).   He gave the impression of being embarrassed about
something and often looked quickly over his shoulder as though to
check whether his friend was watching.   His mother insisted on
correct Play, by gesture and by removing his hand when necessary
(Plate 212).   She also objected when he banged the handle down,
and when he pulled the table towards himself.   TYRONE often said
'No', and often paused, looking at his mother, before complying.
He communicated clearly, 'I want to hold it', which may have been
an attempt at varying her game.   His mother often said, 'You'll break
it', and referred to the author several times, to keep control, for
example, by saying 'Auntie Zita is going to get cross'.   TYRONE then
always complied immediately.   The mother made derogatory remarks,
which could be joking, but which appeared to be antagonistic, for
example, 'You stupid banana' (Plate 213), or mimicking his words and
tones.   AGBs included clicking the fingers, shaking the handle,
calling him by name and 'Hey, monster'.   TYRONE sometimes joined
his mother's action in holding her hands high (Plates 214 and 215),
but she did not insist on this as long as he took his hand off the
handle after Playing.   She started a verbal game of 'boom' and a
seesaw game, but they were not joined and she stopped.   When TYRONE
vocalised and pointed to the light, his mother joined and made a game
of it.

GARETH appeared to be trying to vary his mother's games by introducing
Variations.   She did not accept the Variations, however.   For example,
at the start of the first session, the mother modelled the action and
said 'Down' (Plate 216).   GARETH said 'Up' and promptly tried to lift
the handle.   Although his mother objected, he succeeded in lifting it.
GARETH Played correctly most of the time, and embarked on a long
series of Variations, including game Invitations.   His mother joined
in the verbal games, but objected to the Variations with the Toy and
persisted in instructing and modelling the 'correct' way to Play.

Plate 211

Plate 213
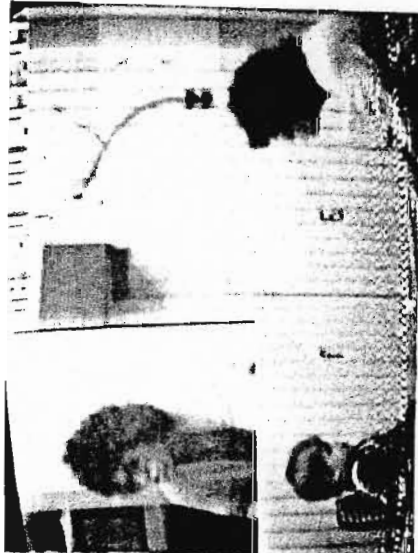
Plate 215

TYRONE and GARETH SG18

Plate 212
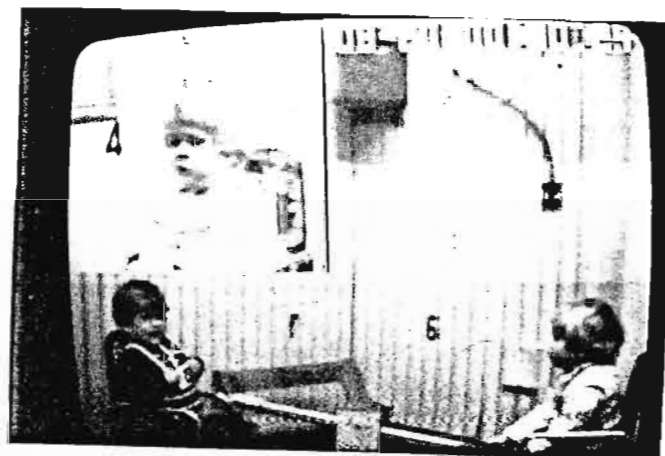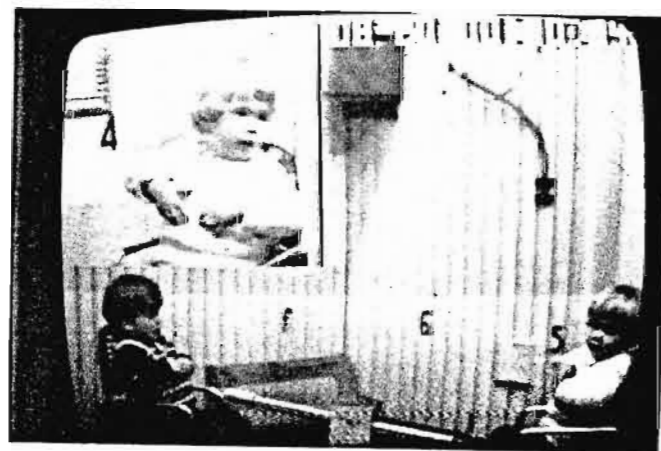
Plate 214

Plate 216

In the second session, GARETH verbalised his possible intentions more clearly (Fig. 36, p. 139). Each time he laughed loudly, he looked into the adjoining room as though to share it with TYRONE, not as though he was bored. When he wanted to play the alternate game, he clearly verbalised it by saying, 'Put the money, put the money, Mummy'. Overall, this was a peaceful session, but it appeared that the mother did not understand that the child was varying the game deliberately. She kept repeating the instructions.

Peers

In the peer sessions, TYRONE and GARETH appeared to enjoy Playing together (Plate 217). They continually repeated each other's actions or varied them slightly. Verbal sequences as well as action sequences were observed. For example, a long sequence about breaking the Toy occurred in the first visit (Fig. 40, p. 146). When TYRONE complained about being stuck, GARETH took it up and they both wriggled and complained in the same way throughout almost a whole session (Plates 218 and 219). Only one AGB was observed, when TYRONE said, 'Come play'. On the whole, they played harmoniously, and complied with each other's requests. TYRONE objected to GARETH's slapping of the handle, first to his mother, and then to GARETH, saying 'You're going to break it', but they both appeared to enjoy that. When GARETH slapped again, TYRONE glared at him, after which he accepted the slapping with a smile. Overall, the children appeared to understand each other's intentions better than the mothers understood them. Except for TYRONE's glaring on one occasion, the sessions were harmonious, and they appeared to communicate well verbally. These children attend a creche together as both their mothers work all day.

Plate 217

Plate 218

Plate 219

TYRONE and GARETH   SG18

Age group 4 (Continued)

SG19   SINGLETONS   :   TARYN and ANDREA   :   02:14:00
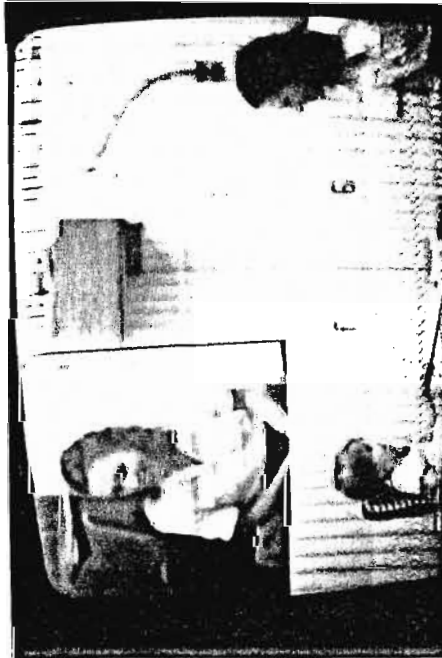
TARYN's mother instructed verbally and by modelling (Plate 220).
She insisted verbally and by gestures on the hand being removed from
the handle.   She asked TARYN in visits 3 and 4 to tell her how to
Play, whose turn it was, and also to remind her to remove her hand.
She also complimented her on Playing nicely (Plate 221).   TARYN's
mother objected to Variations only when they recurred and interfered
with the Game, for example, lifting, little slaps, banging, and
putting the foot in the way of the handle.   She encouraged it when
TARYN Played with the back of her hands.   TARYN spoke to her mother
several times during the sessions, and her mother listened and responded
each time.   The mother introduced the see-saw game, and then varied
it by singing the tune.   She also introduced verbal games such as
'It's your turn', and Playing quickly.   TARYN accepted or joined all
the games, and after playing the last one for a while, she varied it
by suddenly Playing slowly while looking at her mother.   In the final
session, it is possible that 75 seconds of the time were taken by a
long game with Variations by TARYN, although it appeared to be a series
of different Variations.

ANDREA's mother used few strategies besides straight instruction.
Except for 'Your turn, my turn', the games were introduced by ANDREA
and were based on giving the mother instructions.   For example,
ANDREA insisted that her mother take her hand off, that she place
them on her stool, hold her hand up to her ear, and she started the
game 'Down'.   Her mother smiled and joined the games (Plate 222).
The mother accepted holding down the side and trying to lift the
handle the first time they happened, but then objected to them.   She
distracted ANDREA by calling her by her nickname 'nunu'.   Whenever
ANDREA spoke, her mother listened politely and responded.   ANDREA
appeared to enjoy Playing with her mother, but became bored earlier
in each session.   In the final one, she Played for only about a
minute.

Plate 220

Plate 221

Plate 222

TARYN and ANDREA   SG19

Plate 223

Plate 224

Plate 225

Plate 226

Plate 227

TARYN and ANDREA   SG19

Peers

In the peer sessions, TARYN and ANDREA Played correctly a lot of the time.   They each used AGBs once.   TARYN shook the handle and looked at ANDREA.   Later, ANDREA looked at TARYN and twisted the handle until it squeaked (Plate 223).   In the final session, for over a minute, they Played with a series of Variations by each and with evidence of enjoyment.   They also showed instances of imitation.   For example, TARYN reached for the light, and they then took turns in doing that (Plates 224 and 225).   Then ANDREA tried to get out of her harness, and was joined by TARYN trying to do the same (Plates 226 and 227).

Overall, the sessions with the mothers were quiet, with a few Variations, and the peer sessions were the same.   The affect was prosocial in both situations.

SG20   SINGLETONS : MARC and SCOTT : 02:20:06

MARC's mother hardly spoke at all. She Played, watching him constantly with a slight smile. She spoke quietly and stopped smiling when she objected. She encouraged all his Variations except when he prevented Play or used a lot of force. MARC's mother introduced one game of see-saw, which MARC joined. She instructed verbally and with gestures, and insisted that he removed his hands from the handle. She suggested that he lifted the handle, and when he could not, she said, 'Mummy must do it then'. However, in subsequent sessions, the handle lifted more easily, and she did not object to his lifting it. Possibly since she was very non-intrusive, MARC Played for long periods, with many Variations interspersed with correct Play. It was not solitary Play because he looked at her often and they smiled together often (Plate 228). MARC introduced two games, one in which he slapped the handle down on each of his turns, looking at her each time, and the other in which he lifted the handle, looking at her, and she joined by lifting her side. He also made remarks which she listened to and responded to (Plate 229). Therefore, although she introduced only one game for a short while, he remained interested almost all the time.

SCOTT started Playing correctly right away. At the start of each following session, his mother reminded him about the hand coming off, verbally and by gesture. She used voice changes and games such as going fast (when they both kept their hands on to get a see-sawing effect), and counting. Both games were joined by SCOTT. She objected when SCOTT did not remove his hand, when he forced the handle up, and when he continued banging or peering into the Toy. She did this verbally, by gestures, and by not Playing until he complied (Plate 230), sometimes turning away in irritation. She also labelled his non-compliance as being 'like a baby'. She kept his attention by asking his help to 'get unstuck', by saying 'Mrs. Dickman will get cross', and 'We have to stay here till the lady calls us'. SCOTT appeared to try to introduce several games, such as lifting his hand over his head, or curled on his shoulder (Plate 231), Playing with his wrist or with one finger, and slapping the handle down. These were not
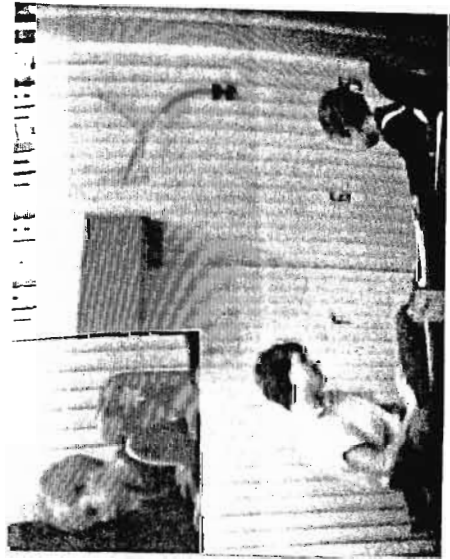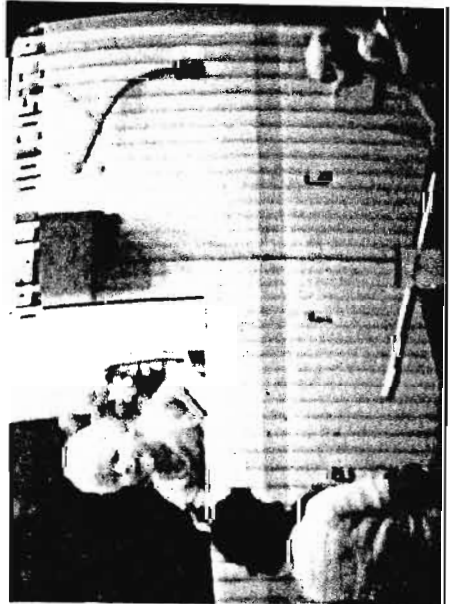

Plate 228

Plate 229

Plate 230

Plate 231

MARC and SCOTT   SG20

joined by the mother, although only the slapping was objected to.
Later, when the mother lifted her hands to her ears, SCOTT clasped his
hands over his chest.   SCOTT showed clearly that he knew how his mother
wanted him to Play by doing what he wanted to do and labelling it as
wrong (Fig. 35, p. 35).   Overall, SCOTT appeared to enjoy the sessions,
and on the few occasions that he wanted to stop, very little persuasion
was needed for him to continue.

Peers

In the first peer session, MARC and SCOTT Played for approximately 35
seconds, when SCOTT stopped Play by leaning over the Toy to look into
the centre.   Play did not resume.   In the third session, MARC was
miserable throughout and did not attempt to Play.   The whole second
session, however, was a sequence of Play and Variations, most of them
Invitations to play and most of them joined.   Interest was maintained
throughout and both children obviously enjoyed it all.   There were no
objections at all (Fig. 19, p. 112).   In the fourth session, MARC's
mother sat next to the Toy.   (She reported that MARC was afraid of
SCOTT.)   The peers Played well and quickly from the start, and then
started a series of Variations which began with SCOTT lifting the
handle.   It was obviously understood by both boys that this was not
permitted.   SCOTT repeated it a few times during the sequence, but
MARC did not join in that Variation.   Both glanced at MARC's mother
from time to time, and then, at the end of the session, they each
made a statement to her, apparently explaining why they did not abide
by the 'rules' (Fig. 37, p. 142).

Overall, both boys enjoyed the sessions with their mothers, and showed
an ability to have a complex and lengthy game together.

Age group 4 (Continued)

SG21   SINGLETONS : BRIGITTE and SAM : 02:30:02

BRIGITTE started Playing correctly after 10 seconds of settling in and instruction, which the mother did verbally and with gestures. Throughout, the mother insisted on very slow careful Play, with several injunctions not to break the Toy.   In the third visit, BRIGITTE lifted the handle, and the mother objected (Plate 232), saying 'Now it's broken'.   In the last session, the handle stuck and banged as it came down.   Mother and child both reacted, and BRIGITTE looked into the adjoining room.   The mother referred often to the light.   Her instruction, 'Hands on knees' could be seen as a game which BRIGITTE joined, but it was not carried out in a game-like manner, so the 'joining' could simply be compliance.   Otherwise, no games were introduced, and the mother very seldom smiled or used game-like expressions.   BRIGITTE talked of other things 3 times, and the mother responded to two of these.   Both appeared to be enjoying the Game and, at times, showed it (Plate 233).   In the second visit, the mother complimented BRIGITTE on doing it 'nicely'. The mother objected to all Variations, which included Playing with both hands, slapping and patting the handle when it was down.   In the third session, the mother instructed BRIGITTE how she was to Play with her peer partner, and started a game of 'Sam-John's turn', 'Brigitte's turn'.   Overall, they were pleasant sessions, but BRIGITTE had to Play very slowly indeed to please her mother.

SAM's mother did not introduce any games, except for 'Your turn', which SAM joined.   SAM issued several game invitations, such as banging, lifting the handle, and using his foot on different occasions.   His mother did not join these Invitations.   When his mother ignored the fact that he had not released the handle, he said in a gamelike way, "Say 'take your hand off' ", which she then did.   The mother usually insisted on the rules of the game, using gestures (Plate 234).   She Played for SAM (Plate 235) or removed his foot when he refused to do so, and these episodes were repeated in sequences.   She consistently
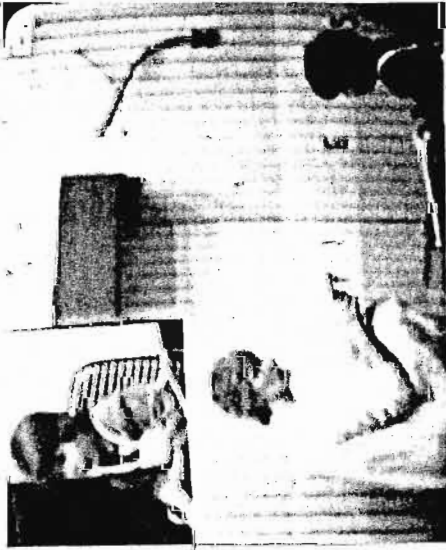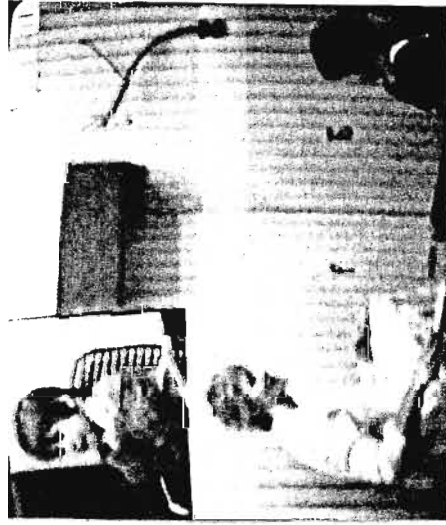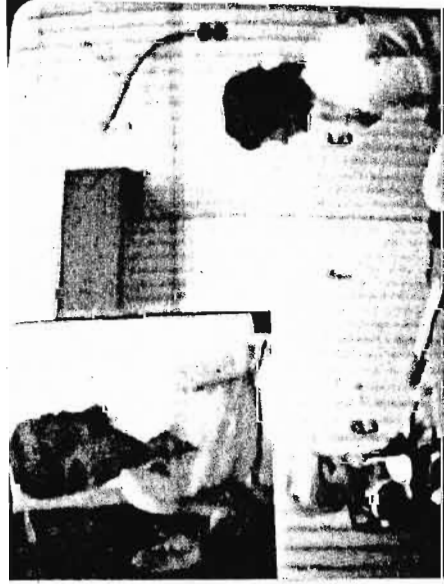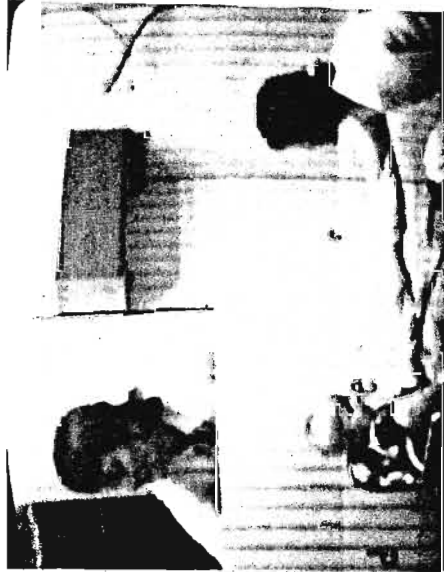

Plate 232

Plate 233

Plate 234

Plate 235

BRIGITTE and SAM   SG21

responded to his conversation, and distracted him by tapping and
pointing to the light, and by discussing a game they were to play
on the way home.   She encouraged him when he lay down on the bar
and when he pulled faces at her.   When he poked into the centre of
the Toy, she leant forward too, but she objected when he kept his
hand on the handle, when he used two hands to Play or used his foot,
lifted the handle, banged or shook the handle (Plate 236).   SAM did
not comply so often and appeared to be so happy, that it is possible
that non-compliance was a game in itself (Fig. 34, p. 134).

Peers

The peers appeared to enjoy their first ten seconds together.   For
the next 5 seconds, they appeared to be trying to prevent each other
from Playing, but still appeared to be enjoying it.   Thereafter, and
through all the subsequent sessions, they appeared to be in competition
with negative affect.   Much of the time they were equally matched,
so that the handle stayed level or moved slowly in one direction or
another.   However, when one partner got the handle firmly down, the
other was generally unable to move it.   This occurred in visit 1,
when SAM held it firmly down.   After trying for a while to Play,
BRIGITTE resorted to smacking the handle occasionally and fighting
SAM verbally.   When her mother came in and they ignored SAM, he tried
to distract her attention several times.   In the second session,
BRIGITTE immediately took control of the handle.   When SAM immediately
called his mother, she attracted his attention by vocalising and lifting
the handle, and then abandoned her position of strength, saying 'There
you are'.   The whole of the third visit was fighting for control
(Fig. 38, p. 143) with the children using the same strategies.   They
smiled only in the last 20 seconds, when BRIGITTE gave her attention
to the light.   Visit 4 was a repeat of visit 3, until SAM got his foot
on the handle (Invitation).   BRIGITTE watched him carefully and then
joined.   Immediately afterwards, SAM said 'Get your foot off' with
clenched teeth, and competitive play resumed.   It appears possible that
the children were trying to force each other to abide by the rules,

Plate 236

BRIGITTE and SAM   SG21

or that the competition itself was the game and that was why they were not happy to see the other abandon the field.   The only time they showed positive interest in each other was when Variations were introduced, such as the light or Playing with the foot.

Age group 4 (Continued)

SG22 : SINGLETONS : CANDICE and LESLEY : 02:27:00

CANDICE's mother instructed briefly at the start, focussing on the light. She insisted on CANDICE taking her hands off at the beginning, but only intermittently after that throughout the sessions. She used game-like facial expressions once and whispered instructions once. CANDICE modelled a flat palm gesture, which was not seen to be modelled by the mother. The only game observed was one of going fast, which was joined by CANDICE. Variations by CANDICE were gently done (Plate 237), and not always consistently objected to or encouraged. For example, banging the handle down was encouraged once and objected to with a smile the next time. CANDICE started conversations with her mother 3 times and her mother responded each time. She started a 'What's that' game, and a game in which she appeared to pull at the handle, making it difficult for the partner to Play easily. Her mother joined her both times. A game of Playing with 2 fingers was not joined. CANDICE looked into the adjoining room often, and Played in that position too. Her mother seemed to start attracting her attention, but then stopped. When CANDICE was not looking there, but stopped Play, the mother distracted verbally and by shaking the handle. CANDICE was compliant and seemed to enjoy a lot of the Play (Plate 238). However, she seemed to get bored. Her mother did not insist on continuing with the Game and did not try to interest her in Playing.

LESLEY's mother also appeared to be very passive. In the first session, she started a verbal game, 'Now Mummy, now Les' and a counting game, both of which were accepted but not joined by LESLEY. She also introduced the see-saw game, which was refused by LESLEY. In the third session, the mother introduced a verbal game of 'Mummy can't' (do it without help) and 'Lesley can't' which interested LESLEY. LESLEY started a 'What's that' game, which the mother joined. She also introduced a hitting the table game and one involving lifting the handle, both of which were accepted but not joined by her mother (Plate 239). One invitation to lift the handle was made verbally. The mother said, 'Let me', and LESLEY replied, 'No, let's both do it.' LESLEY's

Plate 237

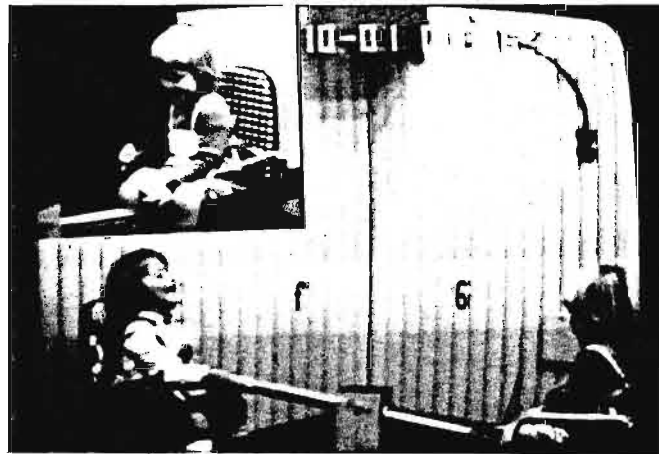Plate 238

Plate 239

CANDICE and LESLEY SG22

Plate 240

Plate 241

Plate 242

CANDICE and LESLEY SG22

mother, too, did not attempt to distract her when she looked into the adjoining room, but tapped and touched her side when LESLEY stopped Playing without looking around in that direction.   LESLEY showed several times that she understood how to Play.   For example, at an appropriate time, she said to her mother, 'Push yours down'.   LESLEY started conversations several times, which were responded to by her mother. Holding the handle, lifting it and sticking a finger into the centre of the Toy were objected to most of the time, but other Variations such as shaking, see-sawing and banging were encouraged.   Both partners appeared to enjoy the sessions and, although LESLEY did not want to Play for most of the second session, she was compliant.

Peers

LESLEY cried for most of the first peer session and appeared to be very embarrassed about it.   CANDICE sat and watched her quietly with great interest, and only once tried to distract her with an Invitation. She lifted the handle with a crash.   The children did not get together for long in the second session either.   LESLEY appeared to try to distract CANDICE by pumping the handle, by shaking it violently, and by vocalising.   She then managed to get CANDICE to Play for a short time by lifting the handle, but when she tried a Variation of holding the handle down, CANDICE stopped .   LESLEY then asked her mother to Play with her.   In the third session, there was only a little isolated Play, and the children did not appear to relate to each other much. The children Played the whole of the last session apparently with enjoyment (Plate 240), and each introduced Variations.   Sometimes they were objected to (Plate 241) and sometimes accepted (Plate 242), but no joining was seen.
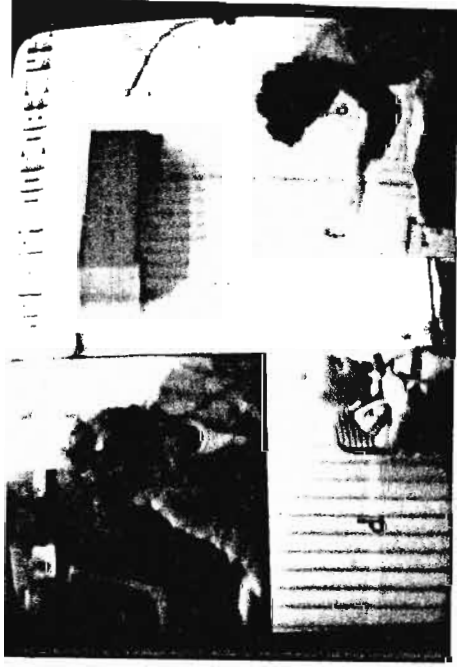
Age group 4 (Continued)

SG23   SINGLETONS : STUART and NIALL :   02:22:06

STUART was slow in maturing and his mother reported that he was below average in speaking. He was very active and impulsive. He started Playing right away. His mother insisted on the rules, removing his hand if he was non-compliant (Plate 243). By the last session, this made STUART angry. The mother modelled the Play for him (Plate 244), getting his attention first, verbally and by wriggling her fingers, or by pointing. She objected to most Variations such as banging, lifting, holding, keeping his foot on the table, shaking and pulling the handle. However, she sometimes ignored them, for example, Playing with 2 hands or with little slaps, and once turned to hide a smile when he pulled the table up. He appeared to be vigorous and strong and, in one session particularly, he was non-compliant but happy. Games she introduced included using fingers only, saying 'Down', Playing with one finger, and saying 'Stuart's turn, Mummy's turn'. STUART joined all except the verbal games. STUART tried to start several games too for example forcing the handle up, banging it so hard that it jumped up and pulling at it. The mother did not join these invitations. When the handle came off in the first session, STUART seemed to make it into a game by pulling it off again and again, his mother replacing it each time. STUART vocalised often, and his mother responded each time. They both seemed to enjoy the sessions (Plate 245), and STUART needed very little distracting, which his mother did verbally and by tapping the bar or handle. The mother's strategy was not so much to provide variety as to provide control, and STUART provided the variety, until he got bored just before the end of each session.

NIALL appeared to be quiet and thoughtful. The mother explained the Game by showing how she could not lift the handle, and asked him to try to lift his. After a few such tries, his side did come up, and after that he contentedly tried lifting it very gently, and used a great deal of pressure to push it down, since it appeared to stick. He seemed to try to get her to join his Variations in the fourth session. When she said, 'It won't come up', he said 'You can'. The mother also
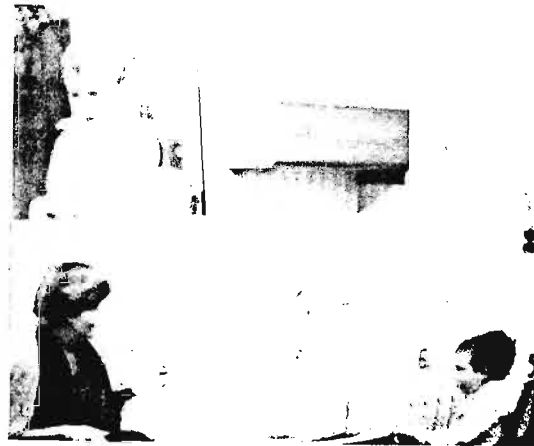

Plate 243

Plate 244
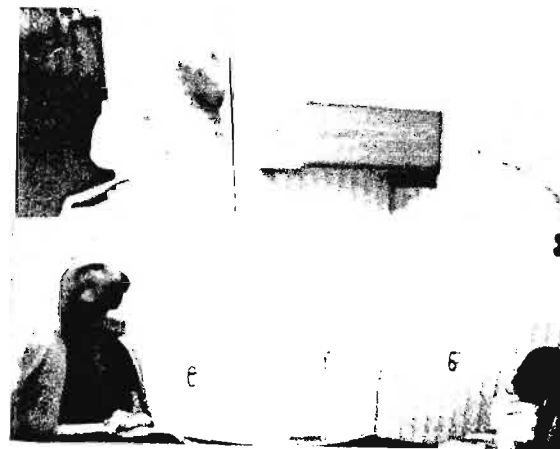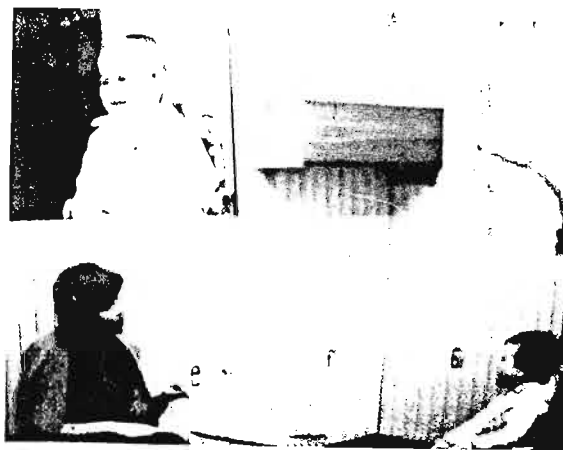

Plate 245

STUART and NIALL   SG23

Plate 246

Plate 247

Plate 248

Plate 249
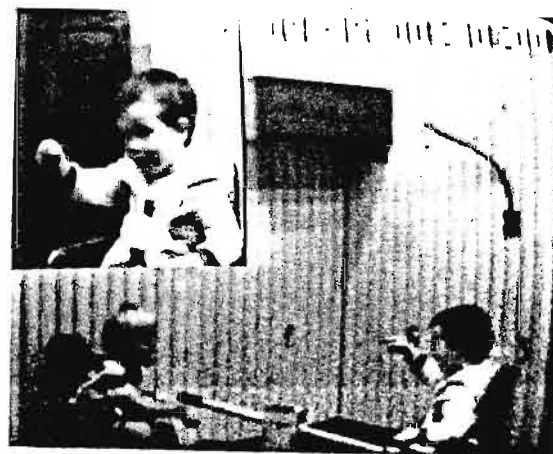
Plate 250

Plate 251

STUART and NIALL   SG23

Age group 4 (Continued)
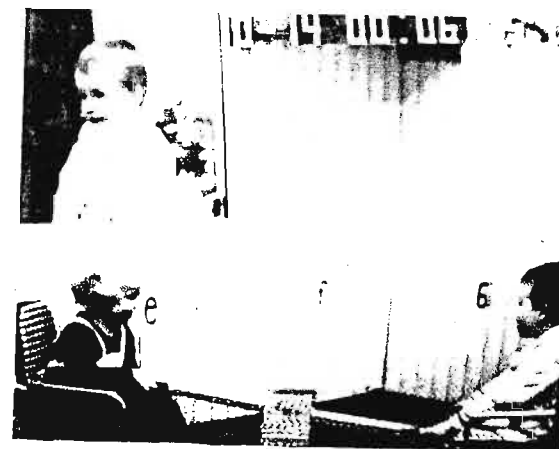
explained the regularities of the light.   NIALL started several
conversations, which his mother responded to.   Trying to lift the
handle appeared to become a game, and the mother introduced a verbal
game as well, 'My turn', which NIALL joined.   NIALL started a game
using his mother's repeated 'Take your hand off' remark, and he also
made a game of non-compliance in the last session.   There were very
few Variations.   The mother objected to holding down and lifting the
handle, and encouraged banging it down and Playing with the foot.
She joined when he Played with one finger (Plate 246).   NIALL appeared
to be interested throughout the first three sessions and became bored
in the last session (Plate 247), but he remained pleasant and compliant
(Plate 248).

Overall, both mothers used very few games and responded to the children,
while trying to keep to the rules of the Game.

Peers

In the peer sessions, NIALL appeared to be concerned about STUART's
rough Play with the Toy, and often objected and looked into the adjoining
room when STUART seemed to be forcing the handle.   The first session
was characterised by STUART playing with the loose handle, taking it off
repeatedly and also Playing without it, while NIALL watched him.   In
the second session, NIALL objected verbally and by gesture to the rough
Play (Plate 249).   He also seemed to be encouraging Play rather than
manipulation (Plate 250), seemed to explain about the lifting to STUART,
and started his mother's 'Mine can't come up' game.   He also Played with
his foot.   In the last session, he Played with one finger, with 2 fingers
and tried holding the handle down.   The latter was joined by STUART, so
that each child Played with effort, against the other's holding down.
This was also seen in the third session.   Overall, the children appeared
to enjoy being together (Plate 251).   STUART seemed to get bored sooner,
and NIALL sometimes had to distract him, but there was a lot of soft
vocalising from both of them throughout, and they responded to each other.

Age group 4 (Continued)

SG24   TWINS : DAVID L. and MICHAEL :   02:08:00

DAVID L's mother was very animated, talked a lot, gestured and helped physically to Play and to remove his hand (Plate 252).   She started such verbal games as 'Boom', see-saw, and focussed on the light, all of which were accepted.   A game of 'Let's play quickly' was sometimes joined.   A game which always encouraged DAVID L. to Play was when the mother said she would cry if he did not Play (Plate 253).   She treated DAVID L. very tentatively, having described him before the session as being 'difficult'.   She often referred to 'telling Daddy' how they Played, and this usually was effective in encouraging him to continue. DAVID L. introduced Variations such as lifting the handle, holding on to it, manipulating the light and moving the table, all of which the mother objected to.   She accepted slapping and banging.   DAVID L. started several conversations with his mother.   Some of them she responded to immediately, some after several repetitions, and others not at all.   DAVID L. introduced a game in which he lifted the handle, pointed to his mother and said 'Up'.   She objected to this.   He looked into the adjoining room often, and she distracted him by tapping the light and talking in a quick excited way.   It appeared to be difficult to keep his attention, although he appeared to enjoy Playing at times.

MICHAEL Played well and more quickly than DAVID L. did.   He appeared to get bored too and needed a lot of encouragement, but was basically compliant.   The mother's teaching strategies were the same, but she appeared to use more game-like gestures with MICHAEL.   She introduced 'Let's Play quickly' and see-saw, both of which MICHAEL joined.   She also often pretended to cry, and referred to how they were going to report the Playing to his father.   She distracted MICHAEL with her game-like gestures and by pointing to the Toy.   She appeared to respond immediately to his communications.   MICHAEL started a see-saw game which his mother joined, and invited her to Play with two hands on the bar, which she objected to.   He often looked into the adjoining room, pointing and vocalising about it (Plate 254), but also showed enjoyment of the Game.
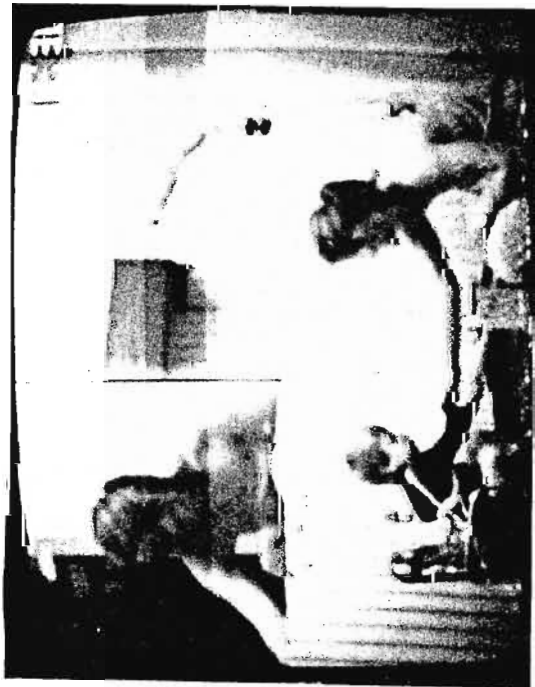

Plate 252

Plate 253

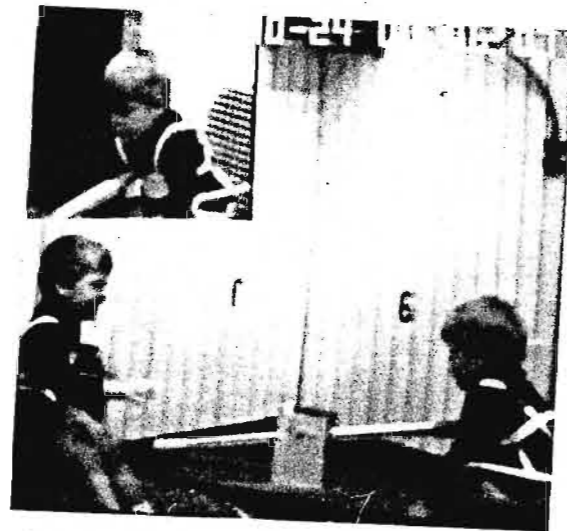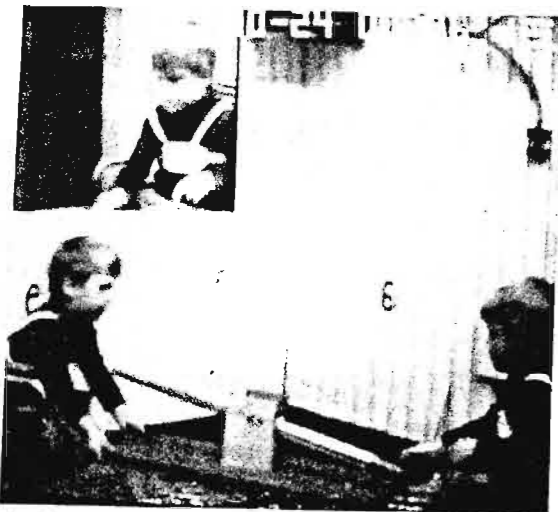Plate 254

DAVID L. and MICHAEL SG24

Plate 255

Plate 256

Plate 257

Plate 258

Plate 259

Plate 260

DAVID L. and MICHAEL   SG24

Age group 4 (Continued)

Peers

In the first two peer sessions, the mother intervened with instructions. Most of the following comments refer to the last two sessions when she stayed out of the room.

The boys often duplicated each other's actions (Plates 255 to 258, and Plates 259 and 260).   In the third session, DAVID L. started a sequence of Playing and lifting.   MICHAEL then began banging it down each time DAVID L. Played, so that it could not be lifted (Fig. 41, p. 147). This appeared to have required some skill, since when DAVID L. tried to reverse the roles in the last session, he was not able to do so, missing the handle each time.   The boys vocalised quietly to each other throughout the sessions.   In the last two sessions, they did not appear to be bored at all and showed enjoyment.   When the mother was present, there were several objections by MICHAEL to DAVID L's Variations, but when she was absent, there were no objections from either boy.   Overall, they kept their interest in being together when they were on their own by Variations, which were accepted or joined, by imitations and verbal communication.