MOTHER-INFANT RELATIONS IN DIFFERENT ETHNIC GROUPS
LIVING IN LONDON

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ABSTRACT

Styles of mothering and the emphasis on the mother-infant relationship vary enormously both across and within cultures. Class, ethnicity, birth order and sex are some of the factors which have been shown to affect mother-infant relations, and thus the infant's development.

The importance of a stimulating physical environment for the infant's cognitive-intellectual development is now accepted, but the question of which aspects of development are related to different aspects of the environment, and at which ages, are less investigated. Individual differences also have to be considered here.

This longitudinal study was planned to look at the mother-infant relationship and its subsequent effect on infant development in a diversity of child-rearing situations. Both ethnic origin and social class differed widely, reflecting the main immigrant groups of the area of study and the indigenous population. 19 mother-infant pairs were visited in their homes at 3-monthly intervals until 18 months. Assessment was by means of maternal interview, observation of family interaction, and developmental testing of infants.

No significant differences relating to social class or ethnic group, sex of infant or birth order emerged, either in cognitive, motor or social development. Differences in styles of mothering were observed, and cross-lagged panel analysis indicated the positive influence of two maternal behaviours: Emotional and Verbal Responsivity, and Maternal Involvement, on subsequent mental development.
Direction of effect for both behaviours was from mother to child, so that it was the more emotionally responsive and involved mothers who were having the more positive effect on their infant's level of mental functioning. In the second year a mutually reinforcing "steady state" relationship appeared to have been established between these two maternal behaviours and infant's mental test scores, although the impact of the alert infant in eliciting maternal involvement was now greater than in the first year.
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Chapter 1: INTRODUCTION

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INTRODUCTION

According to the 1971 Census just under 3 million people in Britain were born overseas. Of these about half are white immigrants who have come from Europe, the Old Commonwealth and Ireland; the other half have come from the New Commonwealth countries of Asia and Africa, from Pakistan, and from countries throughout south-east Asia where 'overseas Chinese' have settled.

Despite the widely differing ethnic origins of our population, health and educational services are designed both to promote and protect a 'British way of life', as typified by the two-parent, two-child family. An intelligent English-speaking woman who has grown up in this country, and who wishes to start a family is able to obtain appropriate advice on family-planning, pregnancy and child-rearing, but the adequacy of the advice and the extent to which it is assimilated depends to a large extent on the woman's social class. The comparatively uneducated working-class woman is at an obvious disadvantage here, finding it difficult to ask questions of doctors and nurses. As Hymes (1971) has pointed out, "What language skills people have available affects what they can do". Even more disadvantaged is the immigrant mother who may speak very little English.

In 1978 13.1% of all live births were to mothers born outside the U.K. Of these 8.1% were from the New Commonwealth and Pakistan (NCWP) and 3.0% from other foreign countries (excluding the Irish Republic and the Old Commonwealth). In Tower Hamlets, the district of study, 31% of live births were to mothers from the NCWP, and 4% from other foreign countries. (OPCS Monitor 1980). While these mothers are a heterogeneous group as far as country of origin, education and parity are concerned, all are in the same situation, that of giving birth and caring for a child in an alien culture.
New mothers in this country may turn to their own mothers for advice, or may prefer to seek guidance from the wealth of literature which is currently devoted to child-rearing. (See Hubert 1974). Those immigrant mothers who are able to turn to their own mothers for advice, may be glad of their moral support, but are more likely to find themselves faced with a choice between traditional ideas, and what they have been told at the hospital or clinic. In all cases the mother who is living away from her own culture has her confidence lowered, and this may be expected to affect both her relationship with her child and the child's subsequent development (Ainsworth and Bell 1973, Thoman 1974, Baudin 1977).

Most mothers are given a 'baby book' during their confinement, which gives basic advice on feeding, sleeping, crying and baby's earliest 'milestones', and are advised (both by the hospital and health visitors) to take Baby to the local clinic at regular intervals. From the beginning, those mothers who are most in need of clear guidance are those least likely to receive it. The 'baby book' is incomprehensible to those with poor English, and not all local clinics have staff who are able to speak any of the major immigrant languages.

Furthermore, baby-books are written by Western paediatricians or child psychologists with Western mothers in mind. The subject of infant-feeding, the most vital aspect of mothering, is discussed in terms of scheduling from the earliest days, with breast-feeding being regarded as something only a few privileged mothers are able to succeed at. The major question as far as sleeping is concerned is whether Baby should sleep in a cot or crib in the parents' room, or whether in a room of his own from the start. Crying is discussed as a problem in itself, rather than something which is integrally linked to feeding and sleeping. Such "advice" can only serve to confuse the immigrant mother who is more likely to have been reared in a tradition where the young infant has constant access to mother's breast, and until early childhood will be comforted physically by someone as soon as he cries.
The extent to which immigrant mothers in this country are influenced by Western attitudes to child-rearing, and the extent to which they continue their traditional practices is comparatively little researched. Children from minority backgrounds do seem prone to a greater number of paediatric problems (such as failure-to-thrive), and psychological stresses (behaviour disturbances and anxiety, (Stewart-Prince, 1967), and to have more problems at school. But how much of this is due to unfavourable economic and social conditions, and how much is due to the child's early social environment?

This question has been approached from different viewpoints by Hood, Oppé, Pless & Apte (1970), Pollak (1973), Rutter, Yule, Morton & Bagley (1975), and de Lobo (1978); their findings are discussed in more detail in Appendix I.
Cross-cultural study of childhood

The earliest descriptions of family life and child-rearing in non-western traditions came from anthropologists. The pioneering work of Mead (1930, 1932; Bateson & Mead, 1942) reflected the growing concern with the early acquisition of culture. A number of psycho-analytically oriented studies attempted to link the typical child's socialization in a culture to the modal adult personality (e.g. Kardiner, 1939). The first quantitative cross-cultural study on infancy was that of Dennis (1940), among the Hopi Indians of North America, while Erik Erikson (1950) was one of the first psychologists to professionally observe and report on infancy and childhood outside Western traditions, and to make cross-cultural comparisons. A move away from pure ethnographic description was made by Whiting & Child (1953), whose multicultural comparisons proved seminal, both for their incorporation of learning theory and for their statistical method in which each culture is treated as a special case.

A culture's structuring of its members' behaviour is the concern of the social anthropologist. A developmental model for psychological anthropology was conceptualized by Harrington & Whiting (1972), Whiting (1977). In this model environmental factors are seen to largely determine the social structure of a society, which, in turn, determines its socialization processes, and the resultant personality forms and culture patterns, values, attitudes and beliefs (e.g. Barry, Child & Bacon, 1959, Whiting, 1961).

Such a model shows how the child becomes moulded by the culture in which it lives, but fails to take into account the effect the child has on its environment.

Infants differ widely in their status at birth which, in turn, differentially affects maternal behaviour. A neonate's developmental maturity is affected by such factors as gestational and postnatal age (Fantz, Fagan & Miranda, 1975), Tilford (1976), and parity (Bell, 1963). Furthermore, there are many environmental conditions which influence newborn behaviour, e.g. complications of pregnancy and delivery (Pasamanick & Knobloch, 1957); maternal medication (Bowes, Brackbill, Conway & Steinschneider, 1970; Moreau & Birch, 1974; and Horowitz, Culp, Gaddis, Levin & Reichman, 1977).
The assumption of genetic differences at birth is surrounded by many controversial factors, and such an assumption is even less well-founded in cross-cultural studies. As Super (in press) has pointed out, no single cross-cultural or cross-ethnic study of newborns has adequately controlled for even a majority of these factors, and there is no simple way to do so.

The attempt to link behavioural differences in ethnic groups with genetic factors began in America in the sixties. Concern at the effects of poverty on child development and subsequent intelligence resulted in numerous two-group studies looking for 'class differences' (Tulkin, 1968). Since Negroes, Mexicans or other underprivileged ethnic groups were over-represented among the lower SES subjects, it was to be expected that any racial differences found in performance would be in favour of the white groups.

American psychologists were also looking at the effects of deprivation in Central America, where the evidence was confounded by the dual effects of malnutrition and lack of environmental stimulation, e.g. Kagan & Klein (1973) in Guatemala, Brazelton & Collier (1969), and Chavez, Martinez & Yaschine (1975) in Mexico.

Motor development

By 1972 some 50 studies of infant development in non-western societies had been reported with Western norms employed to evaluate the results. (See Werner, 1972, for review). Although developmental testing was not the basis of most of these studies, the reported test scores loaned themselves more readily to comparison than did other aspects of infant behaviour. A common finding from these studies was that infants from Europe and the United States fell well below non-western infants in psycho-motor development. Studies conducted in Africa have produced the most consistent evidence of accelerated infant psycho-motor development (Geber & Dean, 1957, Ainsworth, 1967, Leiderman, Babu, Kagia, Kraemer & Leiderman, 1973, and Kilbride, Robbins & Kilbride (1970), all of whom reported D.Q.'s as high as 130 for motor development in the first year of life. 1.

1. Nancy Bayley's data, based on extensive testing in the USA, indicates differences between white infants and black infants in motor development, but not in mental development. (Bayley, 1965, 1969).
Infants from Central America (Robles, 1959, Solomons & Solomons, 1975; Wug de Leon, DeLicardie & Cravioto, 1958) and India (Phatak, 1969, 1970a, 1970b), were also found to be advanced motorically, but not so strongly: their scores tended to fall between the African and Euro-American norms. Precocity on both motor and mental scores was reported by Leiderman et al. (1973) and Geber & Dean (1976).

The initial reports of African precocity by Geber (1956, 1957, 1958a) were followed by a diversity of confirmatory, contradictory and confounding studies. Whereas early studies were often lacking in qualitative data, and offered no item analyses of the developmental scales used, more recent studies such as Leiderman et al. (1973), and Kilbride et al. (1970), Kilbride (1976) have been carried out and reported with enough attention to sampling, testing and analysis to be thoroughly convincing. There is little doubt now that there often are group differences in motor development.

Explanations offered for these differences include genetics (Geber, 1956; Geber & Dean, 1957, Jensen, 1969; Brackbill & Thompson, 1967), maternal psychological state during pregnancy (Geber, 1958), and certain aspects of infant care, such as back-carrying (Geber & Dean, 1957, 1958, Goldberg, 1977), the intimate mother-infant relationship (Geber & Dean, 1957), and the general accelerative effect of the high levels of physical contact or handling (Ainsworth, 1967; Geber & Dean, 1957, Hopkins, 1976, Kilbride & Kilbride, 1975; Korner, 1972, and Super, 1973a, 1973b and 1976).

The high developmental test scores of infants in non-western societies are reported to soon decline (Werner, 1972), the downward trend beginning between the first and second year. Just as the findings of infant precocity have been accompanied by a variety of different explanations, so numerous factors have been proposed to account for the decline of this precocity. Almost all involve the idea of discontinuity between near-optimal conditions of early development and later abrupt changes, so contrastive that they prove traumatic for the infant. Sudden weaning, for example, may not only harm the mother-infant relationship, but may also pose a
nutrition problem (under present-day conditions of acculturation). Although weaning trauma was probably over-estimated in much early work (see Wober 1975), or Zempléni & Rabain-Zempléni, 1972), nutrition and health may also play an increasingly important role as breast-feeding decreases (Bardet, Masse, Moreigne & Sénécal, 1960, Géber, 1956; Moreigne, 1970; Ssengoba, 1978).

It is also debatable whether there is an actual decline of abilities, or whether it is simply test scores which drop. Testing in non-western societies has not yet been extensive enough to draw up new scales of development, and Western norms are still employed to evaluate performance by non-western infants. Many developmental test items are culturally biased. In the Bayley Scales, one of the most widely used developmental tests, it is the later items, both motor and mental, which are culturally biased, reflecting skills which are not equally practised and encouraged in all cultures. Walking on a thin board or line, for instance, or walking backwards; while most babies in rural Africa or Jamaica (Grantham McGregor & Hawke 1971) have little experience in squeeing a doll or drinking from a cup.

More empirically, Leiderman et al. (1973) were among the first to document environment-performance correlations in a non-western sample, even though both sets of measures were atheoretical constructs (i.e. modernization and mental D.Q). As with their findings on motor development, high economic and educational status of the parents were associated with superior performance. Furthermore, infants who were often tended by more than one caretaker scored significantly higher on the Bayley Mental Scale than those in 'monomatric' care (Leiderman & Leiderman 1974a). The authors attribute this to the additional stimulation provided by a variety of caretakers, and note that the effect was greatest for infants from the most impoverished backgrounds.

The Kilbrides have related the specific pattern of mental development in Ugandan babies to their social and psychological environment. At the ethnographic level they discuss Bagandan family interaction, and the value attached to social abilities as they affect smiling, a behaviour heavily weighted on Bayley's Mental Scale, and included in most other tests (Kilbride & Kilbride 1975). J. Kilbride (1976) demonstrated an empirical correspondence
in a longitudinal sample between the pattern of specific item precocity and child-care practices. Observed frequency of being in a supine position, for example, was related to grasping and manipulative behaviour. High scores on visual behaviour were correlated with the frequency of being lifted to the caretaker's shoulder. These within-sample differences generally correspond to American-Ugandan group differences in caretaking and performance, and are also in agreement with research on individual differences within American and other samples (Sayegh & Dennis 1965; White 1969; Yarrow, Rubenstein, Pedersen, & Jankowski, 1972).

Theoretically-based tests

The data discussed so far have all been derived from traditional baby tests which consist of often unrelated behavioural items, chosen primarily on the basis of their regular, ordered attainment at the group level, by infants in a normative sample. In contrast, there are two relatively new schools of infant testing based on specific theoretical viewpoints. The major one is derived from the work of Piaget, while a smaller body of work has emerged from studies of infants' attention to familiar, novel and changing stimuli, as indicative of their cognitive functioning. Whereas work with the older psychometric tests tends to concentrate on group differences in rate of overall development, research within the newer framework emphasizes commonality in the process of development. In part this reflects the relatively small group variation found in most cases, but it stems as well from the universalist orientation of the scientists who have worked in these theoretical traditions.

Piagetian studies

Piaget's studies of the emergence of intelligence in infancy, particularly with reference to the actively growing understanding of physical existence and space, have inspired three closely related sets of assessment procedures: The Albert Einstein Scales of Sensorimotor Development (Escalona & Corman, 1967; Corman & Escalona 1969); the Casati-Lézine test (Casati & Lézine, 1968; Lézine, Stambak & Casati, 1969); and the scales developed by
Uzgis & Bunt (1975). These tests have now been used in a number of non-western samples and in general they replicate the Euro-American sequence of developmental steps. This result is of primary theoretical importance for, unlike the psychometric approach, the Piagetian model requires universals of a basic logical sequence of development. Even in these studies, however, several minor variations in the pattern of development can be identified, corresponding roughly with the infants' cultural surroundings. There are, in addition, several reports of substantial group differences in timing of cognitive accomplishments, and while their import has not yet been fully explored, they warn against premature conclusions about the inevitability of normal cognitive growth rates.

The most thorough reports emphasizing developmental similarities have come from the Ivory Coast (Bovet, Dasen, Inhelder & Othenin-Girard, 1972; Dasen, 1973; Dasen, Inhelder, Lavallée & Retschitzki, 1978; Dasen, Lavallée, Retschitzki & Reinhardt, 1977). Infants aged 5 to 31 months, from a rural village of the agricultural Baoule people were tested with the Casati-Lezine procedures, which include scales for object permanence, use of intermediaries, exploration of objects, and combination of objects. In comparing the results with French norms, the test items fell primarily into two groups (Dasen et al. 1978; cf. Bovet et al. 1972, where there may have been a difference in testers. The Baoule children were found to be advanced, by a month or two, in attaining items involving use of an instrument or the combination of two objects (e.g. pulling a string or using a stick to retrieve an object). There was no difference from French norms in the exploration of objects or search for objects after displacements on the object permanence task. The African babies were behind the French norms on one or two specific items, but there is no clear explanation for this. These similarities and differences in sub-scale performance tended to occur at all levels within the subscale, that is, throughout the full age range tested.

The Ivory Coast project also compared the development of well-nourished infants to those who received only half the daily requirement of calories and proteins. There were several small though reliable delays in the latter group on the cognitive tests, but the most striking difference was lessened exploration of the environment and active manipulation of objects observed during a structured free-play session.
Konner used the Einstein Scales in his work with the !Kung San hunter-gatherers of Botswana. So far he has reported formally only on the prehension sub-scale (Konner, 1976, 1977). He found the !Kung infants to progress through the same sequences as European babies, and they passed items concerning simple object manipulation (e.g. grasping) at about the same ages as the Corman-Escalona sample. They generally started more complex behaviours involving the mutual regulation of schemata (e.g. visual-guided reaching) about two to three weeks earlier than the New York babies. Konner relates this result to the physical and social stimulation, and opportunities provided by frequent vertical posture.

Urban Zambian infants were tested with the Einstein Scales by Goldberg (1972, 1977). At the period of overlap with Konner's data, stage 3, or about 6 months of age, she reports the infants in Lusaka, also to be advanced in prehension compared to American infants.

Of relevance here are Dasen's observations on infant's play behaviour. Dasen et al. (1978) studied play with objects in both free and structured settings, and they were impressed with the structural similarity to play seen in European children. This was true for both conventional (i.e. appropriate) and symbolic use of objects. The timing of the developmental progression of play was the same as in French infants. This is particularly interesting, since the authors report that adults do not emphasize play with objects, and the Baoule babies have few, if any formal 'toys'. The environment is, however, rich in unstructured play objects such as sticks, and the children are allowed to explore the physical environment.

In Guatemala, Fenson replicated some of the procedures used earlier in the U.S. to observe the developmental progression of manipulative play (Fenson, Kagan, Kearsley & Zelazo 1976). Babies in both samples were seen to combine two objects in an apparently deliberate and meaningful way at about 12 months. This kind of play marks an important development in the use of mental schemas.
Studies of infant attention

The other important body of research on infant cognitive development in non-western settings is derived from the extensive work over the past 15 years on attentional strategies. Kagan and Lewis (1965) and their associates considered response decrement to a repeatedly exposed stimulus as a measure of cognitive processes. From this work was derived what has come to be known as the violation of expectancy paradigm (Lewis & Goldberg 1969).

The violation of expectancy paradigm, or variations of it, has been widely used to investigate numerous problems in the field of infant attention (as well as perception and cognition (Lewis, Goldberg, & Campbell 1969; Caron & Caron 1969; Schaffer & Parry, 1969).

As with the Piagetian work, the cross-cultural evidence in infant attention is most convincing with respect to similarities in the basic developmental process, but again, some differences in the timing have been suggested.

One of the most reliable developmental indicators is the decline with age in infants' visual attention to models of the human face, from 4 - 8 months, and then an increase in the second year. Kagan (1971) has argued that the initial decline results from the infant's increasing facility in assimilating the stimulus as a face, while the increase reflects a growing ability to try and understand the discrepancies between the models and actual faces. As evidence for this latter interpretation, Kagan notes that increase in attention is greatest if the face is distorted by having its features re-arranged in an unnatural pattern.

This basic curvilinear relationship between age and attention to facial masks has been replicated with Mayan subjects in rural Mexico (Finley, Kagan & Layne, 1972), 'Kung San infants in Botswana (Konner 1973), and Ladino babies in Guatemalan villages (Sellers, Klein, Kagan & Minton 1972). Data from the latter two studies support the conclusion that the maturation of a cognitive competence controls the basic growth function for attention. Differences in the relative power of the "scrambled" face reported in both studies suggest that specific experiences may influence the level of attention within any particular stage of development.
M. Takahashi (1973, 1974) has carried out several related studies with Japanese infants. The results are generally similar, indicating for example a peak of smiling to facial models at 3 - 4 months.

Kagan and his associates (Kagan, Kearsley & Zelazo, 1978; Kagan & Klein 1973; Kagan et al. in press), found some evidence for differences in the emergence of the ability to activate hypotheses about discrepancy among three groups of Guatemalan infants varying in the amount of stimulation and experience they receive. The greatest delays were found in an isolated village on Lake Atitlan. The Mayan babies there spend most of the first year of life in the "small, dark interior of a windowless hut", while they are "rarely spoken to or played with", and have access to no toys or play-things (Kagan & Klein 1973, p. 949). The thrust of their work documents delays of a few months (generally two or three) in a variety of cognitive landmarks: object permanence, stranger anxiety, separation distress, vacillation to discrepancy, inhibition to novelty, and relational and symbolic aspects of play. At the same time, they point out, all these phenomena do occur in the same general period as in American infants, despite the considerable variation in environmental stimulation, indicating the same critical developments in active memory retrieval. They further suggest that the pattern of within group variance also points to powerful control by biological, maturational forces (Kagan, Klein, Finley, Rogoff & Nolan, in press).

The major effects of stimulus novelty on the visual and manipulative exploration of 3 - 18-month olds have been replicated in Japan by Yamada (1978): habituation to repetition and dishabitation to novelty. The Japanese infants showed a concordance of responsiveness in looking and reaching at 6 months, as has been reported for American infants.

Genetic factors

The possibility of genetically determined differences in temperament of disposition has been explored by Freedman (1974) who reported that Chinese-American newborns were calmer, less labile, and are placated more easily than Caucasians. Bronson (1972) also
noted less motor reactivity to novel events among infants of Asian ancestry than among Caucasian infants. Similar observations have been made of Central American Indian infants (Brazelton, 1969), although here the data are confounded because of the poorer nutritional status of the Indians.

Kagan, in his study of American-born Caucasian and Chinese infants (from 5 - 29 months) assessed two composites: 1. Attentiveness to a series of repeated trials, both visual and auditory; heart rate (HR) was recorded at the same time; and 2. Excitability, i.e. the vocalizing and smiling accompanying attentiveness; motor activity and fretfulness - signs of the affective state that usually reflect lack of attention. The only consistent ethnic difference was that the Chinese had less variable HR's at every age. Apart from the HR there were no significant differences in the two groups until at least 5 months. The most consistent differences were in smiling and vocalization in response to the laboratory stimuli, the Caucasians being generally more vocal and "smiley", especially during the first year.

Kagan suggested a conditioning interpretation of these differences. He observed that consistent parental reward and stimulation of babbling and smiling is less common among Chinese than Caucasian families (also reported by Kuchner, 1973). This interpretation is supported by Kagan's observations in Guatemalan villages where vocalization in response to similar laboratory episodes was seriously reduced, and where home observation indicated that the mothers and older siblings rarely interacted playfully or verbally with the infants. Thus it appears that familial experiences contribute to the behavioural differences between ethnic groups.

It is clear from the studies cited above that infants differ in the age at which a specific competence emerges, peaks or declines. But as Kagan (1978) writes: "these differences seem trivial in comparison with the more impressive variation that is the product of maturational forces operating on the information available in any reasonably normal environment".
Environmental studies

Research into the effects of deprivation led to an attempt to pinpoint the environmental factors which play a causal role in the emergence of early competence, e.g. Yarrow et al. (1972), Yarrow, Rubenstein & Pedersen (1975), White (1971).

Yarrow et al. looked at the differential effects of early stimulation, using variety, responsiveness and complexity as environmental variables, and caretaker stimulation and contingency of response as measures of the social environment.

White attempted to analyse the laws of optimal development by intensive observation of the most talented and the least talented of a group of 3, 4 and 5-year olds. He found few differences in motor and sensory capacities between children of high and low overall competence, but significant differences in their social abilities, i.e. the competent children were more likely to get and maintain the attention of adults in socially acceptable ways, and to use adults as resources.

Whereas Yarrow's findings suggest that the social environment is largely independent of the inanimate environment, White's study emphasized the importance of the child's caretaker as the mediator of inanimate stimulation, e.g. "Mother's direct and indirect actions with regard to one to three-year olds .... the most powerful formative factors in the development of a pre-school child". This view is in line with that of Schaffer & Emerson (1964), Hess & Shipman (1967), Lewis & Goldberg (1969) and Ainsworth & Bell (1974).

Reference has already been made to the low levels of stimulation in early infancy in Guatemala (Kagan & Klein, 1973; Kagan et al. (in press), while Brazelton (1972) has made similar observations in Mexico. In all these studies authors report very little stimulation, either from caretakers or from their surroundings.
Interaction studies

From the many, mainly Western studies that report interactions between mothers and their infants (see Clarke-Stewart, 1973 for a review), it is clear that there are different sorts of maternal stimulation even within our own culture. Variation across cultures is even greater, with differential emphasis placed on specific functions or competences according to their relevance to that culture.

Comparative studies of social interaction in infancy fall into three clusters which correspond to geographical areas: Oriental studies, African studies and Central American studies.

Oriental studies

Caudill and his associates have carried out an intensive study of the first six years of life in Japan and America (Caudill, 1972; Caudill & Frost 1973; Caudill & Schooler 1973; Caudill & Weinstein 1969). Through detailed observations of maternal and infant behaviour, and with firm ethnographic understanding of the culture, they present the following picture of early development. One of the Japanese mother's goals is to help her infant become integrated into the fabric of social life in the family, and later in Japanese society as a whole. She therefore encourages a close and solicitous relationship with the purpose of rearing a passive and contented baby. In contrast, the American mother considers the need to assist her infant's emerging independence, to facilitate individual activity, assertiveness and self-direction.

So by the use of both deliberate and probably unconscious techniques of infant care, mothers encourage their infants to adapt to the "preferred patterns of social interaction at later ages". (Caudill & Weinstein 1969). A subsequent study (Caudill & Frost 1973) found American mothers of recent Japanese descent and their infants to behave generally more like the earlier Anglo-American group than the Japanese sample. In particular, the Japanese-American mothers were found to chat to their infants more than Anglo-American mothers, and their babies did more 'happy vocalizing' in return. There were also some discernible continuities between the Japanese and Japanese-American mother-infant pairs.
Kuchner (cited in Freedman, 1974) has looked at some related aspects of early interaction in Oriental-American families in Chicago, replicating many of the contrasts found in Caudill’s reports. Notably, they appear in her earliest observations, at two weeks of age. Kuchner also replicated some of Freedman's (1974) newborn findings and suggests that temperament differences at birth may contribute to the later patterns of maternal interaction, for example, through differing frequency of changing state. The apparent discrepancies between the work of Kuchner and that of Caudill & Frost (1973) cannot be resolved until the more recent study is published in detail.

African studies

A second group of studies on early social interaction comes from Africa. A number of workers have commented on the apparent low levels of affect between mother and child. Ainsworth (1967) for instance, wrote: "Ganda babies very rarely manifest any behavior pattern even closely resembling European affection" (p.344), while LeVine (1973) reports from home observation among the Gusii of Kenya that they "deemphasize in their values direct expression of intense affect, and they avoid face-to-face interaction. Munroe & Munroe (1971, p.11), in a study focussing on other aspects of infant care in a Maragoli (East Africa) sample, found high levels of attentiveness, but incidentally remarked on the low "amount of exchange of overt affectional responses".

More recent reports from other African groups present a different picture. Whitten (1975, p.7) comments on the elaborateness of social interaction among Ibo families of Nigeria, in which the infant "is held in the eye-to-eye position and engages in prolonged babbling conversations". Similarly, Mundy-Castle and Okonji (1976, p.3), in describing several Nigerian samples, derive a set of attitudes and practices as "characteristically African (which) relate especially to the emotional and social support given to babies".

As far as quantitative data is concerned, Super & Harkness (in press) present evidence that caretaker-infant interaction in their Kenyan sample may be richer than relevant American samples in smiling and mutual regard, equivalent in affectionate nuzzling
and kissing, and lower only in infant (but not caretaker vocalization). Lusk & Lewis' (1972) rural Senegalese data on maternal and infant smiling are roughly equal to American levels (Lewis & Ban 1977), while Goldberg's (1977) measures from working-class urban Zambians appear two to three times greater. All these comparisons are technically flawed in one manner or another, but they suggest caution in generalizing even about rural agricultural groups in sub-Saharan Africa.

Central American studies

These have been less intensive than the Oriental and African studies, but are agreed upon the finding of low levels of stimulation, both animate and inanimate, in early infancy (Brazelton & Collier, 1969; Kagan & Klein, 1973; and Kagan et al. (in press).

DISCUSSION

Although many of the above studies looked at similar aspects of social development, such a variety of measures were used that evaluative comparison of the findings is nearly impossible. An attempt at such a comparison has been made by Lewis & Ban (1977), who correlated the rank order within each society of mothers' behaviours toward their infants in several societies, using their own, as well as others' data. The maternal behaviours included were, in descending order of frequency for American mothers: hold, vocalize, look, touch, play and smile. Their correlations, when subjected to hierarchical cluster analysis, yielded the following groupings: ((((Holland + Yugoslavia) + USA) + Zambia) + Senegal).

This multi-cultural analysis is a significant advance in comparative studies of social interaction, and emphasizes the variation across cultures in affective behaviour between mother and child.

Attachment

Students of attachment theory (Bowlby 1969) contend that a warm, intimate and continuous relationship with the mother in the early years is essential if pathology is not to develop. Yet few systematic studies have unequivocally supported this contention. Reports of gross maladjustment, such as those of Spitz (1965) and Dennis (1960) were based
on children reared in conditions of extreme deprivation. More recently Barbara Tizard (1974) has followed up institutionally-reared children who were later adopted, and found no evidence of gross pathology in their social behaviour. As work by Schaffer & Emerson (1964) has shown, the mother-infant bond is not necessarily an exclusive one. 29% of their sample of infants, when they first became capable of forming specific attachments, formed several simultaneously, and 10% formed as many as five or more. As Schaffer concludes, there is nothing to indicate any biological need for an exclusive primary bond, and it is from this theoretical standpoint that early social development in non-western societies is considered.

Implicit in Bowlby's theory of attachment is the principle of monotropy, i.e. "the strong bias for attachment behaviour to become directed mainly towards one particular person and for a child to become strongly possessive of that person" (Bowlby 1969, p.308). There is said to be a positive correlation between the strength of the primary attachment and the number of secondary attachments that can be formed. Such correlations, Bowlby notes, have been reported from both Scotland and Uganda (Schaffer & Emerson, 1964; Ainsworth, 1967).

The strength of the bias of monotropy, however, seems weaker in those settings where infant care is shared among several family members. A reanalysis of Ainsworth's Ugandan data indicates that the strength of attachment to the mother is negatively correlated with the number of persons in the household (Munroe, Munroe & LeVine, 1972). The Leidermans (1974, 1977) have described in detail the sharing of infant care with older siblings that occurs in many East African families. They emphasize that while the mother remains "preferred by the infant, especially in times of stress" (1977, p. 432), the child-caretaker also has a central role, increasingly so after 5 months when she may be in charge for the best part of the day. There are developmental correlates of 'polymatric' care, some of them to the advantage of infants with sibling caretakers. On this basis, the Leidermans consider that theoretical models of infant socialization based on maternal centrality are not adequate. These comments are in line with Rabin's (1958) work, indicating the absence of detrimental effects of
'multiple mothering' in the kibbutz setting. Fox (1977, 1978) has augmented this work and finds that except for some first-born children, whose mothers treat them differently, most kibbutz infants are equally comforted by the mother and the metapelet.

The contention that polymatrically reared infants fail to form attachments and to manifest the normal maturational functions of stranger protest and separation anxiety was not upheld by Stevens' (1971) study in an Athens intensive care institution for unwanted infants. Using both Ainsworth's criteria of attachment, and Schaffer's, he found that the average ages of onset of specific attachment and stranger protest agreed closely with estimates made by workers on children reared in predominantly monomatric families (Freedman 1961; Morgan & Ricciuti, 1969; Schaffer & Emerson, 1964; Schaffer, 1966; Spitz, 1965; Tennes & Lampl, 1964).

In this country Willmott & Young (1957) documented the role of the extended family in London working-class life, and its psychological advantages to both mother and children, while more recently, reports have come from the U.S. of similarly healthy patterns of psychological development among children in day-care (e.g. Caldwell, Wright, Honig & Tannenbaum (1970), Kagan, Kearsley, Zelazo (1978)).

Emergence of attachment behaviours

It was Freud (1915, 1926) who first called attention to the infant-mother tie. He argued that the single most important manifestation of the mother-infant tie was the child's separation anxiety upon his mother's departure, or threatened departure. 'Separation anxiety' together with 'stranger protest' are still the most widely used measures of attachment behaviour. Kagan (1976) has charted the development of separation distress in a variety of cross-cultural groups: working-class Americans, Ladino and Mayan Guatemalans, !Kung San (Kalahari desert), and kibbutz-reared Israeli infants. He reported a remarkable similarity across samples in the growth of separation distress. Very few infants cry when mother departs until about 7 or 8 months; the likelihood then rises steeply to a peak shortly after the first birthday, and then declines. (See Fig.1)


Figure 1

PERCENT OF CHILDREN WHO CRY at Maternal Departure

AGE (months)

Despite Western society's flaunting of the mother-infant relationship, it is clear that after the early weeks, most young infants are comforted exclusively by their mothers. Whether this is because infants are working within the limits of their capacities, or that they are biologically or psychologically attuned to their mothers, or that we are attuned to their needs, the universal norm of complementarity is a useful construct.
Kagan's findings impressively demonstrate a fundamental species similarity. Whereas attachment theorists interpret this universality as a reflection of biologically influenced emotional dynamics, which become centred on the primary caretaker, usually the mother, Kagan and his associates (1973, 1978) have focussed on the specific cognitive maturity necessary to support this process, and they see the distress experienced at maternal departure as essentially no different from related fears and distress to unfamiliar people, objects and situations. It is because the infant can now appreciate discrepant situations and activate hypotheses about their cause and consequences that distress and inhibitions emerge so rapidly in the last quarter of the first year.

Not surprisingly, Chisholm (1978) presents a "fear of strangers" curve for his Navajo subjects which is quite similar in form and placement to Kagan's. In the Ivory Coast project (Dasen et al. 1978) the same rise, delayed by a few months, is seen in the percentage of infants initially refusing testing, a separate but related index. Stranger anxiety is relatively late in Kagan's remote Mayan sample. This, Kagan believes (Kagan et al. 1973, 1978) is because the cognitive abilities develop more slowly than in more stimulating environments. In fact, the various theories concerning the emergence of attachment behaviours are largely complementary rather than contradictory. It is evident that several relevant sub-systems of the brain are undergoing functional changes in the latter part of the first year, including both the higher cognitive centres and the limbic system, often thought of as the central mediation area for emotions and their interconnections (Yakolev & Lecours 1967).

Despite Western society's idealization of the mother-infant relationship, it is clear that after the early weeks, ever fewer infants are cared for exclusively by their mothers. Whether this is because Mother is working (either out of necessity, or from choice), or because Father plays an unusually large role in caretaking activities, more and more infants are coming to share the universal norm of complementary or alternative caretakers.
This study looks at the mother-infant relationship and its subsequent effect on the infant's development in a diversity of child-rearing situations. Some of these are in the traditional nuclear family, with Mother as exclusive caretaker and Father playing a minimal role, others are extended families where grandparents or uncle play major roles in caring for the infant. Others involve care outside the home. In the light of the studies reviewed, it was decided to look at a sample of mother-infant pairs as diverse as possible: ethnic origin differed widely, as did social class. This ethnic mix reflected both the main immigrant groups in the area of study and the indigenous population. Parity and medical classification also varied.

Aims of study:

1. To obtain a picture of the infant's environment (from 6 weeks to 18 months) by means of maternal interviews and home observation.

2. To assess the intensity of the infant's attachment to the mother (at 9 months and one year) by observing the infant's behaviour in specified situations.

3. To chart the developmental progress of the infant by testing at 3-monthly intervals.

Three major American studies are of relevance here: one concerning mother-infant interactions and their consequences, a second relating the physical environment to the infant's cognitive-intellectual level, and a third looking at the primary direction of effect between cognitive development and environmental stimulation.

Importance of mother as mediator of the environment

Clarke-Stewart (1973) followed-up a group of mothers and infants from 9 - 18 months, no controls being made for class, race or birth order. Among the measures used were the Bayley Mental Scale, level of inanimate stimulation, intensity of attachment to mother, and mother's emotional involvement with baby.
The main factor to emerge from this study was the importance of the mother as mediator of the environment. Clarke-Stewart found that cognitive development was not related to stimulation by the physical environment per se, but that children's overall competence was highly significantly related to maternal care. The total amount of maternal stimulation was found to be closely related to the infant's overall development. In particular, the mother's verbal stimulation directed toward the child significantly influenced the child's intellectual development, especially as far as language ability was concerned.

A significant correspondence was also found between children's and mother's social and emotional behaviours toward each other, i.e. child's optimal secure attachment to mother was significantly related to high maternal scores on dimensions of affection, stimulation and responsiveness. Here, however, the direction of influence was from the child - the more often the child looked, smiled or vocalized to mother, the more affectionate and attached to the child she became, and the more responsive to his distress and demands.

As far as performance was concerned, Bayley MDI scores were related to appropriateness of mother's stimulation for age, and ability of child to contingent responsiveness of mother's behaviour. This stongly suggests that maternal responsiveness to the child's social signals was enhancing the child's later intellectual and social performance, and is in line with previous findings, such as White & Watts (1973) and Ainsworth & Bell (1974).

The physical environment - specificity or generality?

In contrast to Clarke-Stewart, Wachs (1979) made no attempt to assess the quality of the mother-infant relationship, concentrating instead on the infant's physical environment. He was particularly interesting in three questions: 1. Is there evidence for environmental specificity, i.e. are different aspects of development related to different aspects of the environment at different ages? 2. Are there then differential reactions between males and females to the physical environment? 3. Are environmental parameters, such as environmental responsivity, which are consistently related to development in the first year, related to development after this time period?
Wachs' study started at age 11 months and continued for 12 months. Although almost exclusively Caucasian, the infants in his sample were from a wide variety of home environments. Measurement of level of cognitive-intellectual development was based on the Uzgiris-Hunt Infant Psychological Development Scale (IPDS) (Uzgiris & Hunt, 1975), a scale of development designed to operationalize and standardize the techniques used by Piaget in his study of intellectual development.

Results clearly supported Wachs' hypothesis of environmental specificity: even with comparable physical environments for males and females, males showed significantly greater reactivity to opportunities for exploration, lack of overcrowding and noise-confusion; females showed significantly greater reactivity to long-term variety.

Age differences could be seen most clearly by looking at environmental factors related to cognitive-intellectual development within a given Piaget scale. While several Piaget sub-scales (verbal and gestural imitation) showed little age relationship in terms of reactivity to environmental stimulation, most of the Piaget sub-scales showed definite age specificity. Some scales showed almost complete changes in the types of environmental variables they were related to at different ages. Thus, for object permanence, development prior to 18 months was mainly related to environmental predictability, while development after 18 months was a function of exploration opportunities and a lack of strangers in the home. For foresight, the early development of this ability was primarily related to the presence of a responsive physical environment, while development in the second half of the second year of life was a function of exploration opportunities, the presence of a stimulus shelter, and a lack of overcrowding. Other Piaget scales, such as schemas or objects in space showed a more cumulative effect of the environment.

A similar type of specificity was evident in the between-scale relationships at a single-age level. Thus, at 24 months, object permanence was related to the presence of strangers and the degree to which the environment permitted exploration; while the environment permitting exploration was relevant to 24-month foresight, so also were the presence of a stimulus shelter and a lack of overcrowding.
The presence of a stimulus shelter was relevant for 24-month schemas, as were a responsive physical environment and maternal language indices; while a responsive physical environment was relevant for 24-month objects in space, as were a lack of overcrowding and the presence of noise-confusion.

It seems clear that whether referring to age, environmental parameters, or individual differences, Wachs' findings support the hypothesis of environmental specificity rather than that of environmental generality.


As Wachs points out, in many of the above studies, evidence for a sex-age-construct generality of certain environmental parameters also exists, as it does to some extent in his own study for "responsivity of the physical environment". The existence of evidence for both specificity and generality of environmental parameters leads Wachs to formulate a hypothesis of general and specific environmental parameter action: the Bi-factor Environmental Action Model. This model refers not to the structure of the environment, but rather to the nature of the relationship between environmental parameters and development.

This bi-factor model hypothesizes that certain environmental parameters are general in scope, while others are highly specific in their action. An implication of the model is that greater attention must be paid to the possibility that the same stimuli will not have the same effect on different individuals (as Wachs' data demonstrated both for age and sex). Individual differences in reaction to the environment, as these relate to development, have rarely been studied.
The data that exist are too often descriptive rather than statistical, (Escalona & Cormen 1971), or are concerned primarily with gross environmental parameters, such as institutional rearing (Greenberg, 1965). State of the child (particularly for young infants, temperamental variables, biomedical status, and previous experiential history, have all been suggested previously as possibly leading to individual differences in reactivity (Wachs 1977), and are currently being researched (e.g. Redshaw & Rosenblatt, in press.)

Individual differences and maternal involvement

The third study considers individual differences and their interaction with maternal behaviour. Infants not only react differentially to their physical environment, but also differ in the effect they have on their environment, this being determined by biological or behavioural characteristics which the infant brings to his interaction with the environment (Lewis & Rosenblum 1974). More alert, active babies tend to elicit greater responsiveness from parents in the first year of life (Rheingold & Eckerman, 1975), while Schaffer & Emerson (1964) reported individual differences in babies' responses to affectionate handling which appeared to stem from the baby itself, rather than the mother's way of handling the infant.

Clarke-Stewart (1973) found a significant correspondence between children's and mothers' social and emotional behaviours towards each other, and that the direction of influence was from the child to the mother.

Caldwell and her colleagues (Bradley et al. 1979) have attempted to assess the primary direction of effect between children's general level of mental functioning and maternal involvement during the first two years of life. This was a follow-up to a longitudinal observation and intervention study, conducted by the Center for Child Development and Education. The Bayley Scales were administered at 6, 12 and 24 months, mothers were interviewed and homes observed by means of the HOME (Home Observation for Measurement of the Environment) Inventory (Caldwell 1978). Three categories of environmental stimulation were considered: 1. responsivity of the mother; 2. provision of appropriate play materials; and 3. maternal involvement with the child. Cross-lag correlation of these measures indicated that more capable children tended to elicit higher levels of
maternal involvement and the provision of more appropriate play materials during the 6 - 12 month period, whereas higher levels of maternal involvement tended to produce more capable children during the 12 - 24 month period. These findings are consistent with White & Watts (1973) who suggested that parental influence on cognitive development is greatest between about 9 and 24 months.

While Bradley et al. warn that interpretations of these analyses allow for weak causal inferences only, they do indicate a need to re-examine assumptions about the primary direction of effect between various categories of stimulation and cognitive development.

In line with Wachs, the authors suggest that different environmental variables may be amenable to influence by the child at different points in his or her development. Similarly, various environmental variables may exert a significant influence on development at different points in development.
Chapter 2:

METHODOLOGY

I. Design
II. Method
III. Reliability
IV. Methodological Critique
I. DESIGN

Initial data:

On recruitment to the study mothers were given a six-page questionnaire entitled "Your Baby", which they were requested to complete within their baby's first week. It was hoped to relate this data concerning the first week with information to be obtained from a subsequent questionnaire administered at six weeks. This method had proved successful in an earlier study where psychologists were working on hospital premises.

In the present study, however, initial return of questionnaires was less than 50%, which was considered too small a response to justify use of the subsequent questionnaire. It was therefore decided that data on the infant's first six weeks would be collected during the course of the first interview.

Design of interview schedules:

Interview schedules were non-standardized and non-structured; they consisted mainly of open-ended questions, with a certain number of closed questions requiring yes/no answers.

The use of a non-structured interview which allowed for flexibility of wording (and sequence of questioning) was felt to be essential for this study, since subjects were not restricted to one nationality or socio-economic class, and varied in their knowledge of English. Richardson, Dohrenwend & Klein (1965) have argued for the use of the 'non-schedule interview' in which the wording and ordering of questions is not rigidly laid down in advance. This is also the approach favoured by Rutter & Brown (1966) in measuring family activities and relations, and Rutter, Tizard & Whitmore (1970) in their Isle of Wight study.
Data collected:

I. Initial data taken at hospital of delivery when recruitment to study took place:

   Infant's birth date, sex, birth weight and gestational age (if known)
   Maternal age and parity
   Prenatal or birth difficulties
   Mother's initial reactions to sex of child (assessed by asking "Were you pleased to have a boy/girl?")

All subsequent data were collected in subjects' homes, after appointment had been made by letter or telephone.

II. 6-weeks (see Appendices B and C for examples of interview schedules)

   1. Sociological data: education, occupation (if any), age and marital status (if not known), husband's occupation; country/district of origin; length of residence in London; family composition.
      (Non-English mothers were also questioned on their experience of mothering in their own country. See questions 54-68 of Appendix B).

   2. A developmental and temperamental profile of baby as perceived by Mother.
      (Assessed by means of questioning on feeding, sleeping, temperament and early development).

   3. Mother's state of health -
      (Questioning designed to assess extent of help available to Mother since birth of baby).

   4. Mother's satisfaction with baby's sex -
      (Questioning worded according to information given by Mother at hospital).

Observation:

   Mother's emotional involvement with baby

   1. Emotional tone assessed by:

      1. physical contact
      2. praise
      3. censure
      4. comfort
      5. Does Mother respond to Experimenter's praise of infant?
2. **Tone of voice rated as follows:**

<table>
<thead>
<tr>
<th>Tone of Voice</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>angry/hostile</td>
<td>1</td>
</tr>
<tr>
<td>distant/cold</td>
<td>2</td>
</tr>
<tr>
<td>unemotional/neutral</td>
<td>3</td>
</tr>
<tr>
<td>lukewarm</td>
<td>4</td>
</tr>
<tr>
<td>warm/kind</td>
<td>5</td>
</tr>
<tr>
<td>very warm/lovey</td>
<td>6</td>
</tr>
</tbody>
</table>

3. **Amount of expressed positive emotion:**

   rated on a 5-point scale, as follows:

<table>
<thead>
<tr>
<th>None</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>very much</th>
</tr>
</thead>
</table>

   All 6-week interviews were carried out within a day or two of the infant's reaching six weeks of age. The one exception was S.3, a baby boy born at a gestational age of 31 weeks, who remained in intensive care until his sixth week. It was decided in this case to visit for the first time at three months, when this mother, like the others, would have had six weeks' experience of caring for her baby at home. Basic data from the 6-week interview schedule was then integrated into the 3-month schedule, as well as a number of questions relevant to the care of a premature infant.

III. **3-months** (see Appendix D for example of interview schedule)

The 3-month interview schedule was designed to assess the reciprocal patterning of the mother-infant relationship, the extent of any problems the mother might report with regard to Baby, and whether these were actual or perceived. Questioning covered:

1. Infant's state of health since last visit; current weight.
2. Follow-up data concerning infant's physical and temperamental development as perceived by mother, with particular reference to:
   - crying patterns and mother's soothing techniques
   - feeding: whether mother had changed from breast to bottle-feeding, or was introducing solid foods
   - sleeping: whether or not infant was sleeping through the night
3. Mother's attitude to infant's hand- or thumb-sucking
4. Mother's attitude to leaving Baby, and child's reaction

5. Mother's reaction to Baby's performance on the Bayley Scales (See Question 23, Appendix D).

Testing:

The Bayley Mental and Motor Scales of Infant Development were administered to all infants. (See Appendices J and K for examples of Scales). Items attempted at 3 months ranged from Item 25 - 52 of the Mental Scale, and Item 11 - 25 of the Motor Scale. Items were not administered sequentially, nor were the Mental and Motor Scales always administered in the same order. All items were administered as convenient, according to the infant's schedule.

Preliminary scoring of the main items was made during testing, in order to ensure accuracy, whilst Scale Record Forms were scored, and D.Q.'s (developmental quotients) calculated later. The Infant Behaviour Record (IBR) was completed as soon as possible after testing. (See Appendix L for example of IBR).

Observation:

1. Mother's emotional involvement with baby (as at 6 weeks)

2. Infant vocalization (rated 1 - 5 according to frequency of vocalization)

Mothers were visited as close as possible to their infant's 3-month birthday, ± 7 days. There were three exceptions due to families being away from home. These infants were visited at 2½, 3½ and 4 months. In all cases Bayley scores were adjusted accordingly.

It was necessary to pay a second visit to S.14. This infant became very upset as soon as testing began, so the test was repeated 5 days later).

1. The scoring system is divided into age groups, each of which have a 31-day range. For example, age range at 3 months:
   2 mths 24 days - 3 mths 7 days. Only scores which fell within the specified age range were included in group analyses.
IV. 6-months (see Appendix E for example of interview schedule)

The 6-month interview schedule was designed to assess the development of the mother-infant relationship, and to provide a developmental and temperamental profile of the baby, as perceived by the mother. Specific questions concerned:

1. Feeding: whether solid foods had been introduced, and Baby's reaction
   Sleeping: incidence of night-waking
2. Course of teething
3. Information on the home environment

HOME Inventory (see Appendix M)

This provided data on the home environment, and covered the following:

Scale I. Emotional and verbal responsivity of Mother
Scale II. Avoidance of restriction and punishment
Scale III. Organization of the physical and temporal environment
Scale IV. Provision of appropriate play materials
Scale V. Maternal involvement with the child
Scale VI. Opportunities for variety in daily stimulation

Inventory items which could not be assessed by observation were incorporated into the interview schedule.

The Inventory was scored as soon as possible after the interview and testing. Where infants were in the care of child-minders or at day-nurseries it was not possible to assess certain items. For statistical purposes such items were scored as "missing data".

Testing:

The Bayley Mental Scales and Motor Scales were administered to all infants. Items attempted at 6 months ranged from Items 59 - 84 of the Mental Scale, and Items 21 - 41 of the Motor Scale. Administration and scoring procedure was as at 3-months. The IBR was also completed as before.

Observation:

1. Mother's emotional involvement with Baby (as at 6-weeks)
2. Infant vocalization (rated 1 - 5 according to frequency and developmental level)
3. Whether T.V. or radio was on during Experimenter's visit, and if so, whether or not Mother switched off automatically.

All mothers but one were visited one week of their infant's 6-month birthday. The one exception, who had been abroad with her family, was visited at 7 months. This infant's Bayley scores were adjusted accordingly, but not included in the 6-month statistical analysis.

V. 9-months (see Appendix F for example of interview schedule)

The 9-month visit focussed on the extent of the infant's attachment to his mother, and his reaction to strangers (in this case the Experimenter). A number of relevant questions were incorporated into the interview schedule (see Appendix F), and further assessment was made by means of the following observations:

1. Child's behaviour towards Mother when Experimenter enters room
2. Child's behaviour when Mother leaves room
3. Child's behaviour while Mother is out of room
4. Child's behaviour when Mother returns
5. Child's behaviour while Mother is in room
6. Child's behaviour when Mother puts baby down
7. Child's behaviour towards additional persons present

All observations recorded by means of a check-list (see Appendix F).

In addition to the questions concerning attachment, this interview covered the child's state of health, including current weight and teething progress, the child's developmental profile as perceived by the mother, and possible introduction of toilet-training.

HOME Inventory

As at 6 months Inventory items which could not be assessed by observation were incorporated into the interview schedule.

The Inventory was scored as soon as possible after interview and testing.
Testing:

The Bayley Mental and Motor Scales were administered to all infants. Items attempted ranged from Items 78 - 106 of the Mental Scale, and Items 35 - 48 of the Motor Scale. Administration and scoring procedure was as at previous testing. The IBR was also completed as before.

All infants except one were tested + one week of their 9-month birthday. The exception, S.4, could not be tested until 9 months 25 days, so that these scores were not included in the 9-month group analyses.

Additional observation:

1. Mother's emotional involvement with Baby (as at previous visits)
2. Infant vocalization (rated 1 - 5 according to frequency and developmental level)
3. Use of T.V. or radio, as at previous visits.

Three subjects were lost after 9 months:
S.11.: this mother moved out of London, and although the Experimenter was willing to continue visiting her, she decided against this.
Ss. 10 and 13: returned to their country of birth.
The sample then stood at 15 (9 males, 6 females)

VI. 12-months (see Appendix g for example of interview schedule)

The same observational sequence was made as at 9 months, to allow for comparison of infant-mother attachment and development of stranger protest.

A number of supplementary questions concerning attachment and stranger protest were incorporated into the interview schedule, as well as questions concerning possible behaviour problems and toilet-training.
HOME Inventory

As at previous visits.

Testing:

The Bayley Mental and Motor Scales were administered to all infants. Items attempted ranged from Items 87 - 118 of the Mental Scale and Items 41 - 57 of the Motor Scale. Administration and scoring procedure was as previously. The IBR was also completed as before.

All infants were tested + one week of their first birthday.

Additional observation:

As previously.

VII. 15-months (see Appendix H for example of interview schedule)

Another subject (S.18) was lost at this stage. The sample then stood at 14 (9 males, 5 females).

This interview schedule was similar to that at 12 months, with alterations incorporated to allow for completion of the HOME Inventory.

Additional measures:

Child's weight, height and teething progress.

Testing:

The Bayley Mental and Motor Scales were administered to all infants. Items attempted ranged from Items 103 - 130 of the Mental Scale, and Items 46 - 54 of the Motor Scale. Administration, scoring procedure and completion of the IBR were all as at previous visits.

All children but one were tested + one week of their 15-month birthday. The exception, S.8, could not be tested until 15 months 17 days so that these Bayley scores were not included in the 15-month group analyses.
Observation:

Although use was still made of the check-list of Child's behaviours towards Mother (Appendix P) for purposes of convenience, this was no longer wholly applicable, and was therefore not always completed. (See discussion of this point on p.301.)

Symbolic Play Test

This test was administered as close as possible to 16.5 months. Age at testing ranged from 16.0 - 17.1 (16 subjects). However, the oldest and youngest subjects were omitted for statistical purposes, so that the age-range was 16.3 - 16.6. (S.3's score was omitted throughout, and S.19's score was omitted on this occasion because it was felt to be invalid. (See p. for fuller discussion of these omissions).

Administration and scoring was in accordance with the Test Manual (experimental edition), (Lowe & Costello 1976). An example of the scoring sheet can be found in Appendix 0.

No additional questioning or observations were made at this visit.

VII. 18-months (see Appendix I for example of interview schedule)

Interview schedule and HOME Inventory were both similar to the 15-month procedure.

Testing:

Another subject, S.3, was lost at this stage, so the sample then stood at 13 (8 males, 5 females).

The Bayley Mental and Motor Scales were administered to all infants. Items attempted range from 112 - 153 of the Mental Scale and from Item 42 of the Motor Scale, according to the child's motoric level.

Items 55, 56 and 62 had to be omitted as it was not possible to administer them in the home.
All children except one were tested one week of their 18-month birthday. The exception was S.5 whose family were abroad. He could not be tested until 18 months 21 days, so that these Bayley scores were omitted from the 18-month group analyses.
II. METHOD

Subjects:

The original sample consisted of 19 mothers, all of whom had given birth at a London teaching hospital or its nearby sister hospital.

Subjects were contacted by the Experimenter during the lying-in period (between 2 and 7 days of delivery). They were given a brief explanatory handout (see Appendix A), and were asked whether they would like to take part in the study.

Selection criteria:

1. A knowledge of English adequate enough to allow for informal interviewing. (All subjects were able to write their own name and address on the introductory handout).

2. No immediate plans to move out of London.

Age:

Mean age of mothers was 27.1 years. Range: from 16 - 41 years.

Marital status:

All subjects except one were married. Mean number of years of marriage at birth of the subject child was 6.75. The single mother, aged 16, was living with the father of her child. With this exception all conceptions were within marriage.

Maternal nationality:

Of the original sample, 7 mothers were English, 12 non-English. The latter were: American: 1; Ghanaian: 1; Israeli: 1; Nigerian: 2; Indian: 3; Pakistani: 1; Bangladeshi: 1; West Indian: 2.
Three of the English mothers were married to non-Caucasians, only one of whom had been born and educated in this country. One of the West Indian mothers was married to a Nigerian. All other mothers were married to men of the same nationality.

Social Class

Subjects were classified according to husband's occupation (with the exception of the single mother).

According to the Registrar General's Classification of Social Class, Classification of Occupations (1970), subjects would be grouped as follows:

Social-class I : 3
" II : 5
" IIIN : 2
" IIIM : 5
" IV : 3
" V : 1

Area of residence and type of housing:

All subjects but one were resident in East London, having been patients at the maternity hospital serving their area. The exception was the American mother, who was resident in West London, and was a private patient of the teaching hospital Consultant.

Of the East London families four lived in residential suburban areas, while the remaining 75% lived in congested urban areas: 50% of families lived in council flats, none of these having access to a garden. 9 families were house-owners.

While most of the flat-dwellers were subject to the problems of high-rise living (only one subject lived below the third floor) their accommodation was adequate, and internally in good repair.

Only one family lived in grossly inadequate conditions: a three-child family occupying 3½ rooms with no bathroom.

1. 'East London' includes Stepney, Poplar, Bethnal Green, Hackney, Shoreditch in the County of London; and West Ham, East Ham, Walthamstow, Leyton, Wanstead & Woodford, Ilford, Barkings & Dagenham in the County of Essex. (R. Sinclair, "East London", Robert Hale, 1950.)
A more detailed description of subjects and their families is given in Appendix 2: 'Family profiles'.

Medical status:

Only 11 subjects (55%) were 'low-risk' mothers, (criteria derived from the Perinatal Mortality Survey, Butler & Bonham, 1963). These criteria include: maternal age 18 - 30 years, so that one subject was below the lower limit and four above the upper limit. The remaining four subjects could not be considered 'low-risk' since they were of 'short-stature', i.e. height 158 cm. (5ft.) or less.

Two subjects were classified as 'high-risk', one having her first baby at age 39, and the other, her second baby at age 41, subsequent to three miscarriages.

Parity:

5 babies were first-born
9 " second-born
4 " third-born
1 baby was fourth-born

Type of delivery:

16 mothers were noted in hospital records as giving birth by 'normal delivery'. Two mothers were delivered by caesarian section, one emergency and one elective, and one mother by forceps delivery.

The babies:

All babies except three (Ss. 3, 12 and 13) were reported as 'full-term' in hospital records. Gestational ages as recorded in hospital notes are given in Table 1.

1. Normal delivery is the expression used in hospital records. According to a hospital midwife this is used for spontaneous vaginal delivery (excludes forceps or other instrumental delivery but includes episiotomy).

2. Full-term: used in hospital records to denote a gestational age of 38 - 40 weeks. (40 weeks + is referred to as "post-mature").
Table 1: Birth weights, gestational age and type of delivery.1

(Weights are given in pounds and ounces as mothers referred to their baby's weight in these terms after leaving the hospital).

<table>
<thead>
<tr>
<th>Birth weight</th>
<th>Gestational age</th>
<th>Type of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.1 Rory</td>
<td>6 lbs 9 ozs</td>
<td>41 weeks</td>
</tr>
<tr>
<td>S.2 Ibrahim</td>
<td>6 lbs</td>
<td>full-term</td>
</tr>
<tr>
<td>* S.3 Stephen A.</td>
<td>1.43 kgs.</td>
<td>31 weeks</td>
</tr>
<tr>
<td>S.4 Clifford K.</td>
<td>5 lbs 5 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.5 Benjamin</td>
<td>8 lbs 2 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.6 Mohamed</td>
<td>8 lbs 8 ozs</td>
<td>6 days post-mature</td>
</tr>
<tr>
<td>S.7 Leroy</td>
<td>8 lbs 4 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.8 Harjit</td>
<td>7 lbs 4 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.9 Stephen C.</td>
<td>8 lbs 12 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.10 Uchenna</td>
<td>6 lbs 9 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.11 Clifford M.</td>
<td>6 lbs 10 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.12 Caroline</td>
<td>6 lbs 8 ozs</td>
<td>3 wks. prem.</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.13 Ruth</td>
<td>7 lbs 12 ozs</td>
<td>1 wk. prem.</td>
</tr>
<tr>
<td>S.14 Charlotte</td>
<td>7 lbs 4 ozs</td>
<td>full-term</td>
</tr>
<tr>
<td>S.15 Celia</td>
<td>8 lbs 3 ozs</td>
<td>40 weeks</td>
</tr>
<tr>
<td>S.16 Sandra</td>
<td>8 lbs 5 ozs</td>
<td>2-3 wks. overdue</td>
</tr>
<tr>
<td>S.17 Hannah</td>
<td>7 lbs 8 ozs</td>
<td>normal</td>
</tr>
<tr>
<td>S.18 Nkeruka</td>
<td>7 lbs 15 ozs</td>
<td>full-term</td>
</tr>
</tbody>
</table>

Mean weights: males: 7.1 lbs; females: 7.63 lbs

* omitted from calculation of mean.

The lower mean weight for the male babies is attributable to the high proportion of Asian boy babies (45%). (Mean weight for the five Asian babies: 6.61 lbs). This is in line with general findings that Asian (i.e. Bangladeshi, Pakistani and Indian) mothers have smaller babies. (See BMJ, Vol. 281, 15 Nov. 1980, pp. 307-8).

1. According to hospital records.
III. RELIABILITY

1. Bayley Scales of Infant Development

The current edition of the BSID was standardized on a sample of 1,262 children, distributed in approximately equal numbers among 14 age groups ranging from 2 to 30 months. The sample was selected to be representative of the United States within this age range.

A stratified-sample design was used to collect the data necessary to establish the norms for the Bayley Scales, and the sample was controlled for sex and colour within each age group, with further controls related to residence (urban-rural) and to education of the head of the household.

Although there were deviations of the sample from population proportions, the gravity of these discrepancies was mitigated by the findings of Bayley (1965) who used a nationwide sample of 1,400 infants to investigate the effects of demographic and socioeconomic variables upon scores obtained with the 1958-60 version of the Scales. No significant differences were found on either the Mental or Motor Scale by sex, birth order, geographical location, or parents' education. Separating the results by ethnic group (white, Negro and Puerto Rican), the only significant difference was a consistent tendency for Negro children to obtain slightly superior scores on the Motor Scale at all ages from 3 to 14 months. In view of these findings, it was felt that the children tested in each age group were sufficiently representative of the relevant population to serve as the basis for norms for the Mental and Motor Scales.

Tester Reliability

The Tester had successfully completed the ARICD course on the Griffiths Mental Development Scale (March 1980), and it is felt that the expertise gained on this course contributed towards the reliability of the study.

1. Association for Research in Infant and Child Development.
The Tester had had over a year's experience of home administration of the BSID in the course of a pilot study. 29 children were tested at approximately 3-monthly intervals, so that the Tester had administered the Bayley Scales on at least 100 occasions.

A pilot subject in the same age range as the sample was tested before each series of tests was begun, in order to ensure familiarity with the test items applicable to that age. The same pilot subject was used throughout the study.

**Tester-observer reliability**

As it was not possible for an independent observer to attend the testing sessions, the Tester and an observer simultaneously tested a child (not one of the sample) at each of the age intervals. The same child was used from 3 - 15 months. Another child had to be used for the 18-month test because of the limited duration of the study. The observer was herself a qualified psychologist and an experienced administrator of the BSID.

At the 3-month test, agreement on the Mental Scale was 93% (discrepancy in scoring on 2 out of 30 items).

At the 6-month test, agreement on the Motor Scale was 83% (discrepancy in scoring on 3 out of 18 items).

There was 100% agreement between Tester and Observer on the Motor Scale at 3 months, the Mental Scale at 6 months, and both scales at 9, 12, 15 and 18 months.

### 2. HOME Inventory

The 45-item version of the HOME Inventory was used. This version is extracted from a longer (72-item) version described by Caldwell, Heider & Kaplan (1960) which was reduced to improve the efficiency of the Scale and to facilitate its use as a screening instrument by reducing the time required to administer the Scale.

Caldwell used data obtained from families in Syracuse, New York, in order to estimate the reliability of the six new subscales of the HOME, and the total scale. Cronbach alpha coefficients were computed ranging from .49 - .78 for the six subscales, while the internal consistency of the total scale was calculated at .84. Point-biserial correlations were also computed between individual items and their
factor scores. The resulting correlations ranged from .39 to .73. Based on these results, it appeared that the factor structure of the 45-item HOME was sufficiently clear and the subscales sufficiently stable to warrant using the HOME as an index of the quality of stimulation to be found in the early environment.

HOME Inventory assessments of 174 Little Rock, Arkansas, families of infants and toddlers were used to calculate the mean, S.D. and S.E. of measurement for each of the six HOME subscales and the total HOME score. Complete data were not available on all families, but Caldwell gives the following as characteristics of the Little Rock sample:

Family data:

Welfare - 34%; non-welfare - 66%
Father absent - 39%. father present - 71%
Maternal education (average no. years) - 12.2
Paternal education " " - 12.9
Paternal occupation - wide range of employment, but on the average "about skilled labor to sales".

Child data:

Black males: N = 57
Black females: N = 58
White males: N = 31
White females: N = 28
0 - 12 mths of age N = 67
13 - 24 " " N = 59
25 - 36 " " N = 48
Birth order: First born or only child - 53%
second or third born - 30%
fourth or later born - 17%
Reliability:

Internal consistency estimates were made for the total scale and each subscale, based on the Kuder-Richardson 20 formula. The coefficients ranged from .38 - .89, which was considered to be an acceptably high level with respect to the length of the subscales.

Stability:

HOME data were collected from 91 families in Little Rock, Arkansas, when the child was 6, 12 and 24 months. Using these three estimates for each family, the stability of the HOME Inventory for families of infants and toddlers was estimated. Coefficients indicated a moderate to high degree of stability for all subscales ranging from .24 to .77.

Intercorrelation among Subscales:

Caldwell calculated the intercorrelations among 6-month, 12-month and 24-month HOME subscale scores. The coefficients ranged from negligible to moderate in size and corroborated the findings of the factor analysis on which the shortened version of the Inventory is based. That is, each subscale contains clusters of items which can be meaningfully interpreted. The subscales cannot, on the other hand, be considered independent home environment factors. Caldwell found that subscales 4, 5 and 6 shared about 20 to 45% common variance.

Intercorrelations among subscales of the HOME applied to the study sample are given in Tables 15-19, 'Results' Section.
3. **Symbolic Play Test**

The initial standardization consisted of 241 tests carried out on a group of 137 children ranging in age from 12 - 36 months. 60 of the children were tested on at least two, and sometimes as many as five of the seven age levels at which testing was done.

The children were recruited at random from welfare centres or day nurseries in North and Inner London. The sample of tests was felt to be reasonably representative of social class (using the Registrar General's Classification of paternal occupation), although the distribution is skewed towards the upper end of the social scale (66.4% of the sample fall into Social Class I, II or III.) The sample included a small number of children whose parents were not English-speaking (6.6%). Though this sub-group is a small one, Lowe & Costello felt that their findings would apply to immigrant children, even if their native language was not English. (In the present study language was not found to significantly affect performance on the Symbolic Play Test.)

**Reliability:**

Split-half reliability was calculated using the Spearman-Brown formula. These correlations were felt to be sufficiently high for so short a test, thus indicating the internal consistency of the scale. The authors note that more items might give larger coefficients at the expense of making the test longer and more difficult to administer.

**Tester-reliability:**

The Symbolic Play Test was administered to approximately 20 children in the course of a pilot-study. Ages ranged from 12 - 30 months. Possible discrepancies between the pilot sample and the study sample are discussed in the Results section.
INTERVIEWING AS A RESEARCH TECHNIQUE

Interviewing as a research technique has been criticized for a number of reasons. Yarrow, Campbell & Burton (1970), for instance, compared maternal reports with clinical records and found considerable inaccuracy and systematic distortion in retrospective reporting. They also pointed out the possibility of a social-desirability dimension in child-rearing interviews. (See Edwards, 1957; Crowne & Marlowe, 1964).

To what extent do these criticisms apply to the present study?

ACCURACY OF RETROSPECTIVE REPORTING

3 months, the time lapse between each interview, was not felt to be a long enough time-span to make systematic distortion a major problem.

To avoid this possibility, however, attainment of "developmental milestones", e.g. walking or first tooth, were only recorded when observed, although note was made of mothers' reports of earlier attainment. Thus these statistics were recorded as "percentage of sample walking at 12 months" for example.

The probability of distortion becomes greater when information on the nature of the event is required. For example: "Is teething a problem?" may elicit a strongly positive reply if the teething trouble was recent, whereas with the lapse of time the extent of the teething "troubles" may have been forgotten. Reporting of sleep disturbances or crying would be subject to similar distortion.1.

1. This point is discussed under "Teething", p.185.
"Experimenter effect" - the problem of neutrality

Although the Experimenter's introductory handout (see Appendix A) was printed on University notepaper, subjects were recruited on hospital premises. Consequently, most mothers assumed the Experimenter was connected with "the Hospital" until assured otherwise, i.e. that she was from "the University of London".

As was shown in the Newsons' study (Newson & Newson, 1963), university-trained interviewers received somewhat different responses from health visitors, the tendency being for health visitors to report a higher percentage of responses in the direction of recommendations of 'authoritative experts'.

This tendency would be most probable in the early part of the present study, where the Experimenter was still seen by mothers as "from the hospital". (The Experimenter was frequently asked: "Do you have to go to the Hospital now?")

The Experimenter was on occasions asked by mothers for advice on their infant's health problems, for example, to look at a skin rash, to comment on feeding-formula proportions, or whether weight gain was adequate. After appropriate reply, the Experimenter always added that she was not qualified to advise on health problems, and that mothers should ask their G.P. or Clinic if they felt this to be necessary.

The question arises here of whether or not the Experimenter was shaping subjects' behaviour. This may have been the case as far as having Baby weighed, and Clinic visits were concerned. Two mothers reported Clinic visits to have Baby weighed "because I knew you were coming".

The most frequent questioning of Experimenter at later interviews arose in connection with toys. A question such as "Where do you buy these toys (i.e. test objects)?" answered by "These are from America, but I think Woolworths or Mothercare have similar ones" was not felt to be "behaviour-shaping", whereas a direct, detailed answer to "What sort of toys should I buy for this age?" would have been. In all such cases the Experimenter endeavoured to be non-specific.
Once mothers' attitudes to a certain topic were known, questions had to be worded accordingly. For instance, if at 9 months a mother had reported that she did not intend introducing toilet-training until at least 18-months, at 12 months she was asked, for example: "You haven't started toilet-training yet, have you?" or, if she expressed a strong opinion against dummies at one interview, at the next she was asked: "You don't use a dummy, do you?"

Similarly, a mother who consistently reported her baby as "difficult" was not asked: "Would you say he's an "easy" or "difficult" baby, or neither?" , but, for example, "He's still difficult, is he?"

A non-schedule, standardized interview (Richardson, Dohrenwend & Klein, 1965), allowing for flexibility of wording, was felt to be essential for this type of study, particularly as subjects were from such a variety of background.

Familiarization effect

A possible source of distortion in interview data may be the different degree of familiarization between Mother and Experimenter as the study progressed. At early interviews, when the Experimenter was still a stranger, it was to be expected that subjects would be less forthcoming in their replies than at later interviews when a better rapport had been established.

This would account for early bias of replies in the direction of 'authoritative experts', and more accurate replies later in the study when mothers were less likely to feel that their behaviour was being assessed.

Several subjects were noticeably reserved at early interviews, becoming more forthcoming later in the study. This tendency was reflected in 'Emotional Tone' and 'Emotional Involvement' scores, and at times in Scale I of the HOME Inventory, i.e. 'Emotional and Verbal Responsivity of Mother'. However, these differences did not emerge as a statistical trend.
2. The Bayley Scales.

A number of problems arose in administration of the Bayley Scales:

1. Most common of these was distraction from siblings, visitors to the home, or T.V. Siblings proved the greatest problem, as interference or jealousy from a close-aged brother or sister was to be expected when attention was focussed on the younger child. This problem was partially solved by offering one of the test objects to the older child before starting testing, or offering a child's book.

Interference from siblings occurred at one or more testing in 42% (8:19) of the sample. Such occurrences were recorded on the IBR.

In two cases (S.1 and S.13), this form of interference was noted at 3 months as being a possible reason for the subject's poor auditory response. In one case this was recorded as "interference from noisy brother", in the other case as "mother's shouting at sister". Neither subject scored significantly below the group mean MDI, nor the mean for their sex.

In the remaining cases scores as high as 131 on the Mental Scale resulted, despite interference recorded as "extremely difficult testing conditions".

One home in which testing was particularly difficult was that of Mohamed (S.6). "Extremely difficult testing conditions" were noted at all visits, due to interference from older brother, visits from neighbour with young children, and limited testing space. Mohamed's MDI ranged from 99 - 120 (overall $\bar{x}$: 111.8). At 9 months, when Mohamed's score was at its lowest (99), poor performance may have been partially due to the after-effects of measles. Although his scores were adequate, his performance throughout the course of the study was felt to reflect the low levels of environmental stimulation Mohamed was receiving. (Mohamed's mother was among the lowest scorers on all HOME scales).
"Extremely difficult testing conditions" in the form of interference from older sister (at all but one visit) and limited testing space at all visits, was noted for Harjit (S.8). Nevertheless, Harjit was among the highest overall scorer (range: 116 - 131, \( \bar{x} : 130.3 \)). His mother scored consistently highly on Scale I and Scale V of the HOME Inventory. Her living space was cramped, but less so than Mohamed's home. She was an exceptionally involved mother who may have managed to divide her time equally between her two children, thus providing equal learning opportunities for both.

In three cases older siblings proved more effective than Mother in persuading subjects into playing with test objects.

2. Visitors

Visitors, whether already present on Experimenter's arrival or arriving in the middle of testing, inevitably distracted subjects. In cases where visitors attempted to interact with the subject child during testing, it was necessary to ask them as tactfully as possible not to do so until later.

One subject, (S.15), scored 126 at 12 months despite "distraction from female visitor" being noted.

3. T.V.

Where T.V. was on on Experimenter's arrival this was recorded, as was whether or not Mother switched off spontaneously, or had to be asked to do so.

Two families had T.V. on on more than one occasion, and did not switch off spontaneously: (Mrs. A., S.3 on three occasions, Mrs. N., S.16 on 4 occasions). In both cases testing was begun with T.V. on, but Mother (or Father) was later asked to switch off if distraction resulted.
Sandra (S.16) scored 129 at 15 months, despite distraction from T.V. (Testing was carried out in the evening, and on this occasion her father appeared to be particularly engrossed in a programme).

4. Infants were not always ready for testing on Experimenter's arrival, so that this was delayed until a suitable time, i.e. if Baby was asleep it was left up to the mother whether or not she felt she should wake him. In two cases where infants appeared to be unwell, no more than initial testing was possible, so that a second visit had to be made, in one case the same afternoon (S.3 at 9 months), in another case the following week (S.14 at 3 months).

Validity of scores

Home testing is inevitably affected by a number of problems, some of which have been referred to above. A recent study by Horner (1980) compared performance on the Bayley Scales in both home and clinic. They found few differences according to setting (9-month olds were more affected by clinic setting than were 15-month olds), but certain test-retest characteristics appeared after a week's interval. The items that were performed inconsistently by 9-month olds were mostly social-interactional and/or vocal-verbal (15-month olds were less affected).

In the present study, a number of inconsistencies were evident, particularly on verbal items. These may have been attributable to inhibition in the presence of a stranger, i.e. the Experimenter. Item 106: "Imitates words" proved particularly difficult to assess in homes where siblings were present, and a lot of vocalization was taking place. In certain cases spontaneous imitation may have occurred, but was not heard against the background noise, and

1. When testing was carried out shortly after a child had been asleep, this was recorded on the IBR, so that the test performance could be considered accordingly.

2. Werner & Bayley (1966) reported inconsistency on these items from 8-month olds.
therefore was not credited. This was also the case with spontaneous "naming" items. (See also "Language Development", p.142).

Re-testing was not possible in this study. The possibility of inconsistency of response becomes greater in a longitudinal study, but may balance itself out. Where a subject's performance was not felt to be representative of his developmental level (bearing in mind previous and subsequent scores), possible reasons for the discrepancy are discussed in the relevant sections, e.g. S.16 at 18 months, p.174.

"Practice effects"

"Practice effects" have been reported in studies involving infant testing. White (1973) for instance, found that 24-month olds who had already been tested at 12 months showed better performance than 24-month olds with no prior testing experience.

In the present study where the Experimenter became more attuned to subjects' personality differences as the study progressed, practice effects were to be expected. These were not reflected in group means, however. (Overall, Mental scores showed little consistency from testing to testing, with no trend in either direction (see Figure 2). Motor scores declined rapidly for both sexes, with an upward trend between 15 and 18 months for females (see Figure 6).

Motor Scale items

1. Items 55 and 56 (those requiring a walking-board) could not be assessed in the home, and therefore had to be omitted from Test scores. Appropriate adjustment of scores was made by crediting subjects who passed items consistently up to this level and subsequent items, with Items 55 and 56. Comparisons of group means using this method with omission of Items 55 and 56 showed a difference of ca. one D.Q. point, i.e. at 15 months adjusted method: male $\bar{x} = 101.625$, omitted method = 102.25; female $\bar{x} = 96.2$, omitted method $\bar{x} = 98.4$. 

2. According to the Bayley Test Manual (1969), credit should only be given for items when observed, and not for mother's report. In the case of Items 53 and 54: Walks up/down stairs with help, credit was given when mothers reported this and the child was thought to be at this motoric level. (Not all homes had staircases, so observation was not always possible. No child was credited with these items before 15 months.

3. A number of earlier items were felt to be affected by inhibition (This was particularly noticeable in infants who showed excessive wariness of Experimenter.) These were Item 28: Rolls from back to stomach, Item 33: Pre-walking progression, Item 34: Stepping movements. In these cases scores may not reflect the infants' true abilities.
3. The HOME Inventory.

The HOME Inventory was scored in accordance with the guidelines described in the Test Manual. Here each item is discussed individually. For example:

Scale I, Item 9:
When speaking of or to child Mother's voice conveys positive feeling.

What you are looking for here is evidence that the Mother feels good about her child - sounds animated when she speaks about him, does not use a flat or querulous tone of voice. (p.101).

Scale IV, Item 32:
Provides eye-hand coordination toys - items to go in and out of receptacle, fit-together toys, beads to string, etc.

The items should be fairly small and should require precise hand movements - the child should not be able to move around and manipulate them at the same time. (p.105).

Despite such guidelines assessment of certain items often proved difficult. According to the Manual credit may be given on many items for a single incidence of "approved" behaviour, so that a ceiling effect results. For example, Scale I, Item 2: Mother responds to child's vocalizations with a vocal or verbal response - here credit can be given for a single response; or Item 7: Mother permits child occasionally to engage in "messy" types of play. In most cases mothers reported allowing a certain amount of play with water or food, so that one mother who expressed strong feelings about not allowing her child to "play with her food" could still be credited because she encouraged her to play in the bath.

As can be seen from Table 13, pp. 105-106, scores on Scale I show very little variance which was felt to be due to the nature of the wording, and the difficulty of "failing" on an item.
Further items which often proved difficult to assess were:

**Scale IV: Provision of appropriate play materials**

In those homes with a large supply of toys it was usually possible to check the list of "appropriate" play materials without having to ask questions. Where the child had few play-things, or toys were kept in another room, it proved difficult to assess each item. In such cases mothers were asked: "Has he any new toys?", or "What toys does he like at the moment?"

**Item 29: Mother provides toys or interesting activities for child during the interview.**

This item was not appropriate for the present study, as the child was the focal point of each visit, and mothers tended to "present" the child to the Experimenter. Only in certain cases where testing had already been completed, and an interview was extra long was there any occasion for the mother to provide the child with an activity.

**Scale V: Maternal involvement with child.**

**Item 37: Mother consciously encourages developmental advances.**

This item applies both to mental and motor development. Not all mothers 'consciously' encouraged both, so that in certain cases encouragement of developmental advances had to be balanced against active discouragement, i.e. S.5 at 15 months: Mother teaches "naming" from picture-book (in E.'s presence), but discourages self-feeding and walking. No credit was given here.

**Item 39: Mother structures child's play periods.**

Where mothers did not spontaneously mention play-sessions with their child, "Do you enjoy playing with him?", or "What sort of games do you play?" (Questions 39/40 ) was asked. A typical reply was: "We clap hands, and I talk, and she goes berserk. I hide my face with cloths and things". Credit was given here, but in this and similar cases "structuring of play" may have been wrongly assumed.
Chapter 3:

RESULTS
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      Individual profiles of mental development (MDI)
      Consistency of scores
   2. Motor Scores (PDI)
      Summary tables of group means, S.E.'s and variance
      Individual profiles of motor development (PDI)
      Consistency of scores
   3. Correlation of Mental and Motor Scale Scores

II. HOME Inventory Scores
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    percentile band and age stage
    Consistency of HOME scores
    Intercorrelations among HOME subscales

III. Symbolic Play Test Scores
     Discussion of results.

IV. Language Development (Vocalization Scores)

V. Cross-lagged panel analysis: direction of effect

VI. Behavioural measures (Infant Behaviour Record)
I. Bayley Scales

1. Mental Scores (MDI)

Table 2:

Summary table of group means, S.E.'s and variance
male and female scores combined

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>( \bar{X} )</th>
<th>S.E.</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>17</td>
<td>114.353</td>
<td>2.358</td>
<td>94.493</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>119.706</td>
<td>3.178</td>
<td>171.721</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>110.750</td>
<td>2.322</td>
<td>91.691</td>
</tr>
<tr>
<td>12</td>
<td>14</td>
<td>122.000</td>
<td>1.972</td>
<td>54.462</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>119.308</td>
<td>2.107</td>
<td>57.731</td>
</tr>
<tr>
<td>18</td>
<td>13</td>
<td>115.769</td>
<td>3.494</td>
<td>158.692</td>
</tr>
</tbody>
</table>

Sample S.E.'s range from 2.3 - 6.3. This is lower than the range given for Bayley's standardized sample (4.2 - 6.9), and this increases the reliability of the scores.

Note: All scores are standard scores.
S.3's scores have been omitted from all group analyses.
Table 2(a):  

Mental scores: S.3

S.3 was born at a gestational age of 31 weeks. His scores on the Bayley Mental Scale are given below for his age since birth (unequated) and equated for 2 months' prematurity.

<table>
<thead>
<tr>
<th>Age</th>
<th>Raw Score</th>
<th>(unequated)</th>
<th>(equated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>39</td>
<td>MDI: 102</td>
<td>146</td>
</tr>
<tr>
<td>6 &quot;</td>
<td>66</td>
<td>MDI: 86</td>
<td>139</td>
</tr>
<tr>
<td>9 &quot;</td>
<td>87</td>
<td>MDI: 99</td>
<td>136</td>
</tr>
<tr>
<td>12 &quot;</td>
<td>89</td>
<td>MDI: 89</td>
<td>114</td>
</tr>
<tr>
<td>15 &quot;</td>
<td>104</td>
<td>MDI: 75</td>
<td>94</td>
</tr>
<tr>
<td>18 mths</td>
<td>lost from study</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean MDI (unequated): 90.2
These scores can be represented in graphic form as follows:

Mean Bayley Mental Scores (MDI) from 3 - 18 months

(Males and females combined)

Fig. 2. As can be seen from this graph, the mean group score increases from 3 - 6 months, troughs at 9 months, and peaks at 12 months, then declines smoothly until 18 months.
### Table 3(a): MALES

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>x</th>
<th>S.E.</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>10</td>
<td>117.10</td>
<td>2.734</td>
<td>74.770</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>118.600</td>
<td>3.351</td>
<td>112.275</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>106.666</td>
<td>2.321</td>
<td>48.497</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>118.25</td>
<td>2.858</td>
<td>65.351</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>116.750</td>
<td>2.498</td>
<td>49.928</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
<td>113.125</td>
<td>4.962</td>
<td>196.981</td>
</tr>
</tbody>
</table>

### Table 3(b): FEMALES

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>x</th>
<th>S.E.</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7</td>
<td>110.428</td>
<td>3.951</td>
<td>109.286</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>121.286</td>
<td>6.376</td>
<td>284.563</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>116.285</td>
<td>3.790</td>
<td>100.580</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>125.666</td>
<td>1.909</td>
<td>21.864</td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td>123.400</td>
<td>3.219</td>
<td>51.796</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
<td>120.00</td>
<td>4.359</td>
<td>95.004</td>
</tr>
</tbody>
</table>
Male and female mean scores can be represented in graphic form as follows:

Fig. 3.
As can be seen from Figure 3, male and female mean scores follow a similar pattern. Although females score lower at 3 months, showing a much steeper increase between 3 and 6 months, male scores show a much deeper trough at 9 months, and remain a consistent number of points below female scores. These differences are reflected in the greater variance of female scores at all ages except 12 and 18 months.

As can be seen from the following table, these differences reach the conventional level of significance only at 9 months (t = 2.16, p < .05, N = 16):

Table 4:

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
<td>N</td>
</tr>
<tr>
<td>3</td>
<td>1.39</td>
<td>10</td>
<td>117.10</td>
<td>8.647</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>.37</td>
<td>10</td>
<td>118.60</td>
<td>10.596</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>2.16</td>
<td>9</td>
<td>106.66</td>
<td>6.964</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>1.87</td>
<td>8</td>
<td>118.25</td>
<td>8.084</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>1.64</td>
<td>8</td>
<td>116.750</td>
<td>7.066</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>1.04</td>
<td>8</td>
<td>113.125</td>
<td>14.035</td>
<td>5</td>
</tr>
</tbody>
</table>
Individual Bayley Mental Scores (MDI) from 3 - 18 months (Males)

mean score at:
3 mths 107
6 "  120
9 "  111
12 "  119
15 "  109 Overall X =
18 "  117   113.8

mean score at:
3 mths 119
6 "  110
9 "  99
10 "  111
15 "  114 Overall X =
18 "  140   115.5

mean score at:
3 mths 102
6 "  86
9 "  99
12 "  89
15 "  75 Overall X =
18 "  90.2
Individual Bayley Mental Scores (MDI) from 3-18 months (Males) contd

S.4
Clifford

mean score at:

3 mths 133
6 " 105
9.75" 91
12 " 106
15 " 95
18 " 103 Overall 105.5

Fig. 4(d)

S.5
Benjamin

mean score at:

3 mths 113
7 " 119
9 " 99
12 " 119
15 " 114
18.7" 100 Overall 110.6

Fig. 4(e)

S.6
Mohamed

mean score at:

3 mths 116
6 " 120
9 " 99
12 " 117
15 " 116
18 " 103 Overall 111.8

Fig. 4(f)
Individual Bayley Mental Scores (MDI) from 3 - 18 months (Males) contd.

**S.7**
Leroy

Fig. 4(g)

![Graph showing Individual Bayley Mental Scores for Leroy from 3 - 18 months.](image)

**Mean score at:** 76

- 3 mths: 122
- 6 " : 134
- 9 " : 117
- 12 " : 130
- 15 " : 132
- 18 " : 111 Overall: 124.3

**S.8**
Harjit

Fig. 4(h)

![Graph showing Individual Bayley Mental Scores for Harjit from 3 - 18 months.](image)

**Mean score at:**

- 3 mths: 116
- 6 " : 116
- 9 " : 114
- 12 " : 131
- 15 " : 119
- 18 " : 126 Overall: 120.3

**S.9**
Simon C.

Fig. 4(i)

![Graph showing Individual Bayley Mental Scores for Simon C. from 3 - 18 months.](image)

**Mean score at:**

- 3 mths: 107
- 6 " : 110
- 9 " : 107
- 12 " : 109
- 15 " : 121
- 18 " : 98 Overall: 108.6
Individual Bayley Mental Scores (MDI) from 3 - 18 months (Males) contd.

S.10  
Uchenna  
mean score at:
3 mths  110  
6  "    116  
9  "    111  Overall  \( \bar{x} \)
(at 9 mths)

Fig. 4(j)

S.11  
Clifford M.  
mean score at:
3 mths  128  
6  "    139  Overall  \( \bar{x} = 133.5 \)
(at 6 mths)

Fig. 4(k)

S.19  
Ashni  
mean score at:
4 mths  102  
6  "    116  
9  "    103  
12  "   115  
15  "   116  
18  "   107  Overall  \( \bar{x} = 109.8 \)

Fig. 4(l)
Individual Bayley Mental scores (MDI) from 3 - 18 months (Females)

S. 12
Caroline

mean score at:
3 mths 96
6 " 92
9 " 95
12 " 117
15 " 132
18 " 132 Overall x = 110.6

Fig.4(m)

S. 13
Ruth

mean score at:
3 mths 102
6 " 110
9 " 114 Overall x = 108.6

Fig.4(n)

S. 14
Charlotte

mean score at:
3 mths 113
6 " 144
9 " 133
12 " 128
15 " 130
18 " 119 Overall x = 127.8

Fig.4(o)
Individual Bayley Mental scores (MDI) from 3-18 months (Females) contd.

S.15
Celia

mean score at:
3 mths 122
6 " 129
9 " 117
12 " 126
15 " 118
18 " 123 Overall \( \bar{x} \) 122.5

Fig. 4(p)

S.16
Sandra

mean score at:
3 mths 116
6 " 129
9 " 114
12 " 131
15 " 121
18 " 105 Overall \( \bar{x} \) 119.3

Fig. 4(q)
Individual Bayley Mental scores (MDI) from 3 - 18 months (Females) contd.

S.17
Hannah

mean score at:
3 mths  122
6 "    129
9 "    120
12 "   126
15 "   116
18 "   121  Overall \bar{x} = 122.3

Fig. 4(r)

S.18
Nkeruka

mean score at:
3 mths  102
6 "    116
9 "    117
12 "   126  Overall \bar{x} = 115.25
(at 12 mths)

Fig. 4(s)
It is clear from these individual profiles of the MDI that mental development between 3 and 18 months, as measured by the Bayley Scale, is inconsistent.

The highest male scorer at 3 months (S.4) dropped over 20 points (p < .05 level) at 6 months, and remained at this low level, so that his overall mean (105.5) was the lowest of the sample.

Similarly, the lowest female scorer at 3 months (S.12) remained low until 12 months, when her score rose over 20 points (p < .05 level), and continued to rise, until at 18 months, her MDI (132) was the highest of the group. Because of her low scores between 3 and 9 months, however, her overall mean was the lowest female mean, and among the bottom twenty per cent of the sample.

Consistency of scores

Table 5: Correlations on the Mental Scale by age (auto correlations)

<table>
<thead>
<tr>
<th>MDI at</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>r = .458</td>
<td>.05</td>
<td>.07</td>
<td>-.607</td>
<td>-.21</td>
</tr>
<tr>
<td>p = (.03)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.01)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>n = 17</td>
<td>16</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>6 mths</td>
<td>.56</td>
<td>.670</td>
<td>.335</td>
<td>-.14</td>
<td></td>
</tr>
<tr>
<td>p = (.01)</td>
<td>(.006)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 mths</td>
<td>.751</td>
<td>.350</td>
<td>-.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p = (.002)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 mths</td>
<td>.520</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p = (.04)</td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 mths</td>
<td>.294</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p = (n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All correlations refer to Pearson's Product-Moment Correlation Coefficient. Correlation coefficients are followed by significance level (in brackets), and sample size (n). Significant correlations are underlined.
As can be seen from Table 5, only between 6 and 15 months do Mental scores show a significant level of consistency, i.e.:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>r</td>
</tr>
<tr>
<td>6 - 9 mths</td>
<td>16</td>
<td>.56</td>
</tr>
<tr>
<td>6 - 12 mths</td>
<td>14</td>
<td>.67</td>
</tr>
<tr>
<td>9 - 12 mths</td>
<td>14</td>
<td>.751</td>
</tr>
<tr>
<td>12 - 15 mths</td>
<td>13</td>
<td>.52</td>
</tr>
</tbody>
</table>

Scores at 3 months are significantly correlated only with 6-month scores. The correlation coefficient decreases until at 15 months scores are inversely related with those at 3 months.

Scores at 18 months are also inversely related with scores at 3, 6 and 9 months. They are positively correlated with 12-month scores at a low level of significance (r = .35, p < .12, n = 12), but are not significantly correlated with 15-month scores (r = .294).

With the exception of this correlation all scores are significantly correlated with those at the next age stage. The inverse correlations between 3-month and 15 and 18 month scores may reflect the unpredictability of early infant testing.
2. Motor Scores (PDI)

Table 6: Summary table of group means, S.E.'s and variance
male and female scores combined

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>( \bar{x} )</th>
<th>S.E.</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>17</td>
<td>133.412</td>
<td>3.388</td>
<td>195.132</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>166.176</td>
<td>2.499</td>
<td>106.154</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>110.87</td>
<td>3.930</td>
<td>262.610</td>
</tr>
<tr>
<td>12</td>
<td>14</td>
<td>103.071</td>
<td>5.016</td>
<td>352.225</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>99.538</td>
<td>3.624</td>
<td>170.769</td>
</tr>
<tr>
<td>18</td>
<td>13</td>
<td>103.308</td>
<td>4.936</td>
<td>316.731</td>
</tr>
</tbody>
</table>

Sample S.E.'s range from 2.4 - 8.4. This compares favourably with the range given for Bayley's standardized sample (4.6 - 9.0).

These scores can be represented graphically, as follows:
As can be seen, mean Motor scores show a sharp decline, dropping below the norm at 15 months, and rising only just above the norm at 18 months.
Motor Scores (cont'd.)

Summary tables of means, S.E.'s and variance according to sex

Table 7(a):

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>$\bar{x}$</th>
<th>S.E.</th>
<th>variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>10</td>
<td>135.800</td>
<td>4.024</td>
<td>161.951</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>115.300</td>
<td>3.300</td>
<td>108.910</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>108.666</td>
<td>5.513</td>
<td>273.505</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>104.875</td>
<td>6.844</td>
<td>374.693</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>101.625</td>
<td>4.280</td>
<td>146.555</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
<td>100.500</td>
<td>4.962</td>
<td>313.148</td>
</tr>
</tbody>
</table>

Table 7(b):

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>$\bar{x}$</th>
<th>S.E.</th>
<th>variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7</td>
<td>130.000</td>
<td>6.028</td>
<td>254.338</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>117.428</td>
<td>4.082</td>
<td>116.618</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>112.857</td>
<td>6.620</td>
<td>306.810</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>99.600</td>
<td>7.948</td>
<td>379.080</td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td>96.200</td>
<td>6.829</td>
<td>231.203</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
<td>107.80</td>
<td>8.499</td>
<td>361.190</td>
</tr>
</tbody>
</table>

As can be seen, female scores show a higher variance than do male scores at all ages but 18 months.
Table 6(a):

Motor scores: S.3

(unequated and equated for 2 months' prematurity)

<table>
<thead>
<tr>
<th>Age</th>
<th>Raw Score</th>
<th>PDI:</th>
<th>(unequated)</th>
<th>(equated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>18</td>
<td>PDI: 125</td>
<td>150+</td>
<td></td>
</tr>
<tr>
<td>6 mths</td>
<td>28</td>
<td>PDI: 104</td>
<td>150+</td>
<td></td>
</tr>
<tr>
<td>9 mths</td>
<td>36</td>
<td>PDI: 87</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>12 mths</td>
<td>80</td>
<td>PDI: 80</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>15 mths</td>
<td>46</td>
<td>PDI: 81</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>18 mths</td>
<td>lost</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean PDI (unequated): 95.4
Graph showing mean Bayley Motor scores (PDI) from 3 - 18 months
(Males and females separately)

Fig. 6.
Male and female scores show a similar pattern until 12 months, when female scores drop sharply, reaching a trough 4 points below the norm at 15 months, but then rise steeply, finishing 7 points above male scores. Female scores show a greater variance than do male scores at all ages but 18 months.

Figure 6 illustrates the interaction between male and female scores. At no stage did these differences reach the conventional level of significance, as can be seen from the following table:

Table 8:

<table>
<thead>
<tr>
<th>Age in months</th>
<th>t</th>
<th>Males</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>Females</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>.80</td>
<td>10</td>
<td>10</td>
<td>135.80</td>
<td>4.024</td>
<td>7</td>
<td>130.00</td>
<td>6.028</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>.41</td>
<td>10</td>
<td>10</td>
<td>115.30</td>
<td>10.436</td>
<td>7</td>
<td>117.428</td>
<td>16.869</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>.49</td>
<td>10</td>
<td>10</td>
<td>108.666</td>
<td>16.538</td>
<td>7</td>
<td>112.857</td>
<td>17.516</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>.40</td>
<td>8</td>
<td>8</td>
<td>104.875</td>
<td>19.357</td>
<td>6</td>
<td>100.666</td>
<td>19.470</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>.71</td>
<td>8</td>
<td>8</td>
<td>101.625</td>
<td>12.106</td>
<td>5</td>
<td>96.200</td>
<td>15.271</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>.69</td>
<td>8</td>
<td>8</td>
<td>100.50</td>
<td>17.696</td>
<td>5</td>
<td>107.80</td>
<td>8.499</td>
<td></td>
</tr>
</tbody>
</table>
Individual Bayley Motor scores (PDI) from 3 - 18 months (Males)

Fig. 7(a)

S.1
Rory

mean score at:
3 mths 117
6 " 96
9 " 96
12 " 92
15 " 106
18 " 84 Overall $\bar{x} =$ 98.5

Fig. 7(b)

S.2
Ibrahim

mean score at:
3 mths 117
6 " 116
9 " 100
12 " 124
15 " 114
18 " 124 Overall $\bar{x} =$ 115.83

Fig. 7(c)

S.3
Simon A.

mean score at:
3 mths 125
6 " 104
9 " 87
12 " 80
15 " 81 Overall $\bar{x} =$ 95.4
Individual Bayley Motor scores (PDI) from 3 - 18 months (Males) contd.

S.5 Benjamin

mean score at:
3 mths 134
7 " 99
9 " 90
12 " 80
15 " 77
18.7" 53 Overall $\bar{x}$ = 88.83

Fig. 7(d)

S.6 Mohamed

mean score at:
3 mths 134
116
119
117
106
94 Overall $\bar{x}$ = 114.33

Fig. 7(e)
Individual Bayley Motor scores (PDI) from 3 - 18 months (Males) contd.

S.4
Clifford K.

Fig. 7(f)

mean score at:
3 mths 126
6 " 116
9 " 116
12 " 98
15 " 100
18 " 94 Overall \( \bar{x} = 108.3 \)

S.7
Leroy

Fig. 7(g)

mean score at:
3 mths 138
6 " 129
9 " 127
12 " 128
15 " 110
18 " 107 Overall \( \bar{x} = 123.16 \)

S.8
Harjit

Fig. 7(h)

mean score at:
3 mths 142
6 " 124
9 " 139
12 " 122
15 " 102
18 " 129 Overall \( \bar{x} = 126.33 \)
Individual Bayley Motor scores (PDI) from 3 - 18 months (Males) contd.

S.9
Simon C.

Fig. 7(i)

mean score at:
3 mths 150
6 " 120
9 " 100
12 " 105
15 " 110
18 " 88 Overall \( \bar{x} = 112.16 \)

Fig. 7(j)

S.10
Uchenna

mean score at:
3 mths 150
6 " 124
9 " 111 Overall \( \bar{x} = 128.3 \)
(at 9 mths)
Individual Bayley Motor scores (PDI) from 3 - 18 months (Males) Cont'd.

Mean score at:
3 mths 150
6 mths 112 Overall $\bar{x} = 131$
(at 6 mths)

Mean score at:
4 mths 119
6 mths 100
9 86
12 95
15 84 Overall $\bar{x} = 97.3$

Fig. 7(k)  
Clifford M.

Fig. 7(1)  
Ashni
Individual Bayley Motor scores (PDI) from 3 - 18 months (Females)

S.12
Caroline

Fig. 7(m)

Mean score at:
3 mths 108
6 " 96
9 " 76
12 " 70
15 " 72
18 " 78

Overall $\bar{x} = 83.3$

S.13
Ruth

Fig. 7(n)

Mean score at:
3 mths 117
6 " 120
9 " 119

Overall $\bar{x} = 118.6$
(at 9 mths)
Individual Bayley Motor scores (PDI) from 3 - 18 months (Females) Contd.

S.14
Charlotte

Fig. 7(o)

Mean score at:
3 mths 117
6 112
9 111
12 92
15 100
18 100 Overall x
= 105.3

S.15
Celia

Fig. 7(p)

Mean score at:
3 mths 134
6 120
9 119
12 111
15 106
18 120 Overall x
= 118.3

S.16
Sandra

Fig. 7(q)

Mean score at:
3 mths 142
6 125
9 127
12 98
15 100
18 124 Overall x
= 119.3
Individual Bayley Motor scores (PDI) from 3 - 18 months (Females) contd

Fig. 7(r)

S.17
Hannah

Mean score at:

<table>
<thead>
<tr>
<th>Age</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>142</td>
</tr>
<tr>
<td>6</td>
<td>120</td>
</tr>
<tr>
<td>9</td>
<td>111</td>
</tr>
<tr>
<td>12</td>
<td>105</td>
</tr>
<tr>
<td>15</td>
<td>114</td>
</tr>
<tr>
<td>18</td>
<td>117</td>
</tr>
</tbody>
</table>

Overall $\overline{x} = 118.16$

Fig. 7(s)

S.18
Nkeruka

Mean score at:

<table>
<thead>
<tr>
<th>Age</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>150</td>
</tr>
<tr>
<td>6</td>
<td>129</td>
</tr>
<tr>
<td>9</td>
<td>127</td>
</tr>
<tr>
<td>12</td>
<td>122</td>
</tr>
</tbody>
</table>

Overall $\overline{x} = 132$

(at 12 mths)
The clearest trend to emerge from these individual profiles of motor development between 3 and 18 months, as measured by the Bayley Scale, is the exceptionally high 3-month scores, and their rapid decline. Only one subject (S.13) increased her PDI between 3 and 6 months. 64% of the remaining Motor scores dropped significantly, i.e. at least 14 standard points (.05 level). The mean PDI continues to drop, until at 18 months it is highly significantly lower than at 3 months, and significantly lower than at 6 months.

With the exception of 3-month scores, motor development in this group shows more consistency than does mental development. This is reflected in the significant correlations between motor scores at each successive age stage and across ages.
Consistency of scores

Table 9: Correlations on the Motor Scale by age (auto correlations)

<table>
<thead>
<tr>
<th>PDI at</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>r = .678</td>
<td>.452</td>
<td>.671</td>
<td>.264</td>
<td>.420</td>
</tr>
<tr>
<td></td>
<td>p = (.002)</td>
<td>(.03)</td>
<td>(.006)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>n = 17</td>
<td>17</td>
<td>16</td>
<td>14</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>6 mths</td>
<td>.848</td>
<td>.819</td>
<td>.572</td>
<td>.740</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.02)</td>
<td>(.002)</td>
<td></td>
</tr>
<tr>
<td>9 mths</td>
<td>.848</td>
<td>.560</td>
<td>.689</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.02)</td>
<td>(.007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 mths</td>
<td>.779</td>
<td>.568</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 mths</td>
<td>.305</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These correlations show a high level of stability for the PDI. Only three correlation coefficients, those between 3 and 15 and 18 months, and 15 and 18 months are non-significant. All other correlations either reach or exceed the conventional level of significance (p < .05).

Scores at each consecutive age stage are highly significantly correlated until 15 months (non-significant correlation between 15 and 18 months: r = .305, n = 12). While this non-significant correlation is not reflected in significantly different group means, examination of scores at 15 and 18 months shows a 2-point drop in the mean PDI for males, but a 9-point increase in the mean PDI for females.

The non-significant correlations between 3 and 15 and 3 and 18 months (r = .42, p < .08), could be due to the instability of early motor development. An alternative explanation is that only at this early age (i.e. 3 months) is motor performance little inhibited by Experimenter or affected by negativism.
Graph illustrating correlation of Mental (MDI) and Motor (PDI) scores
(Males and females combined)

Fig. 8
3. Correlation of Mental (MDI) and Motor Scale (PDI) Scores

Table 10: (Male and female scores combined)

Correlation coefficients (r), t-statistic, means and S.D.'s

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>r</th>
<th>t</th>
<th>MDI Mean</th>
<th>S.D.</th>
<th>PDI Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>17</td>
<td>.250</td>
<td>5.3</td>
<td>114.353</td>
<td>9.721</td>
<td>133.412</td>
<td>13.969</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>.274</td>
<td>1.02</td>
<td>119.706</td>
<td>13.104</td>
<td>116.176</td>
<td>10.303</td>
</tr>
<tr>
<td>12</td>
<td>14</td>
<td>.46</td>
<td>4.98</td>
<td>122.000</td>
<td>7.380</td>
<td>103.071</td>
<td>18.768</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>-.23</td>
<td>4.04</td>
<td>119.308</td>
<td>7.598</td>
<td>99.538</td>
<td>13.068</td>
</tr>
<tr>
<td>18</td>
<td>13</td>
<td>.300</td>
<td>2.52</td>
<td>115.769</td>
<td>12.597</td>
<td>103.308</td>
<td>17.797</td>
</tr>
</tbody>
</table>

Note: Significant correlations are underlined and followed by significance level (in brackets).
Graphs illustrating correlation of Mental (MDI) and Motor (PDI) scores (males and females separately)
Correlation of MDI and PDI (cont'd.)

Table 11: (Male scores)
Correlation coefficients (r), t-statistic, means and S.D.'s

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>r</th>
<th>t</th>
<th>Mean MDI</th>
<th>S.D.</th>
<th>Mean PDI</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>10</td>
<td>-.07</td>
<td>3.71</td>
<td>117.10</td>
<td>8.647</td>
<td>135.80</td>
<td>4.024</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>.05</td>
<td>.72</td>
<td>118.60</td>
<td>10.596</td>
<td>115.3</td>
<td>10.436</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>.604</td>
<td>.44</td>
<td>106.66</td>
<td>6.964</td>
<td>108.66</td>
<td>16.538</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>.608</td>
<td>3.15</td>
<td>118.25</td>
<td>8.084</td>
<td>104.87</td>
<td>19.357</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>.29</td>
<td>3.46</td>
<td>116.750</td>
<td>7.066</td>
<td>101.62</td>
<td>12.106</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
<td>.772</td>
<td>3.17</td>
<td>113.125</td>
<td>14.035</td>
<td>100.50</td>
<td>17.696</td>
</tr>
</tbody>
</table>
Correlation of MDI and PDI (cont'd.)

Table 12: (Female scores)

Correlation coefficients ($r$), t-statistic, means and S.D.'s

<table>
<thead>
<tr>
<th>Age in months</th>
<th>N</th>
<th>$r$</th>
<th>$t$</th>
<th>MDI Mean</th>
<th>S.D.</th>
<th>PDI Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7</td>
<td>.47</td>
<td>3.619 (.01)</td>
<td>110.428</td>
<td>10.454</td>
<td>130.00</td>
<td>6.028</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>.46</td>
<td>.67</td>
<td>121.285</td>
<td>10.799</td>
<td>117.428</td>
<td>16.869</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>.538</td>
<td>.21</td>
<td>116.285</td>
<td>10.029</td>
<td>112.857</td>
<td>17.516</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>.58</td>
<td>4.08 (.01)</td>
<td>125.666</td>
<td>4.676</td>
<td>99.60</td>
<td>19.470</td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td>-.85</td>
<td>2.52 (.03)</td>
<td>123.40</td>
<td>7.197</td>
<td>96.20</td>
<td>15.271</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
<td>-.73</td>
<td>1.01 (n.s.)</td>
<td>120.00</td>
<td>9.747</td>
<td>107.80</td>
<td>8.499</td>
</tr>
</tbody>
</table>

103
Correlation of MDI and PDI (cont'd.)

Discussion:

When male and female scores are combined, only at ages 9 and 12 months are the MDI and PDI significantly correlated. At all ages but 6 and 9 months Mental (MDI) and Motor (PDI) scores differ significantly. At 3, 12 and 15 months these differences are highly significant, and at 18 months the difference still exceeds the conventional level of significance ($t = 2.52$, $p < .02$, $n = 13$).

When male and female scores are separated according to sex, male scores show significant correlations at 9, 12 and 18 months (at 18 months the correlation coefficient is highly significant, $r = .772$, $p < .01$, $n = 8$), but also highly significant differences at 3, 12, 15 and 18 months.

Female scores are positively but non-significantly related from 3 - 12 months, but inversely related at 15 months ($p < .03$), and at 18 months ($p < .07$).

The Bayley standardized sample showed coefficients ranging from .51 - .40 for standard scores on the Mental and Motor Scales. This Bayley considered to be suggestive of the clearer differentiation between mental and motor skills as children attain higher levels of development.

A tendency for the correlations between Mental and Motor Scales to decrease with age was found in Bayley's standardized sample. Although this decrease with age is true for females in the present study, male scores show an overall increase in correlations with a drop at 15 months. These differing patterns of correlation suggest important differences in male and female test performance for this group.
II. HOME Inventory Scores

Table 13: Group distribution of HOME raw scores according to percentile band and age stage

(A = upper 10%, B = upper 25%, C = middle 50%, D = lower 25%, E = lower 10%).

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Emotional responsivity of mother</td>
<td>18</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>II. Avoidance of restriction and punishment</td>
<td>18</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>III. Organization of the physical and temporal environment</td>
<td>18</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>IV. Provision of appropriate play materials</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>V. Maternal involvement with the child</td>
<td>17</td>
<td>—</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>VI. Opportunities for variety in daily stimulation</td>
<td>18</td>
<td>—</td>
<td>1</td>
<td>12</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL score</td>
<td>16</td>
<td>—</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>—</td>
</tr>
</tbody>
</table>

9 months

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tr>
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<td>1</td>
</tr>
<tr>
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<td>4</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>VI.</td>
<td>18</td>
<td>—</td>
<td>2</td>
<td>12</td>
<td>—</td>
<td>4</td>
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<td>3</td>
<td>11</td>
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</table>
HOME Inventory Scores (cont'd.)

Table 13 (cont'd.)

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<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tr>
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<td>1</td>
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<td>6</td>
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<td>4</td>
<td>2</td>
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<tr>
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<td>5</td>
<td>5</td>
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<tr>
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<td>15</td>
<td>5</td>
<td>4</td>
<td>6</td>
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<tr>
<td>IV.</td>
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<td>5</td>
<td>4</td>
<td>4</td>
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<td>V.</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>VI.</td>
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<td>3</td>
<td>7</td>
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</tr>
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<td>1</td>
<td>2</td>
<td>9</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td><strong>18 months</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>13</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
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<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>III.</td>
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<td>5</td>
<td></td>
<td>8</td>
<td></td>
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</tr>
<tr>
<td>IV.</td>
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<td>6</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>V.</td>
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<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>VI.</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td></td>
<td>1</td>
</tr>
<tr>
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<td>11</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
Group distribution of raw scores according to percentile band (6-18 mths)

**KEY**
A = upper 10% i.e. "top scorers"
B = upper 25%
C = middle 50%
D = lower 25%
E = lower 10% i.e. "bottom scorers"

Subscale I: Emotional and Verbal Responsivity of Mother

![Fig. 10(a)]
Subscale II: Avoidance of Restriction and Punishment

Fig. 10(b)
Subscale III: Organization of the Environment

6 mths.
N = 18

9 mths.
N = 18

12 mths.
N = 14

15 mths.
N = 15

19 mths.
N = 13

Fig. 10(c)
Group distribution of raw scores according to percentile band (6-18 mths)

Subscale IV: Provision of Appropriate Play Materials

Fig. 10(d)
Group distribution of raw scores according to percentile band (6-18 mths)

Subscale V: Maternal Involvement with Child

Fig. 10(e)
Group distribution of raw scores according to percentile band (6-18 mths)

Subscale VI: Opportunities for Variety in Daily Stimulation

Fig. 10(f)
Group distribution of raw scores according to percentile band (6-18 mths)

HOME Total

6 mths

\[ N = 16 \]

\[ \begin{array}{c}
\text{10} \\
\text{5} \\
\text{0}
\end{array} \]

\[ \begin{array}{cccccc}
A & B & C & D & E
\end{array} \]

9 mths

\[ N = 18 \]

\[ \begin{array}{c}
\text{15} \\
\text{10} \\
\text{5} \\
\text{0}
\end{array} \]

\[ \begin{array}{cccccc}
A & A & C & D & E
\end{array} \]

12 mths

\[ N = 15 \]

\[ \begin{array}{c}
\text{15} \\
\text{10} \\
\text{5} \\
\text{0}
\end{array} \]

\[ \begin{array}{cccccc}
A & A & C & D & E
\end{array} \]

15 mths

\[ N = 15 \]

\[ \begin{array}{c}
\text{10} \\
\text{5} \\
\text{0}
\end{array} \]

\[ \begin{array}{cccccc}
A & A & C & D & E
\end{array} \]

18 mths

\[ N = 11 \]

\[ \begin{array}{c}
\text{10} \\
\text{5} \\
\text{0}
\end{array} \]

\[ \begin{array}{cccccc}
A & B & C & D & E
\end{array} \]

Fig. 10(g)
### Consistency of HOME scores

Table 14: Correlations on HOME scores by age (auto correlations)

<table>
<thead>
<tr>
<th>Corr. between mths.</th>
<th>Scale I</th>
<th>Scale II</th>
<th>Scale III</th>
<th>Scale IV</th>
<th>Scale V</th>
<th>Scale VI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>r= .56</td>
<td>.260</td>
<td>.297</td>
<td>.65</td>
<td>.290</td>
<td>.684</td>
<td>.440</td>
</tr>
<tr>
<td></td>
<td>p= (.01)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.004)</td>
<td>(n.s.)</td>
<td>(.002)</td>
<td>(.05)</td>
</tr>
<tr>
<td></td>
<td>n= 15</td>
<td>15</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>r= .468</td>
<td>.873</td>
<td>.505</td>
<td>.608</td>
<td>.325</td>
<td>.44</td>
<td>.717</td>
</tr>
<tr>
<td></td>
<td>p= (.05)</td>
<td>(.001)</td>
<td>(.04)</td>
<td>(.01)</td>
<td>(n.s.)</td>
<td>(.05)</td>
<td>(.01)</td>
</tr>
<tr>
<td></td>
<td>n= 13</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>r= .531</td>
<td>.673</td>
<td>.771</td>
<td>.636</td>
<td>.671</td>
<td>.648</td>
<td>.772</td>
</tr>
<tr>
<td></td>
<td>p= (.03)</td>
<td>(.008)</td>
<td>(.003)</td>
<td>(.01)</td>
<td>(.02)</td>
<td>(.01)</td>
<td>(.007)</td>
</tr>
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<td>11</td>
<td>9</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>r= .511</td>
<td>.620</td>
<td>.638</td>
<td>.838</td>
<td>.804</td>
<td>.648</td>
<td>.874</td>
</tr>
<tr>
<td></td>
<td>p= (.05)</td>
<td>(.02)</td>
<td>(.01)</td>
<td>(.001)</td>
<td>(.01)</td>
<td>(.01)</td>
<td>(.002)</td>
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<tr>
<td></td>
<td>n= 11</td>
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<td>12</td>
<td>11</td>
<td>8</td>
<td>12</td>
<td>12</td>
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</tbody>
</table>

As can be seen from these correlations, HOME scores on each scale show a high degree of stability across ages. Non-significant correlations are found only between 6 and 9 months for Scale II (Avoidance of Restriction and Punishment), Scale III (Organization of Physical and Temporal Environment), and Scale V (Maternal Involvement), and between 9 and 12 months also for Scale V.
Table 15: Intercorrelations among HOME subscales at 6 months

<table>
<thead>
<tr>
<th>Subscales</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.391</td>
<td>.530</td>
<td>.412</td>
<td>.746</td>
<td>.235</td>
<td>.231</td>
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<tr>
<td></td>
<td>(n.s.)</td>
<td>(.01)</td>
<td>(.05)</td>
<td>(.001)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
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<td>17</td>
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<td>16</td>
<td>17</td>
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<td>.642</td>
<td>.688</td>
<td>.355</td>
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<tr>
<td></td>
<td>(.03)</td>
<td>(n.s.)</td>
<td>(.004)</td>
<td>(.001)</td>
<td>(n.s.)</td>
<td></td>
</tr>
<tr>
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<td>.438</td>
<td>.401</td>
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<td></td>
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<td>(n.s.)</td>
<td>(.03)</td>
<td>(n.s.)</td>
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<td>(.05)</td>
<td>(.001)</td>
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<td>(n.s.)</td>
<td>(n.s.)</td>
<td></td>
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<td>(n.s.)</td>
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</tbody>
</table>

Correlations among subscales at 6 months range from .231 - .746. These are higher correlations than those found in Caldwell's standardized sample at 6 months, which ranged from .10 - .40.

Over 50% of intercorrelations are significant or highly significant, with the two scales of maternal behaviour: Scale I (Emotional and Verbal Responsivity of Mother) and Scale V (Maternal Involvement with Child) reaching a highly significant level of correlation ($r = .746$, $p < .001$, $n = 16$).
Table 16: Intercorrelations among HOME subscales at 9 months

<table>
<thead>
<tr>
<th>Subscales</th>
<th>II</th>
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<th>IV</th>
<th>V</th>
<th>VI</th>
<th>TOTAL</th>
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<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
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<td>17</td>
<td>16</td>
<td>16</td>
<td>17</td>
<td>15</td>
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<td>(.001)</td>
<td>(.005)</td>
<td>(n.s.)</td>
<td>(.001)</td>
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<td>(.01)</td>
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</tbody>
</table>

Correlations among subscales at 9 months range from 0 - .90. All scales except Scale I and Scale V are significantly or highly significantly intercorrelated.

Scale I (Emotional and Verbal Responsivity of Mother) is non-significantly correlated with all other scales, while Scale V (Maternal Responsivity) is significantly correlated only with Scale III. Caldwell does not give intercorrelations for the 9-months age level, so comparison cannot be made here.
Table 17: Intercorrelations among HOME subscales at 12 months

<table>
<thead>
<tr>
<th>Subscales</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
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<td>.227</td>
<td>-.115</td>
<td>.233</td>
<td>.562</td>
<td>-.423</td>
<td>.319</td>
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<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.02)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
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<td>13</td>
<td>13</td>
<td>14</td>
<td>11</td>
<td></td>
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<tr>
<td>II</td>
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<td>.737</td>
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<tr>
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<td>(n.s.)</td>
<td>(.05)</td>
<td>(.003)</td>
<td>(n.s.)</td>
<td>(.001)</td>
<td></td>
</tr>
<tr>
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<td>.661</td>
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<td>(n.s.)</td>
<td>(.007)</td>
<td>(.06)</td>
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<td></td>
</tr>
<tr>
<td>IV</td>
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<td>.239</td>
<td>.862</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>(.05)</td>
<td>(n.s.)</td>
<td>(.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(n.s.)</td>
<td>(.001)</td>
<td></td>
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</tr>
<tr>
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<td>(n.s.)</td>
<td></td>
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</tr>
</tbody>
</table>

Correlations among subscales at 12 months range from -.115 to .862. These compare with a range of .17 - .68 reported by Caldwell at the 12-month age level. As at 9 months Scale I shows the least intercorrelation with other scales, correlating positively at a significant level only with Scale V (Maternal Involvement), and at a significant level but inversely, with Scale VI (Opportunities for Variety in Daily Stimulation).
Table 18: Intercorrelations among HOME subscales at 15 months

<table>
<thead>
<tr>
<th>Subscales</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.466</td>
<td>.090</td>
<td>.302</td>
<td>0</td>
<td>-.285</td>
<td>.530 n.s.</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>II</td>
<td>.148</td>
<td>-0.08</td>
<td>.030</td>
<td>-.592</td>
<td>.402</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.01)</td>
<td>(n.s.)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>.242</td>
<td>.427</td>
<td>.027</td>
<td>.397</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>.768</td>
<td>.030</td>
<td>.383</td>
<td>.822</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>.469</td>
<td>.792</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>.266</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Correlations among subscales at 15 months range from -.592 -.822.

The proportion of significant correlations continues to decrease. Scale I is significantly correlated (positively) only with total score, and as at 12 months is inversely correlated with Scale VI.

Scale VI is also inversely correlated at a highly significant level (.01) with Scale II, but is positively correlated at a non-significant level with Scale IV (Provision of Appropriate Play Materials) and Scale V (Maternal Involvement). Scale V is significantly correlated only with Scale IV (p < .005, i.e. highly significantly).
Correlations among subscales at 18 months range from -.10 to .96. No consistent pattern of intercorrelation between subscales emerges; only Scale V correlates significantly with all other scales, reaching a highly significant level with Scales II, III and IV.

The proportion of significant intercorrelations between subscales drops from 80% at 6 months to 38% at 15 months, but rises again at 18 months to 57%.

<table>
<thead>
<tr>
<th>Subscales</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.215</td>
<td>.153</td>
<td>.888</td>
<td>.659</td>
<td>.153</td>
<td>.856</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.001)</td>
<td>(.02)</td>
<td>(n.s.)</td>
<td>(.002)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>II</td>
<td>.10</td>
<td>.278</td>
<td>.695</td>
<td>.06</td>
<td>.684</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.01)</td>
<td>(n.s.)</td>
<td>(.01)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>.432</td>
<td>.768</td>
<td>.292</td>
<td>.548</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(.005)</td>
<td>(n.s.)</td>
<td>(.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>.821</td>
<td>.365</td>
<td>.960</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(n.s.)</td>
<td>(.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>.322</td>
<td>.907</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>.483</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### III. Symbolic Play Test Scores

#### Table 20:

(N = 15)

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Sex</th>
<th>Age at testing</th>
<th>Raw score</th>
<th>Age equivalent of score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>M</td>
<td>16.5</td>
<td>5</td>
<td>12.7</td>
</tr>
<tr>
<td>2.</td>
<td>M</td>
<td>16.6</td>
<td>6</td>
<td>14.0</td>
</tr>
<tr>
<td>3.</td>
<td>M</td>
<td>* 16</td>
<td>1</td>
<td>- 12.0</td>
</tr>
<tr>
<td>4.</td>
<td>M</td>
<td>16.3</td>
<td>7</td>
<td>15.3</td>
</tr>
<tr>
<td>5.</td>
<td>M</td>
<td>16.6</td>
<td>5</td>
<td>12.7</td>
</tr>
<tr>
<td>6.</td>
<td>M</td>
<td>16.5</td>
<td>8</td>
<td>16.6</td>
</tr>
<tr>
<td>7.</td>
<td>M</td>
<td>16.6</td>
<td>6</td>
<td>14.0</td>
</tr>
<tr>
<td>8.</td>
<td>M</td>
<td>16.6</td>
<td>6</td>
<td>16.6</td>
</tr>
<tr>
<td>9.</td>
<td>M</td>
<td>16.5</td>
<td>8</td>
<td>16.6</td>
</tr>
<tr>
<td>12.</td>
<td>F</td>
<td>16.3</td>
<td>11</td>
<td>20.6</td>
</tr>
<tr>
<td>14.</td>
<td>F</td>
<td>16.5</td>
<td>6</td>
<td>14.0</td>
</tr>
<tr>
<td>15.</td>
<td>F</td>
<td>16.4</td>
<td>8</td>
<td>16.6</td>
</tr>
<tr>
<td>16.</td>
<td>F</td>
<td>16.4</td>
<td>7</td>
<td>15.3</td>
</tr>
<tr>
<td>17.</td>
<td>F</td>
<td>16.4</td>
<td>8</td>
<td>16.6</td>
</tr>
<tr>
<td>19.</td>
<td>M</td>
<td>* 17.1</td>
<td>8</td>
<td>16.6</td>
</tr>
</tbody>
</table>

Median age at testing = 16.47  Median age equivalent = 15.3

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>S.E.</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group (n = 13)</td>
<td>7</td>
<td>7</td>
<td>.458</td>
</tr>
<tr>
<td>Males (n = 8)</td>
<td>6.55</td>
<td>6</td>
<td>.429</td>
</tr>
<tr>
<td>Females (n = 5)</td>
<td>8</td>
<td>8</td>
<td>.837</td>
</tr>
</tbody>
</table>

* (S.3 and S.19 were omitted from group analysis)
Sex differences in scores

The mean female score on the Symbolic Play Test was higher than the male mean, but this difference does not reach the conventional level of significance.
The Symbolic Play Test was administered at 16.5 months (±.5) in order to provide an assessment of mental development which did not involve verbal instruction. This was felt to be necessary, as less than 50% of the sample had English as a first language.

The Symbolic Play Test is designed to assess early concept formation and symbolization, so that a correlation would be expected between performance on this test and performance on a test of mental development such as the Bayley Scale.

PLAY scores were correlated with Bayley Mental scores and Vocalization scores at 15 and 18 months (6 weeks below and 6 weeks above the age at which the PLAY test was administered).

S.3 and S.19's scores were omitted from group calculations. S.3 was omitted because this was the premature baby, and his developmental level was not comparable with other subjects on a group basis. S.19 was omitted because play was only elicited after persuasion, and eventual demonstration from the child's grandmother (his primary caretaker). These subjects' performance is discussed separately.

Correlations were as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>Group</th>
<th>Males</th>
<th>Females</th>
<th>Vocalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mths</td>
<td>r</td>
<td>.325</td>
<td>.007</td>
<td>.278</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>11</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>18 mths</td>
<td>.294</td>
<td>-.118</td>
<td>.762</td>
<td>.220</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.08)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

As can be seen, Mental scores for the group are positively correlated with PLAY scores, but not at a significant level. When male and female scores are correlated separately, they remain non-significant at 15 months, but at 18 months we find a negative correlation between the two types of scores for males ($r = -.118$, $p < .40$, $n = 7$), but a high positive though non-significant correlation for girls ($r = .762$, $p < .08$, $n = 5$).

T-tests carried out on scores at both 15 and 18 months showed highly significant differences between means for the two types of scores, which suggests that the two tests were not assessing the same dimensions of cognitive ability, (15 mths: $t = 48.87$, $p < .000$, $n = 11$; 18 mths: $t = 30.32$, $p < .000$, $n = 12$).

Correlation with Vocalization scores

PLAY scores at both 15 and 18 months were positively correlated with infant's vocalization in this group, though only significantly so at 15 months ($r = .537$, $p < .02$, $n = 13$). Early concept formation and symbolization precede and develop alongside receptive and verbal language, and the development of these functions is seen by various authors as underlying (and a necessary condition of meaningful language (see Lowe, 1975 for a review). A correlation with infant vocalization (a purely observational measure) is therefore to be expected.

Correlation with HOME Inventory scores

The Symbolic Play Test makes use of sets of miniature toys (see Plate 1). Although most of these represent everyday objects, such as a cup and saucer, bed, pillow and blanket, one set consists of a miniature tractor with trailer. Such a highly specialised object is likely to be responded to differently by children who are already familiar with this type of toy. It was therefore felt a correlation might be found between those scales of the HOME Inventory which concerned provision of play-things and PLAY scores.
Situation I
a) large doll, sitting
b) add saucer, spoon, cup
c) add brush, comb

Situation II
bed, pillow, blanket
small girl doll

Situation III
chair, table,
tablecloth, fork, small boy doll,
knife, plate

Situation IV
trailer, tractor,
man, logs
Correlations are given below for PLAY scores and the different scales of the HOME Inventory at 15 and 18 months:

Table 22:

<table>
<thead>
<tr>
<th>Scale</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale I</td>
<td>-.156</td>
<td>-.06</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Scale II</td>
<td>.337</td>
<td>.343</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Scale III</td>
<td>.154</td>
<td>.392</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Scale IV</td>
<td>-.056</td>
<td>-.071</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Scale V</td>
<td>.463</td>
<td>.328</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Scale VI</td>
<td>.183</td>
<td>.184</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>.257</td>
<td>.179</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

Provision of appropriate play materials (Scale IV)

As can be seen from Table 22, Scale IV is inversely correlated with PLAY scores at both 15 and 18 months. Examination of the individual items which make up this Scale show that only one is directly relevant to the toys involved in the PLAY Test, i.e. Item 27: Child has push or pull toy. All but two subjects had some type of push or pull toy at both 15 and 18 months. The exceptions were S.3 (the premature baby), and S.6 who had few play-things at all. The premature baby was the only subject who did not push the tractor along spontaneously, but attempted to with the tractor upside down (after inspecting the wheels), and after demonstration by the Experimenter, pushed it along correctly. This subject's performance on the PLAY Test was at a very low level (-12 months), and showed no evidence of symbolic play.
In contrast, S.6 performed according to his age level, despite a lack of formal toys in his home. This subject's score-sheet shows that he scored highly on the "domestic" items, namely "places cup on saucer" and relating knife, fork, plate, table and table-cloth.

This child's parents fall into Social Class IV (Registrar General's Classification of Social Class). Although 47% of the sample come within the lower half of the social scale, this is the only family whose accommodation can be considered grossly inadequate. The subject child and his 2-year old brother spend most of the day with their mother in a cramped "living/dining-room" approximately 4 sq.m. in size. The focal point of the room is a dining-table positioned by the one window, which looks out onto the neighbouring roofs, providing no variety in visual stimulation.

The kitchen area is within full view of the living area, so that the mother's domestic activities must provide a major source of stimulation for the children. From an early age the subject child was clambering up on chairs placed near the table, and playing with cups or plates which were left on the table, with little or no restriction from Mother. The child has his evening meal with both parents each day, so that a familiarity with eating utensils other than cup, spoon and plate is to be expected. This subject was among the few (4) who placed the miniature cup on the saucer, and in common with two of the other three subjects who scored on this item, his mother normally used both cups and saucers.

Maternal Involvement with Child (Scale V)

Scale V shows the highest correlation with PLAY scores. Although neither at 15 months nor 18 months does the correlation reach the conventional level of significance, both coefficients are high positives (15 months: $r = .328, p < .17, n = 10$; 18 months: $r = .46, p < .07, n = 11$). Examination of this scale shows that all items might be expected to positively influence the emergence of symbolic play.

The more significant impact of the mother as mediator of environmental stimulation over that of environmental stimulation alone is supported by Clarke-Stewart (1973). Clarke-Stewart also found that mother's verbal stimulation directed towards the child significantly influenced the child's intellectual development, especially as far as language ability was concerned.
In the present study PLAY score at 15 months is highly significantly correlated with infant vocalization ($r = .537$, $p < .02$, $n = 13$), but not significantly correlated at 18 months ($r = .22$, $p < .24$, $n = 12$). This pattern of correlation is similar to that between PLAY scores and Maternal Involvement, namely a high but non-significant correlation at 15 months ($r = .463$, $p < .07$, $n = 11$), and a non-significant correlation at 18 months ($r = .328$, $p < .17$, $n = 10$). This indicates that in this group of infants, both symbolic activity as measured by the PLAY Test, and vocalization are positively influenced by Maternal Involvement with Child.

Other measures of maternal behaviour

There was no significant correlation between PLAY scores and Emotional Involvement of Mother with Child. (This was an observational measure based on a 1 - 6 rating of two items: Tone of Voice and Amount of Expressed Positive Emotion).

Neither measure was significantly correlated with PLAY score at 15 or 18 months. These correlations are as follows:

Table 23:

<table>
<thead>
<tr>
<th></th>
<th>Tone of voice</th>
<th>Expressed + emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mths</td>
<td>.000</td>
<td>-.033</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>18 mths</td>
<td>-.157</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
</tbody>
</table>

Sex differences

The PLAY Test consists of four different "situations", each involving a different set of toys. Three of these situations can be described as "domestic", i.e. two related to eating and drinking, and one which involves "putting dolly to bed". The fourth situation consists of a tractor, trailer, driver and logs. (See Plate 1). This is the only obviously male-oriented situation, and the one that is most likely to be influenced by parental behaviour, i.e. parents are more likely to provide "boy" toys for a boy than they are for a girl.
In this group, however, both males and females performed according to their age level on this situation, i.e. pushing the tractor along. Three subjects performed at a higher level, i.e. placing the man in tractor or trailer, and relating log(s) to tractor or trailer, and all were females. The mother of the highest scorer (S.12) reported her having a similar toy - a horse and cart with driver. Although the other two high-scorers did not have similar toys at home, one was child-minded outside the home, and one attended a play-group, so both may have had access to similar toys elsewhere.

As far as the "domestic" items are concerned, both males and females might be expected to perform similarly on the feeding-related situations, whereas the bed-situation is more susceptible to socio-environmental influences such as mothers encouraging females to help in bed-making, and discouraging males from such activities. (One mother reported her little girl as "helping" her make the beds, but this subject did not "put dolly to bed" during the PLAY Test).

Examination of the scoring sheets shows that only two subjects advanced further than "discriminating doll" on this item: one female (S.12) and one male (S.8), both of whom were clearly "putting dolly to bed". These results suggest that in this group, sex of subject was not having a significant effect.

The slightly higher mean for female subjects than for males (7 : 6.5) reflects the higher MDI for females at both 15 and 18 months. It is also reflected in infant vocalization scores which are higher for females at both ages:

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mths</td>
<td>3.4</td>
<td>4.2</td>
</tr>
<tr>
<td>18 mths</td>
<td>3.4</td>
<td>4.8</td>
</tr>
</tbody>
</table>

None of these differences reach the conventional level of significance and are in line with previous findings that early female mental development, as measured by developmental tests, is in advance of male development, particularly as far as language is concerned.
Discussion:

Although no clear pattern of correlation emerges between performance on the Symbolic Play Test and the Bayley Mental Scale at either 15 or 18 months, extreme scorers on both tests did perform similarly, as follows:

<table>
<thead>
<tr>
<th>PLAY score</th>
<th>age equivalent</th>
<th>MDI at 15 mths</th>
<th>MDI at 18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.3 (male)</td>
<td>1</td>
<td>- 12 m.</td>
<td>75 * not tested</td>
</tr>
<tr>
<td>S.12 (female)</td>
<td>11</td>
<td>20.6 m.</td>
<td>132</td>
</tr>
</tbody>
</table>

* 94 when equated for prematurity

There does appear to be some correspondence between the two tests which is reflected in the weak but positive correlations for the group as a whole.

The PLAY Test is scored on an additive scale and uses raw scores, whereas the MDI consists of raw scores converted into standard scores. As is to be expected, the variance for the MDI is far greater, which may partially account for the unclear patterns of correlation for the two tests.

Inspection of results shows that only 4 out of 13 (30%) of subjects were performing at or above their age level on the PLAY Test (a score of 8 or above), whereas on the Bayley Scale all subjects were well above the norm (MDI = 100) at 15 months, and only one subject scored less than 100 at 18 months.

Two factors may account for these generally low scores. Firstly, although the Symbolic Play Test is designed for use between 1 and 3 years, the age at which it was administered (16.5) is close to the lower extreme, so floor effects may be indicated. (The authors found that the test has marked ceiling and floor effects, but that these were more evident at the upper end).
Secondly, the Test was originally designed for clinical purposes, and for presentation in a clinical setting. Test administration in the home is influenced by such variables as distractions, particularly from siblings, the child's unwillingness to remain seated, and his limited attention-span. Although these factors influenced the administration of both the PLAY Test and the Bayley Scales, the former was found to be more seriously affected in this way. Despite the considerably shorter duration of the PLAY Test, it appeared to have less intrinsic appeal to this group than did the Bayley Test items, which resulted in loss of interest and hence lower scores. Examination of the scores shows very little performance on the second two situations, and the child's attention usually had to be regained by presenting the larger, more visually stimulating tractor and trailer.

A pilot-study involving approximately 20 children resulted in fewer low scores (although not significantly so). Discrepancy between the pilot group and the study group (the pilot group covered a wider age range, but was exclusively middle-class) may account for these differences in performance.

In conclusion, use of this test did not reveal a significantly different pattern of ability from that measured by the Bayley Mental Scale, but results suggest that it may be regarded as an independent measure of mental development.
V. Language Development (Vocalization Scores)

Assessment of language development was made at all interviews by rating the baby's vocalization on a 1-5 scale. An additional measure of language development was provided by scores on the verbal items of the Bayley Mental Scale. Note was also made of the child's receptive language, and mother's reports of the child's verbal abilities. While these measures were, of necessity, crude, it was felt that they provided an assessment of one aspect of the child's mental development which could be usefully compared with other data.

Mean vocalization scores at each age stage were as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>Gp. mean</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 mths</td>
<td>3.5 (n = 18)</td>
<td>3.7 (n = 11)</td>
<td>3.0 (n = 7)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
</tr>
<tr>
<td>6 mths</td>
<td>3.9 (n = 18)</td>
<td>3.8 (n = 11)</td>
<td>4.1 (n = 7)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
</tr>
<tr>
<td>9 mths</td>
<td>3.7 (n = 17)</td>
<td>3.5 (n = 10)</td>
<td>4.0 (n = 7)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 3 - 5</td>
</tr>
<tr>
<td>12 mths</td>
<td>3.8 (n = 15)</td>
<td>3.5 (n = 9)</td>
<td>4.2 (n = 6)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 3 - 5</td>
</tr>
<tr>
<td>15 mths</td>
<td>3.6 (n = 15)</td>
<td>3.4 (n = 10)</td>
<td>4.2 (n = 5)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 3 - 5</td>
</tr>
<tr>
<td>18 mths</td>
<td>3.9 (n = 14)</td>
<td>3.4 (n = 9)</td>
<td>4.8 (n = 5)</td>
</tr>
<tr>
<td></td>
<td>range 2 - 5</td>
<td>range 2 - 5</td>
<td>range 4 - 5</td>
</tr>
<tr>
<td>Overall mean</td>
<td>3.7</td>
<td>3.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

As can be seen from the above figures, there was no significant difference in the overall group mean for vocalization scores throughout the course of the study.

1. The 1-5 rating was a comparison of group performance, and is not comparable with any standard. From 12 months onwards quality (i.e. developmental level) and amount of vocalization were each given a separate 1-5 rating, but for statistical purposes, only the first of these (developmental level) was used.
Although the male mean score was higher at 3 months, female scores were significantly higher (p < .001) at all assessments from 6 - 18 months. This is in line with previous findings of superior verbal ability in females, e.g. Illingworth (1966), Moore (1968). A possible explanation of the lower female mean at 3 months may be the low scores of two subjects (S.12 and S.18), both of whom were excessively passive in all respects at 3 months.

Figs. 11(a-s) illustrate subjects' vocalization scores from 3 - 18 months. From these graphs it is clear that there was considerable variation in the course of language development, both within the group and in individual scores.

Relationship with scores on the Bayley Mental Scale (MDI)

Vocalization scores at all but the 15-month assessment were significantly related to MDI (i.e. p < .05).

The correlations were as follows:

Table 25:

<table>
<thead>
<tr>
<th>Age</th>
<th>r</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mths</td>
<td>.693</td>
<td>18</td>
</tr>
<tr>
<td>p &lt; .005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 mths</td>
<td>.488</td>
<td>18</td>
</tr>
<tr>
<td>.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 mths</td>
<td>.447</td>
<td>17</td>
</tr>
<tr>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 mths</td>
<td>.51</td>
<td>15</td>
</tr>
<tr>
<td>.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 mths</td>
<td>.25</td>
<td>15</td>
</tr>
<tr>
<td>(n.s.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 mths</td>
<td>.601</td>
<td>13</td>
</tr>
<tr>
<td>.025</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the 18-month level 10 of the 127 items on the Bayley Mental Scale are "verbal" items, i.e. assessment of the child's productive language. These range from Item 13: Vocalizes once or twice (any vocalization other than crying) at -1 month, to Item 127: Uses words to make wants known at 18.8 months.
Vocalization score at each age stage from 3 - 18 mths. (Males)

Fig. 11(a)

S.1
Ryan

$\bar{x} = 3.5$

Fig. 11(b)

S.2
Ibrahim

$\bar{x} = 4.4$

Fig. 11(c)

S.3
Simon A.

$\bar{x} = 3.4$
Vocalization score at each age stage from 3 - 18 mths. (Males) contd.

Fig. 11(d)

S.4
Clifford K.

\[ \bar{x} = 3.1 \]

Fig. 11(e)

S.5
Benjamin

\[ \bar{x} = 3.2 \]

Fig. 11(f)

S.6
Mohamed

\[ \bar{x} = 3.1 \]
Vocalization score at each age stage from 3 - 18 mths. (Males) contd.

Fig. 11(g)

S.7
Leroy

Fig. 11(h)

S.8
Harjit

Fig. 11(i)

S.9
Simon C.
Vocalization score at each age stage from 3 - 18 mths. (Males) contd.

**Fig. 11(j)**

![Graph showing vocalization score for S.10, Uchenna.](image)

S.10  
Uchenna

\[ \bar{x} = 3.5 \]

**Fig. 11(k)**

![Graph showing vocalization score for S.11, Clifford M.](image)

S.11  
Clifford M.

\[ \bar{x} = 4.5 \]

**Fig. 11(l)**

![Graph showing vocalization score for S.19, Ashni](image)

S.19  
Ashni

\[ \bar{x} = 3.5 \]
Vocalization scores at each age stage from 3 - 18 mths. (Females)

Fig. 11(m)

S.12
Caroline

\[ \bar{x} = 3.6 \]

Fig. 11(n)

S.13
Ruth

\[ \bar{x} = 3.6 \]

Fig. 11(o)

S.14
Charlotte

\[ \bar{x} = 4.3 \]
Vocalization scores at each age stage from 3 - 18 mths. (Females) contd.

Fig. 11(p)
S.15
Celia

\[ \bar{x} = 4.6 \]

Fig. 11(q)
S.16
Sandra

\[ \bar{x} = 4.5 \]

Fig. 11(r)
S.17
Hannah \[ \bar{x} = 4.3 \]

Fig. 11(s)
S.18
Nkeruka \[ \bar{x} = 3.7 \]
3-month assessment

All but two of the sample (88%) passed the verbal items appropriate to this age level at the 3-month assessment. The two exceptions were Caroline (S.12) and Nkeruka (S.18), already referred to on p.132. Although both could be credited with the most advanced of these items, i.e. Item 30: Vocalizes two different sounds (two distinguishable syllables) neither passed the earlier Item 27: Vocalizes to Experimenter's social smile and talk. Minimal vocalization was noted for both subjects.

By 6 months Nkeruka was vocalizing at her age level (her rating was 4), but Caroline was again rated 2, and failed to pass the Bayley verbal items appropriate to her age.

At 3 months only two infants could be credited for a more advanced verbal item, i.e. Item 55: Vocalizes attitudes (4.6 months). Both subjects scoring on this item, Leroy (S.7) and Celia (S.15) were both noted to vocalize happily during "en face" interaction with their mother.

6-month assessment

At 6 months verbal items assessed were Item 55: Vocalizes attitudes (4.6 months), and Item 79: Vocalizes four different syllables (7.0 months). Only one subject could not be credited on Item 55 (Caroline, S.12, already mentioned at 3 months). Caroline also failed Item 79 (passed by 77% (14:18) of the sample). Two of the sample also passed the later Item 85: Says "da-da" or equivalent (7.9).

9-month assessment

Item 85 was passed by all but two of the sample (88%) at 9 months. Credit was given for any two-syllable combination, in accordance with Bayley's guidelines. 'Ba-ba', 'Da-da' and 'Ga-ga' were the most frequently heard combinations. One exception, Clifford (S.4) was reported by his mother to say "Mama" "when upset", but during the visit his vocalization consisted mainly of grunts and squeals.1.

1. Scoring on the Bayley Scales does not allow credit for mother's reports. Responses must be observed, or in the case of verbal items, heard.
Uchenna (S.11) was the second subject who could not be credited with this item. His vocalization on this occasion was minimal, and his mother reported that she had not heard 'Ma-ma' or 'Da-da'. Uchenna was lost from the study after 9 months, so his progress could not be followed.

12-month assessment

Items assessed at 12 months were Item 101: Jabbers expressively (12.0) and Item 106: Imitates words (12.5). All subjects passed Item 101, and all but three (81%) passed Item 106. Failure on this item could not be attributed to any one factor. Clifford (S.4) vocalized little throughout testing and interview. Only one two-syllable combination was heard, although his mother reported 'Mama', 'Dada' and 'Baba'. As far as the other two subjects who failed this item were concerned, both were vocalizing adequately in other respects (Mohamed particularly so), but imitation could not be elicited.

"First words"

At 12 months 68% (11:16) of the sample were heard or reported to be producing words. Those subjects who were heard to produce two or more words were credited with Item 113: Says 2 words (14.2). 8 words was the largest reported vocabulary at this age: this was by Mrs. D., mother of Caroline (S.12) who had been almost non-vocal at both 3 and 6 months. All words heard at this age were "naming" words, such as ball, dolly, baba, as well as Mama and Dada. 'Hot', 'what's that' and 'no' were reported but not heard.

15-month assessment

"First words" are assessed on the Bayley Scale at 15 months by Item 113: Says 2 words. All but three subjects (81%) could be credited with this item. The most advanced vocalization heard at this age was again from Caroline (S.12) who was heard to say "I want to get down" (while in her high-chair). Her mother also reported "my book". All other "advanced vocalization" was heard from girls, or was reported by their mothers, e.g. Celia (S.15): "I see", "What's that", "Who's that". This was also the case at 18 months when two mothers reported their girls as reciting or singing: Sandra (S.16) who joined her mother in singing "Happy birthday to you", and Hannah (S.17) whose mother reported that her father had taught her a T.V. "jingle". 
Subjects who were not heard to produce words at this age were Rory (S.1) and Benjamin (S.5), both of whose mothers reported "no words", and Simon A. (S.3) who vocalized happily and frequently during testing, but produced no recognizable words. Simon's mother reported both "Mama" and "Dada".

Simon was lost from the study after 15 months, so further assessment was not possible. At 18 months Benjamin's vocalization was still minimal, but two words: "dolly" and "eyes" were clearly heard, and his mother reported "Mama" and "Dada", and "he repeats everything I say now".

One subject, Rory (S.1), whose vocalization had been normal, both as far as frequency and developmental level were concerned at 3 and 6 months, showed a decline from then onwards. No words were heard or reported at either 12 or 15 months, and at 18 months only two: "look" and "cup" were heard. No other words were reported.

Although Rory's mother scored highly on the relevant scales of the HOME Inventory, i.e. Scale I: Emotional and verbal responsivity of Mother, there were indications from remarks made during interview that rather than responding to Rory's increased need for mental stimulation, she was restricting his development by frequently leaving him in his bedroom during the day, and putting him to bed at the early hour of 7 p.m. Rory's 4-year old brother, who was always present during interviews, appeared very delayed in his language development, and was reported to be receiving speech therapy on the advice of the local Welfare Clinic.

"Advanced" language development.

At 18 months 78% (11:14) subjects could be credited with verbal items beyond the 18-month age level. These were Item 27: Uses words to make wants known (18.8), Item 36: Sentence of 2 words (20.6), and "naming" items, e.g. Item 124: Names 1 object (17.8), and Item 130: Names 1 picture (19.3). (The latter two items were also credited at a higher age level according to the number of objects/pictures named).

1. At the 12-month interview Mrs. G. remarked: "When he's down here he tends to do things I don't want him to do, so I leave him upstairs a lot - it's a bit cruel really."
Item 27: Uses words to make wants known (18.8)

Two subjects failed this item: Rory (S.17) and Benjamin (S.5).

Item 136: Sentence of two words (20.6)

According to the Bayley Manual this item should only be credited if the two words signify two concepts. Only two subjects could be credited accordingly: Caroline (S.12), both at 15 and 18 months, and Celia at 18 months, with "Who did it?" (Clifford's mother (S.4) reported at 18 months: "He makes short sentences" and "He can say 'I wanta go outside' in Punjabi").

"Naming" items

These items were felt to be influenced by a greater variety of factors than earlier verbal items on the Bayley Scale. Recognition and naming of both objects and pictures depends upon the child's familiarity with these, and in the case of naming pictures in a book (the method used in this study) is more easily elicited in children who are used to this type of activity.

Assessment was particularly difficult in homes where English was the second language. Both objects and pictures often produced vocalizations which were not always recognisable. In one case, Mrs. B., mother of Harjit (S.8) interpreted, telling the Experimenter that Harjit had used Punjabi for "cup" (correctly), but other less involved mothers, such as Mrs. R. (mother of Mohamed, S.6), or the grandparents of Ashni (S.19) did not do this, so that correct naming may have taken place, but could not be assessed.

Four subjects (28%) failed to name one object (Item 124) and the same subjects plus three others (50%) failed to name one picture, (Item 130). All subjects but Rory (S.1) and Benjamin (S.5) passed a more advanced item, i.e. Item 127: Makes wants known. In Ashni's case (S.19) although he was unable to name a picture, he named two objects. Ashni's family spoke very little English and at 18 months testing was carried out in the presence of his grandparents whose English was insufficient to allow for questioning. Nevertheless, Ashni could be credited with "ball" and "book", both of which he clearly named. It was felt that he may have learned these words from his 7-year old brother who attended school, but played frequently with him.
The most advanced performance as far as "naming" items was concerned was from Ibrahim (S.2), who passed all verbal items up to and including Item 46: Names 3 objects (24.0).

Despite these individual differences in language development, there is a high degree of uniformity within the sample. (Only two subjects were below the 18-month level according to the Bayley Scale).

Both genetic (Illingworth, 1972) and environmental factors (Nelson, 1973) have been associated with language development. As far as the latter are concerned, amount of verbal stimulation has been shown to vary widely both across cultural and ethnic groups (e.g. Kagan & Klein, 1973) and across social classes (Tulkin & Kagan, 1977).

Ethnic group and language development

No differences related to ethnic group were found in the present study. When subjects were divided into "slow" and "advanced" speakers (a vocalization score of 3 or below at 18 months = "slow", a score of 4 or 5 = "advanced"), there was no significant difference between children of immigrant mothers and children of English families. Despite the language problem involved in assessing the verbal ability of children of immigrant mothers, these children scored as highly as children having English as their mother-tongue.

Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Immigrant mothers</th>
<th>English mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Slow&quot; speakers</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Advanced&quot; speakers</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>
Class differences and language development

There were no differences related to social class in this group's language development. Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Middle-class</th>
<th>Working-class</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Slow&quot; speakers</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Advanced&quot; speakers</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Family size and language development

Birth order is another factor which has often been related to language development, with first-borns usually showing accelerated development (e.g. Neligan & Prudham, 1969).

Birth order was not found to be significantly related to language development in the present study, whether subjects were grouped as first-born v. later-born, or children of "large" families (3+) v. "small" families (1 or 2). Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>first-borns</th>
<th>later-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Slow&quot; speakers</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>&quot;Advanced&quot; speakers</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>&quot;large&quot; families</th>
<th>&quot;small&quot; families</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Slow&quot; speakers</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Advanced&quot; speakers</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
Maternal reinforcement of verbal behaviour has been shown to affect language development (Freedle & Lewis, 1977). It has been suggested that maternal responsivity affects language acquisition not just by reinforcing vocalization, but also because it is a part of a warm maternal attitude towards the child (e.g. Turner, 1980).

Both emotional and verbal responsivity are assessed by Scale I of the HOME Inventory. This Scale was found to be positively related to Vocalization scores at all ages, and at a highly significant level at 12 and 18 months. Correlations were as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>r</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mths</td>
<td>.34</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>9 mths</td>
<td>.26</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>12 mths</td>
<td>.83</td>
<td>(.005)</td>
</tr>
<tr>
<td>15 mths</td>
<td>.32</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>18 mths</td>
<td>.89</td>
<td>(n = 12)</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td></td>
</tr>
</tbody>
</table>

Vocalization scores were also correlated with Scale V: Maternal Involvement (only one item on this Scale is directly "verbal", i.e. Mother talks to child while doing her work.

A significant correlation was found at 18 months (p < .029), and a high-positive, but non-significant correlation at 6 months (p < .08). At 9, 12 and 15 months negative but non-significant correlations were found.

1. Only one item on this Scale does not relate directly to emotional or verbal responsivity. This is Item 7: M. permits child occasionally to engage in "messy" types of play.
Children whose mothers reported reading to them regularly might be expected to be advanced in language development, both as a result of increased verbal stimulation and the greater amount of maternal contact. Five mothers reported "regular" reading to their child at 18 months. Three of these subjects (S.12, S.14 and S.16) were "advanced" speakers, all scoring 5 at 18 months, one was "average", and one (S.1) was "slow".

Two mothers mentioned going through books and "naming" pictures with their children. These were Caroline (S.12) who passed one "naming" item at 15 months (Item 130), but none at 18 months, and Hannah (S.15) who named one picture at 18 months and two objects.

Ibrahim (S.2) was able to name three pictures, but neither children's books nor reading were mentioned in his family. On one occasion Ibrahim's 6-year old sister was asked whether she had any picture-books. After thought she replied: "J. (younger sister) had one, but it's torn now".

Conclusion:

Considerable uniformity of language development was found within the group, irrespective of ethnic group, social class or birth order. Significant sex differences were found: at 3 months male mean vocalization scores were higher, but at all other assessments females scored more highly on Vocalization scores and the Bayley Scales.

Vocalization scores were found to be positively related with Emotional and Verbal Responsivity of Mother at all ages. (Correlations were highly significant at 12 and 18 months).

1. "Regular" reading was assessed by Item 42 of the HOME Inventory: M. reads stories at least three times per week.
Cross-lagged panel analyses were performed to determine the primary direction of effect among different categories of environmental stimulation, as measured by the HOME Inventory and Bayley Mental Scores (MDI) at 6, 12 and 18 months. This statistical technique was used by Bradley, Caldwell & Elardo (1979), employing the same measures, but at 6, 12 and 24 months.

Examination of synchronous correlations for Mental scores (MDI) and HOME scores shows an increasing number of significant correlations with age. All but two of these correlations are positive, which suggests that the variables have a mutually facilitative effect on each other (Kenny 1975). Such a relationship is in line with previous research and with the general body of developmental theory (Bradley et al. 1979).

Table 27:

<table>
<thead>
<tr>
<th>Synchronous correlations between Bayley Mental scores (MDI) and subscales of the HOME Inventory from 6 - 18 mths.</th>
<th>MDI &amp; Scale I</th>
<th>Scale II</th>
<th>Scale III</th>
<th>Scale IV</th>
<th>Scale V</th>
<th>Scale VI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mths</td>
<td>.189</td>
<td>.131</td>
<td>.236</td>
<td>-.31</td>
<td>.057</td>
<td>.061</td>
<td>-.149</td>
</tr>
<tr>
<td>(n.s.)</td>
<td>17</td>
<td>17</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>9</td>
<td>.368</td>
<td>.132</td>
<td>.491</td>
<td>.109</td>
<td>.484</td>
<td>.302</td>
<td>.409</td>
</tr>
<tr>
<td>(n.s.)</td>
<td>(.02)</td>
<td>.17</td>
<td>(.02)</td>
<td>(.02)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td>12</td>
<td>.537</td>
<td>.028</td>
<td>.159</td>
<td>.186</td>
<td>.242</td>
<td>.044</td>
<td>.242</td>
</tr>
<tr>
<td>(.02)</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>15</td>
<td>.362</td>
<td>.157</td>
<td>.030</td>
<td>.391</td>
<td>.352</td>
<td>.299</td>
<td>.515</td>
</tr>
<tr>
<td>(n.s.)</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>18</td>
<td>.424</td>
<td>.514</td>
<td>.131</td>
<td>.408</td>
<td>.591</td>
<td>-.113</td>
<td></td>
</tr>
<tr>
<td>(n.s.)</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

While auto-correlations show a higher degree of stability for HOME scores than for Mental scores (see Tables 5 and 14), Mental scores are consistently stable from 6 - 15 months.
Fig. 12
Cross-lagged correlations for 6 to 18 month Emotional and Verbal Responsivity of Mother

Maternal Responsivity

6 m. → 18 m. : 0.42
12 m. → 18 m. : 0.34
12 m. → 6 m. : 0.53
18 m. → 6 m. : 0.10
6 m. → 12 m. : 0.69
12 m. → 18 m. : 0.56
18 m. → 12 m. : 0.47

Maternal Responsivity

6 m. → 18 m. : 0.42
12 m. → 18 m. : 0.34
12 m. → 6 m. : 0.53
18 m. → 6 m. : 0.10
6 m. → 12 m. : 0.69
12 m. → 18 m. : 0.56
18 m. → 12 m. : 0.47
The results of analyses and their interpretation are discussed separately for each of the HOME scales.

**Scale I: Emotional and Verbal Responsivity of Mother.**

Figure 12 shows the correlations for Maternal Responsivity and MDI. While the individual auto-correlations between 6-month and 12-month, and 12-month and 18-month Mental scores are higher than the individual auto-correlations for Maternal Responsivity, the overall correlation between 6 and 18 months for the MDI is negative, whereas for responsivity scores it reaches a coefficient as high as .91 (n = 12, p < .001). The lower auto-correlations between 12 and 18-month scores indicate considerable change in both cognitive ability and maternal responsivity.

Cross-lagged correlations between the variables are essentially equal, except for that between Maternal Responsivity at 6 months and MDI at 12 months, which reaches the .01 level of significance (r = .62, n = 13). *

The almost equal cross-lagged correlations between 12 and 18 months indicate a positive effect in both directions. Since these cross-lagged correlations are lower than the synchronous correlations it appears likely that neither of the variables is having a significant causal impact on the other between 12 and 18 months.

* This indicates a positive effect of Maternal Responsivity on mental development between 6 and 12 months which exceeds the effect of the infant's developmental status on the amount of maternal responsivity elicited.
Avoidance of Restriction and Punishment

Cross-lagged correlations for 6 to 18 month Avoidance of Restriction and Punishment and Mental Scores (MDI)

Fig. 13(a)
Scale II: Avoidance of Restriction and Punishment.

Figure 13(a) shows the correlations for Scale II: Avoidance of Restriction and Punishment and MDI. The synchronous correlations increase from a non-significant but positive correlation (.13) at 6 months to .51 at 18 months (p < .04, n = 12). The auto-lagged correlations for Avoidance between 6 and 12 and 12 and 18 months both show a high degree of stability, but the highly significant correlation between 12 and 18 months (r = .79, p < .002, n = 11) indicates considerable change in avoidance of restriction and punishment.

The two negative correlations between MDI and subsequent Avoidance of Restriction and Punishment indicate that a high Mental score is related to a low score on Avoidance of Restriction and Punishment, i.e. a greater amount of restrictive and punitive behaviour. This suggests that infants at a more advanced level of mental development, as measured by the Bayley Mental Scale, may be eliciting a higher level of restrictive and punitive behaviour.

As far as the cross-lagged correlations are concerned, those from MDI to Avoidance of Restriction and Punishment are both negative, while those in the opposite direction are positive. Although none of these correlations are significant, the positive relationship between Avoidance at 6 months and MDI at 12 months may indicate a weak but positive effect of this variable on mental development between 6 and 12 months. The higher positive correlation in the same direction between 12-months Avoidance score and 18-month MDI reflects the continuing impact of this effect in the same direction.
Cross-lagged correlations for 6 to 18 month Avoidance of Restriction and Punishment and Motor Scores (PDI)

Fig. 13(W)
Figure 13(b) shows the correlations for Avoidance of Restriction and Punishment and Motor scores (PDI). The auto-lagged correlation between 6-month PDI and 18-month PDI is higher than that between Avoidance of Restriction and Punishment at 6 and 18 months. However, both indicate a considerable change at 12 months. Both synchronous and cross-lagged correlations between the two variables are inverse, although not significantly so. Between 6 and 12 months the cross-lagged correlations are essentially equal, indicating a weak but negative effect in both directions. Between 12 and 18 months, however, the inverse correlation between PDI at 12 months and Avoidance of Restriction and Punishment at 18 months increases ($r = -.35, p < .14, n = 11$) and exceeds that in the opposite direction, thus indicating the impact of the PDI on subsequent avoidance of restriction and punishment, and a minimal effect of this environmental variable on subsequent motor development.

This pattern of correlation between Motor scores and Avoidance of Restriction and Punishment, as measured by Scale II of the HOME Inventory indicates that a high score on the Bayley Motor Scale is related to a low score on Avoidance of Restriction and Punishment. At all ages we find the same relationship between the two variables for this group. The higher negative cross-lagged correlation between PDI at 12 months and Avoidance at 18 months strongly suggests, however, that the child's level of motor development may now be affecting its environment, resulting in a greater amount of restrictive and punitive behaviour.
Fig. 14. Cross-lagged correlations for 6 to 18 month Organization of Environment
Figure 14 shows the correlations for Scale III, Organization of the Physical and Temporal Environment. The auto-lagged correlations show a high degree of stability. Although the correlation between 12 and 18 months is lower than that between 6 and 12 months, this is to be expected, as the nature of this scale's items would be to yield higher scores with age.

Examination of the cross-lagged correlations between 6 and 12 months indicates no significant impact of the infant on its environment, but a high positive correlation between Organization of Environment at 6 months and mental development at 12 months ($r = .43$, $p < .06$, $n = 13$). The direction of effect changes however, between 12 and 18 months when we find a higher correlation between MDI at 12 months and HOME at 18 months ($r = .41$, $p < .09$, $n = 12$) than that between HOME at 12 months and MDI at 18 months ($r = .13$, $n = 11$).

This indicates that between 12 and 18 months these infants are having a significant impact on their environment, as measured by this scale. The low synchronous correlations between MDI and this environmental variable reflect the change in the direction of effect.
Fig. 15. Cross-lagged correlations for 6 to 18 month Provision of Appropriate Play Materials

Figure 15 shows the correlations for Scale IV: Provision of Appropriate Play Materials and MDI. The auto-lagged correlations show a high degree of stability between 6 and 18 months. The correlation between 12 and 18 months is lower than that between 6 and 12 months, which may be due to increased provision of play materials with age. This change is also reflected by the increase in synchronous and cross-lagged correlations with age.

Although the synchronous correlation at 18 months ($r = 0.40$, $p < 0.09$, $n = 12$) fails to reach the conventional level of significance, the increase in correlations with age suggest the growing importance of this variable for mental development.

The cross-lagged correlations are both positive between 12 and 18 months, the correlation between Play Materials at 12 months and MDI at 18 months being higher than that in the opposite direction, and significant at the $p < 0.05$ level. As this correlation ($r = 0.51$) is higher than the synchronous correlations, it would appear that by 18 months Provision of Appropriate Play Materials is having a significant effect on mental development in this group.
Fig. 16. Cross-lagged correlations between 6 and 18 month Maternal Involvement with Child
Scale V: Maternal Involvement with Child.

Figure 16 shows the correlations for Maternal Involvement with Child and MDI. The auto-lagged correlations for Maternal Involvement show a high degree of stability between 6 months and 12 months, and 12 months and 18 months, and do not differ significantly from the Mental auto-lagged correlations. The lower auto-lagged correlation for Maternal Involvement between 12 and 18 months indicates a change in Maternal Involvement, which may reflect the change in cognitive ability.

Examination of the cross-lagged correlations shows no effect of MDI at 6 months on Maternal Involvement at 12 months, but a positive correlation in the opposite direction ($r = .44$, $p < .07$, $n = 12$), which suggests that Maternal Involvement has a significant impact on mental development between 6 and 12 months. The lower synchronous correlations at these ages support this finding.

Between 12 and 18 months both cross-lagged correlations are positive. The higher correlation between MDI at 12 months and Maternal Involvement at 18 months suggests that the effect of the infant's mental ability, as measured by the Bayley Scale, is greater now than from 6 - 12 months. However, the correlation between Maternal Involvement at 12 months and MDI at 18 months is also quite high ($r = .43$, $p < .10$, $n = 10$), and both cross-lagged correlations are exceeded by the synchronous correlation at 18 months. This suggests that by 18 months Maternal Involvement and infant's level of cognitive ability have reached a mutually reinforcing "steady state" relationship.
It is necessary to ensure findings based on direction.

In the context of Cohen's report, it is evident that more research is needed to fully understand the relationship between variables. The diagram illustrates the complex interplay of factors involved, reflecting the need for a comprehensive type of analysis to the present understanding.
Fig. 17. Cross-lagged correlations for 6 to 18 month Opportunities for Variety in Daily Stimulation
Figure 17 shows the correlations for Scale VII and MDI. Neither synchronous nor cross-lagged correlations are significant for these two variables; in fact three out of the four cross-lagged correlations are negative, as is the synchronous correlation at 18 months. This indicates that in this group of mothers and infants, there is no link between mental development and variety in daily stimulation as measured by the HOME Inventory.

DISCUSSION

This analysis reveals two areas in which the infant's mental development appears to be positively influenced by specific maternal behaviours, namely emotional and verbal responsivity of mother, and maternal involvement. Cross-lag analysis on both these scales of the HOME Inventory shows the significant impact of these variables at 6 months on the infant's MDI at 12 months.

Not until 18 months does the infant's level of cognitive ability significantly affect these maternal behaviours: the effect of MDI at 12 months on maternal involvement at 18 months is greater than that in the opposite direction, so that neither variable can be said to be having a significant causal impact on the other between 12 and 18 months.

This is contrary to recent findings suggesting that direction of influence is from child to environment, and not vice versa, e.g. Clarke-Stewart (1973), Lewis & Rosenblum (1974), Rheingold & Eckerman (1975), Bradley et al. (1979). The latter's findings are particularly relevant here, since they used the same measures and a similar type of analysis to the present study.
Maternal Responsivity and Involvement with Child (Scales I and V)

As far as Maternal Responsivity was concerned, Bradley et al. found no pronounced effect in either direction between 6 and 12 or 12 and 24 months. For Maternal Involvement, however, they found a more pronounced effect from 6 months to 12 months of infant's MDI on this variable than in the other direction, but no significant effect between 12 and 24 months. Bradley et al. felt this showed "that more capable children tend to elicit greater interest and attention from their mothers". This appears to be the case in the present study, but not until the age of 12 months, until which time it is the mother's responsivity and involvement which are influencing the child's cognitive ability.

Bradley et al. point out that the use of cross-lagged analysis only allows for weak causal inferences, particularly in their study where the cross-lagged correlations did not quite reach generally accepted levels of statistical significance. In the present study however, the correlation between MDI and Maternal Responsivity is significant at $p < .01$, but that for Maternal Involvement and MDI ($p < .07$) fails to reach the conventional level of significance.

Provision of Appropriate Play Materials (Scale VI)

This type of environmental stimulation showed no link with mental development until the second year. Between 12 and 18 months, however, the provision of play materials appears to be affecting mental development positively, as we find the largest cross-lagged correlation between play materials at 12 months and MDI at 18 months. This is greater than the cross-lagged correlation in the opposite direction, and also exceeds the synchronous correlation.

Once again these findings are contrary to those of Bradley et al. They found no pronounced effect of this variable either in the first or second year, and a weak effect of infant on the environment in the first year in eliciting provision of appropriate play materials. The
difference between correlations upon which they based their inferences, however, was small, as they themselves point out. The pattern of correlation in the present study clearly shows that by 18 months appropriate play materials are positively influencing mental development, but there is no indication that the child itself is eliciting this form of stimulation.

**Avoidance of Restriction and Punishment (Scale II) and mental development (MDI)**

Both in the first and the second year mental development (as measured by the MDI) is negatively correlated with Avoidance of Restriction and Punishment, which may indicate that infants at a higher level of mental development are eliciting more punitive and restrictive behaviour. However, the environmental variable is positively correlated with subsequent MDI in both the first and the second year, reaching a significant level between 12 and 18 months. This suggests that Avoidance of Restriction and Punishment is positively affecting mental development already in the first year and significantly affecting it by 18 months.

**Avoidance of Restriction and Punishment and motor development (PDI)**

As far as motor development (as measured by the PDI) is concerned, this was negatively correlated with Avoidance of Restriction and Punishment both in the first and second years. This is in line with the negative relationship between mental development and this environmental variable, and lends weight to the suggestion that more advanced infants are eliciting more restrictive and punitive behaviour.
In the first year of motor development there is no pronounced effect in either direction, but in the second year the effect of the child's PDI on subsequent restriction and punishment exceeds that in the opposite direction.

In this area then, the child does appear to be affecting its environment. From 6 months onwards more advanced infants are punished and restricted more. As far as mental development is concerned, there is a change between 12 and 18 months, when avoidance of restriction and punishment is having a positive effect on the MDI. For motor development, however, it is the advanced babies who are eliciting more restriction and punishment by 18 months.

Organization of the Environment (Scale III)

Again we see a change in the relationship between stimulation from the environment and mental development between the first and second year. Until 12 months mental development is positively influenced by this variable, but level of mental development does not appear to be having any impact on the environment in this respect. Between 12 and 18 months however, we find that babies with a high MDI are eliciting the types of stimulation measured by this variable.
VI. Infant Behaviour Record

The Infant Behaviour Record (IBR) of the Bayley Scales
(see Appendix L for examples)

The behaviours rated in the IBR, although themselves not reliable indicators of the abilities measured in the Mental and Motor Scales, are not entirely independent of them. Many of the behaviours change with age in an orderly way as the infant develops, and according to Bayley (1969), the study of their significance in relation to other aspects of maturation and development may have important implications for understanding the nature of early growth.

Bayley (1968) found that several IBR items which had been used in 1928-30 in the Berkeley Growth Study correlated significantly with scores on the Mental and Motor Scales, and that in some instances the behaviour items were more highly correlated with later IQ than were scores on the Mental and Motor Scales.1

Selected IBR items in the present study (goal-directed behaviour, sucking and mouthing, and banging or throwing of objects) were correlated with scores on the Mental Scale (MDI) at concurrent and subsequent ages. Although these behaviours were not significantly correlated with MDI at a later age, a consistent pattern of correlations emerged which were in line with Bayley's findings. The behaviour items will be discussed individually.

Goal directedness (Item 11)
(Persistence in goal-directed effort)

Bayley found in groups ranging from 1 - 30 months that MDI correlated positively with ratings of goal-directed behaviour, (averaging approximately .40 in the first year and .30 in the second).

In the present study, ratings on goal-directed behaviour were found to correlate significantly with MDI at all ages from 6 - 18 months except at 9 and 12 months. (See Table 28).

1. In the Bayley Test Manual (1969) these findings are referred to as the 'author's preliminary (unpublished) analysis'. A literature search failed to reveal further details of this analysis.
Table 28: Correlation between MDI and Goal-directed Behaviour

<table>
<thead>
<tr>
<th>MDI at</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>.397</td>
<td>.391</td>
<td>-.086</td>
<td>.715</td>
<td>.609</td>
</tr>
<tr>
<td>p</td>
<td>(.05)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.002)</td>
<td>(.025)</td>
</tr>
<tr>
<td>n</td>
<td>18</td>
<td>16</td>
<td>14</td>
<td>14</td>
<td>13</td>
</tr>
</tbody>
</table>

There was no predictive value in this behaviour at 6 months, and at 18 months the correlation with MDI was negative. The coefficient of $r = -.384$ ($n = 13$, $p < .09$) compares with the negative but non-significant correlation between MDI at 6 months and MDI at 18 months ($r = -.14$).

Sucking and mouthing (Item 23) and Banging and throwing (Item 19)

Bayley's findings suggested that infants with higher MDI's did less sucking or mouthing of fingers and toys (as rated by Item 23) and were less interested in producing noise by banging or throwing objects (Item 19).

For Item 23 (sucking and mouthing) she found an approximate correlation of .40 with MDI from 4 - 12 months, and for Item 19 (banging and throwing) an approximate correlation of .40 with MDI for the same age range.

In the present study banging and throwing of objects was negatively correlated with MDI at all but 6 months (all but one correlation was significant) and sucking and mouthing was negatively correlated with MDI at all ages (all but two correlations significant). These correlations are given in Table 29 (see next page).

The positive correlation with MDI at 6 months is to be expected, as around this age banging of objects in order to produce noise is a characteristic behaviour. (Bayley gives a 'modal' rating of $5_1$, for this behaviour from 6 - 12 months.)

---

1. on a 1 - 9 point scale.
Table 29: Correlation between MPI and Item 23 (Sucking and mouthing) and Item 19 (Banging and throwing)

<table>
<thead>
<tr>
<th></th>
<th>3 mths</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sucking</td>
<td>r= -.143</td>
<td>-.299</td>
<td>-.181</td>
<td>-.189</td>
<td>-.789</td>
<td>-.146</td>
</tr>
<tr>
<td></td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.001)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>n= 18</td>
<td>18</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Banging</td>
<td>r= -.446</td>
<td>.127</td>
<td>-.349</td>
<td>-.602</td>
<td>-.709</td>
<td>-.06</td>
</tr>
<tr>
<td></td>
<td>(.032)</td>
<td>(n.s.)</td>
<td>(n.s.)</td>
<td>(.009)</td>
<td>(.003)</td>
<td>(n.s.)</td>
</tr>
<tr>
<td></td>
<td>n= 18</td>
<td>18</td>
<td>17</td>
<td>15</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

Bayley suggests that the negative correlation between these behaviours and MDI arises because excessive mouthing or excessive throwing and banging interferes with appropriate responses to test items. This was found to be the case in the present study. In two cases (S.9 at 12 months and S.18 at 9 months) only dummies prevented immediate and continued mouthing of test objects. In S.3's case, excessive throwing and banging at 12 months and both excessive throwing, banging and mouthing of objects at 15 months were this subject's typical responses.

Reliability of the IBR

1. Bayley (1969) does not report reliability coefficients for the IBR.

2. Scoring on the IBR is by means of rating scale (for the behaviours discussed above this is a 9-point scale), so that rating is subject to an adaptation level effect which arises by comparing one subject with another.

Both factors may be expected to lessen the reliability of these findings.
Chapter 4:

**PHYSICAL DEVELOPMENT and MATERNAL CARE**

I. Weight  
II. Height  
III. Teething and "teething troubles"  
IV. Feeding  
   Breast-feeding  
   Feeding schedules and demand-feeding  
   Feeding problems  
V. Sleeping and "sleep problems"  
   Sleeping problems  
VI. Ailments and Hospitalization  
VII. Use of Clinic or G.P.  
   Special problems of immigrant mothers
I. WEIGHT

Mothers were asked at all visits whether they knew their baby's current weight. This was for three reasons:

1. Throughout childhood, particularly in early infancy, weight is considered an indicator of health. This information therefore supplemented the mother's reports of her child's physical well-being and the Experimenter's observations.

2. It was hoped to obtain group norms at each age stage.

3. A mother's concern, or otherwise, about her child's weight may affect the child's health, both directly and indirectly.

The proportion of mothers who did know their child's current (or recent weight) varied throughout the course of the study. At the first visit (6 weeks) all but two of the sample knew their infant's weight, but only half knew the current weight, while the others had had their babies weighed at 4 weeks. Accurate reports were even less frequent at subsequent visits, so it was felt pointless to calculate norms for such small groups.

Table 30 shows weights at the various age stages for the sample. Weights given are no more than ± one week of the given age stage unless marked otherwise. During the second year some children were weighed on home scales, so the figures may not be wholly accurate.

Table 30 may be summarized as follows:

<table>
<thead>
<tr>
<th>Range at 4 weeks</th>
<th>7lbs 4 ozs</th>
<th>-</th>
<th>9lbs 6 ozs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 7)</td>
<td>(S.14 ♂)</td>
<td>(S.15 ♂)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range at 6 weeks</th>
<th>8lbs 10 ozs</th>
<th>-</th>
<th>10lbs 14 ozs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 7)</td>
<td>(S.6 ♂)</td>
<td>(S.9 ♂)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range at 3 mths</th>
<th>9lbs 3 ozs</th>
<th>-</th>
<th>14lbs 5 ozs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 10)</td>
<td>(S.10 ♂)</td>
<td>(S.11 ♂)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range at 6 mths</th>
<th>12lbs 4 ozs</th>
<th>-</th>
<th>18lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 7)</td>
<td>(S.9 ♂)</td>
<td>(S.15 ♂)</td>
<td></td>
</tr>
</tbody>
</table>
Range at 9 mths 17 lbs 11 ozs - 21lbs (N = 6) (S.14 Q) 
Range at 12 mths 18 lbs 13 ozs - 21lbs 7 ozs (N = 6) (S.14 Q) 
Range at 15 mths 19 lbs 10 ozs - 21lbs (N = 4) (S.14 Q) 
Range at 18 mths 20 lbs - 27lbs (N = 6) (S.7 Q) 

As can be seen from Table 30, no child failed to make adequate weight gain at more than one stage. The London Hospital "Baby Book" states as average weight gain:

- 6 - 7 ozs per week up to 3 months
- 3 months + approx. 4 - 5 ozs per week
- 6 " + " 3 - 4 ozs "
- 9 - 12 " + " 2 - 3 ozs "

Two children gained above average weight: S.3, Simon A. and S.16, Sandra. These subjects are discussed below.

S.3: Simon, A.

Simon was born at 31 weeks and was kept in "Intensive care" until he weighed 5lbs 10ozs (at 6 weeks). By 3 months he weighed 10lbs 3ozs which was adequate weight gain, and roughly equivalent to that of the "small babies" in the sample. His scores on the Bayley Scales were MDI: 102, PDI: 125 (unequated for prematurity), so Simon had clearly "caught up" on his prematurity at this stage.

By 6 months Simon weighed as much as 19lbs and was obviously overweight. At this visit his Bayley scores dropped to MDI: 86, PDI: 104. It was only possible to test Simon on the Bayley Mental Scale at the second attempt (returning the same afternoon). In the morning it had been possible to administer the Motor Scale on which Simon scored 104, but he became distressed as soon as the test objects, e.g. bell, ring and cube were presented, even when his mother did this instead of the Experimenter.

Table 30: Weights at the various age stages. (in pounds and ounces)

<table>
<thead>
<tr>
<th>Males</th>
<th>6 wks</th>
<th>3 mths</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.1</td>
<td>10.6</td>
<td>14.12</td>
<td>17.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.2</td>
<td>8.7</td>
<td>12.13</td>
<td>-</td>
<td>21.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.3</td>
<td>5.10</td>
<td>10.3</td>
<td>19.0</td>
<td>24.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.4</td>
<td>-</td>
<td>10.8</td>
<td>16.2</td>
<td>21.0</td>
<td>19.8</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>S.5</td>
<td>11.3</td>
<td>-</td>
<td>-</td>
<td>24.13</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.6</td>
<td>8.10</td>
<td>11.10</td>
<td>14.0</td>
<td>-</td>
<td>21.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.7</td>
<td>9.6</td>
<td>14.0</td>
<td>16.8</td>
<td>18.0+</td>
<td>-</td>
<td>20.0</td>
<td>-</td>
</tr>
<tr>
<td>S.8</td>
<td>-</td>
<td>13.8</td>
<td>16.4</td>
<td>20.4</td>
<td>22.2</td>
<td>-</td>
<td>26-27</td>
</tr>
<tr>
<td>S.10</td>
<td>9.8</td>
<td>14.5</td>
<td>17.5</td>
<td>19.14</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.11</td>
<td>8.2</td>
<td>9.3</td>
<td>14.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.12</td>
<td>10.6</td>
<td>12.8</td>
<td>15.0</td>
<td>18.13</td>
<td>21.0</td>
<td>22.0</td>
<td>27.0</td>
</tr>
<tr>
<td>S.13</td>
<td>10.0</td>
<td>14.3</td>
<td>17.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.14</td>
<td>7.4</td>
<td>10.10</td>
<td>14.5</td>
<td>17.11</td>
<td>18.13</td>
<td>19.10</td>
<td>22-23</td>
</tr>
<tr>
<td>S.15</td>
<td>9.4</td>
<td>13.0</td>
<td>18.0</td>
<td>22-23</td>
<td>19.6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.16</td>
<td>9.15</td>
<td>14.8</td>
<td>19.13</td>
<td>-</td>
<td>24.0</td>
<td>-</td>
<td>25.1</td>
</tr>
<tr>
<td>S.17</td>
<td>8.11</td>
<td>11.11</td>
<td>15.13</td>
<td>18.7</td>
<td>21.6</td>
<td>-</td>
<td>28.0</td>
</tr>
<tr>
<td>S.18</td>
<td>10.2</td>
<td>17.12</td>
<td>-</td>
<td>21.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.19</td>
<td>9.9</td>
<td>12.0</td>
<td>12.4</td>
<td>-</td>
<td>20.5</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Key: * weighed on home scales. - not known. _______ lost from study.
Testing was attempted again in the afternoon after Simon had had a sleep. It proved difficult to attract the infant's attention to the test objects, but his interest was eventually aroused by the bell, which he "manipulated" and "rang purposively". ('Rings bell purposively' is a 7-month + item). Simon showed no interest in the red ring until it was put into his hand, and he only picked up one cube, making no attempt to exploit it. Simon's scores were both considerably below those at 3 months, and he appeared to have lost the developmental gains he had made between 6 weeks and 3 months.

At 9 months Simon weighed 24lbs (well above average weight for a normal 12-month old), but on this occasion his mother made no mention of regulating his diet, and reported that the Clinic were "happy with him". At this visit Simon's performance on the Mental Scale gave no cause for concern, and his MDI was 99 (unequated). His PDI was well below the norm: 87, and both his gross and fine muscle movements were rated 4 (on a scale from smooth functioning = 1 to poor coordination = 5). His energy level was insufficient for pre-walking progression despite his mother's encouragement during the test, and his hand movements were noted to be "imprecise, with much swiping and banging".

At 12 months Mrs. A. did not know how much Simon weighed, but reported:

"The doctor (at the Clinic) said he's too big - yes, too heavy, he's overweight. Yes, I'm dieting him - they told me to at the Clinic when I last went (at 9 months)".

When asked: "Do you think he's putting on less weight?", Mrs. A. replied:

"No, I don't think it's the food he's eating. This is only the second meal today".

Mrs. A. added that she thought Simon was "naturally big, like his Dad".

On this occasion Simon's Bayley scores were well below norm: unequated:- MDI: 89, PDI: 80; equated for 2 months' prematurity:- MDI: 114, PDI: 104. But more worrying than low scores was the excessive banging and throwing of objects, with no inspection or manipulation. There was no close regard of objects, and Simon appeared to fixate only on faces (his mother's and the Experimenter's). A similar tendency was already noted at 9 months.
Simon's vocalization was noted as "good average, with frequent use of double syllables", but no appropriate use of words was noted, nor could imitation be elicited.

At 15 months Simon was still clearly overweight, although Mrs. A. did not know how much he weighed. When asked whether she was worried about this, she replied: "No, because I can't do anything. I think it's his nature". On this occasion Simon's performance on the Bayley Scales dropped further. There was no evidence of directed effort or attention, and constant mouthing interfered with testing. Simon's initial reaction to test objects was swiping, then mouthing or throwing. Simon's scores were now below the norm, even when equated for prematurity: MDI: 94, PDI: 98; unequated: MDI: 75, PDI: 98. He was then crawling very agilely, and pulling himself up. He was eventually persuaded to walk with the Experimenter's help (holding two hands), but was unwilling to try with one hand. The furniture was arranged in such a way that Simon could make his way around quite adequately via the settees and arm-chairs.

Simon's general developmental delay was a result of his prematurity, but other factors clearly affected his progress. By 3 months there appeared to be a "catch-up", and he was functioning at the level of a normal 3-month old. By 6 months, however, his performance had begun to decline, and by 15 months had dropped to MDI: 75, PDI: 81. (unequated scores). It was felt that lack of concentrated attention was responsible for Simon's delayed progress, and that systematic stimulation from either parent could have halted the decline. (At 6 months Mrs. A. had resumed full-time work, and had left Simon in the care of a child-minder. This arrangement only lasted two weeks and after this, Simon was cared for by his father who was a full-time student studying at home.

As far as motor development was concerned, Simon's excess weight was clearly delaying the onset of walking. Although he may have been constitutionally fat (his father was a very large man), exercise in assisted walking may have helped, and in any case would have been good exercise for a 15-month old confined to a third-floor flat.
S.16: Sandra, N.

Sandra weighed 8lbs 5ozs at birth (the heaviest of the girl babies). By 11 weeks she weighed 14lbs 8ozs, well above average weight gain; but at 3 months her mother reported:

"I was worried about her weight because she used to be sick, but the doctor said just ignore it, because she's alright, she's not losing weight".

At 5½ months Sandra weighed 19lbs 13ozs and at the 6-month interview her mother reported that she felt Sandra was too fat, so had stopped giving her milk if she woke at night, and gave her Ribena and water instead. Despite her weight Sandra was happy and energetic, and performed well above the norm on the Bayley Scales (MDI: 129, PDI: 123).

By 11 months Sandra weighed 24lbs, but at the 12-months visit was still rated "4" on energy (a 1-5 scale on the IBR). Although Sandra's MDI was as high as 131, her PDI dropped to 98. This was because she failed to pass Item 46: Walks alone (11.7). Sandra's mother reported that until two weeks ago she had been walking, but had been ill: "a cold and fever ...... and then after that she couldn't be bothered".

At 15 months Mrs. N. did not know Sandra's weight. She was clearly overweight but lively and energetic, despite being tested at 7.00 in the evening. Again Sandra's MDI was well above the norm: 122, while her PDI was 100.

At the 18-month visit Mrs. N. and Sandra had just returned from a 6-week visit to Nigeria. Sandra had been taken to the Clinic on return and then weighed 25lbs 10oz, only a pound more than at 11 months, and could no longer be considered overweight. (Her height was then 32½"). Mrs. N. attributed Sandra's weight loss to a more active life in Nigeria: "She was running around .... she was like a bird let out of its cage, running around all the time".

Sandra was again rated "5" on energy and her PDI score of 124 reflected her advanced motor development. Her MDI dropped 16 points to 105. It was felt this was due to negativism which may have been exacerbated by the recent visit to Nigeria, where her mother reported that she had been with older children all the time, and may have received less individual attention than when alone with her parents.
Mrs. N.'s concern at 3 months that Sandra was underweight, even though she had gained well above average by 11 weeks, suggests that she may then have started over-feeding her, and that this set the pattern for her appetite and hence weight, up until 17 months.

Although Mrs. N. recognised that Sandra was overweight at 6 months, and reported giving her less milk, Sandra remained overweight until the visit to Nigeria at 17 months. Both Sandra's parents are "big" without being overweight, so that Sandra may be constitutionally big. Her weight loss after the visit to Nigeria may only have been temporary, so that unless her parents control her diet, she may soon regain excessive weight. Nevertheless, in Sandra's case her excess weight was not affecting her development nor her health.

Regular weighing is no longer recommended as essential after "the first few weeks". "The Baby Book" gives rough guides for weight gain up to 12 months, and only suggests weighing to breast-feeding mothers who feel their baby is being underfed. Mothers are cautioned: "Try not to be a scale watcher", but no mention is made of the dangers of over-feeding. Spock (1976) similarly cautions against a preoccupation with baby's weight. However, he adds that "most babies get weighed when they go to see their doctor", and explains the risks of overfeeding in infancy.

In the present study all mothers but two had their baby weighed within 6 weeks of leaving hospital. The two exceptions, both Sikh mothers, were confined to the house for "40 days" from the birth of their baby, in accordance with Sikh custom that women should remain in bed or indoors for a specified period of time (this varies between 4 and 6 weeks). Both mothers had tied string amulets round their baby's wrists, so that they could tell whether or not he had put on weight.

1. In 1943 Truby King recommended: "Weigh baby regularly each week for the first 3 months and every fortnight afterwards, less stationary weight or a loss in weight pass unnoticed.

When visited at 6 weeks, one of these mothers, Mrs. B. (S.8), seemed worried that Harjit (her second baby) "wasn't getting enough" (breast-milk), and was thinking of "putting him on the bottle as well". She added that he was gaining weight and showed her baby's amulets. Although Mrs. B. had been visited by a health visitor at 5 weeks she said that at that time she had not been worried, so had not discussed her baby's feeding with her.

Mrs. K. (S.4) had her baby (her second) weighed just after two months while visiting the hospital for a check-up. At 6 weeks she was breast-feeding Clifford on demand and seemed satisfied with his progress. She felt the amulets were sufficient guide to his weight gain.

After the first two months these mothers had their babies weighed regularly (at approximately 3-monthly intervals) and were among the most frequent Clinic attenders.

The proportion of mothers who were able to report their baby's weight at each visit were as follows:

<table>
<thead>
<tr>
<th></th>
<th>6 wks</th>
<th>3 mths</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>89%</td>
<td>94%</td>
<td>89%</td>
<td>55%</td>
<td>66%</td>
<td>25%</td>
<td>64%</td>
</tr>
</tbody>
</table>

The above figures indicate that after 6 months most mothers had their baby weighed at less regular intervals.

Whether or not babies were weighed appeared to depend not only on how convenient it was for mothers to attend their Clinic or G.P., but also on the practice of the Clinic or G.P. concerned.

For example, at 9 months Mrs. S. (S.2) had not had Ibrahim weighed since 2½ months. She reported:

"When I go to the Clinic the doctor isn't there. They said they'd give me an appointment but they didn't - I'm waiting for an appointment".

During this time Ibrahim had been "very ill with 'flu" and had been taken to a local doctor, but not weighed. Similar cases were reported by other mothers who took their babies to their G.P. in case of illness, but mentioned that their doctor did not have scales.
Mrs. J. (S.7) was one of the most regular Clinic attenders. 15 months was the only occasion on which she did not know Leroy's weight. She reported:

"I haven't taken him for a little while - I do go to get his vitamin drops, but I can't be bothered to take his clothes off. They only weigh them if you ask them to. He was 20 something the last time - before one year".

At previous visits Mrs. J. had complained about the long wait when she attended the Clinic.

Two mothers were able to report their baby's weight at all visits; one attended the Children's Clinic of her local G.P. "just over the road", and the other attended her local Clinic, 100 yards down the road.

In contrast, three mothers showed no concern about weight.

S.1: Rory, G.

Mrs. G. had Rory (her second baby) weighed regularly up until 6 months, but not at all between 6 and 18 months. At 12 months she said "I haven't been (to the Clinic). I have to get him weighed for his record, so I'll let you know next time."

Mrs. G. did not know Rory's weight at either the 15-month or 18-month visit, despite having taken him to her G.P. after an attack of diarrhoea. Rory's weight appeared within the normal range, although his mother mentioned:

"We put him on a bit of a diet because he used to eat too much. For breakfast he'd eat two Weetabix and a Shredded Wheat all in one go, so we've just cut him down to his three main meals with nothing in between".

S.2: Ibrahim, A.

Mrs. A. knew Ibrahim's weight on two occasions: at 4½ weeks and at 2½ months. Her fourth baby, Ibrahim, had weighed 6lbs at birth (slightly below the group norm for the Asian babies. i.e. 6lbs 6ozs), but gained weight well, weighing 8lbs 7ozs at 4½ weeks.

At 2½ months Ibrahim was hospitalized for 3 days because of a hernia. His mother was allowed to stay at the hospital with him. His weight was then 12lbs 13ozs which was above average weight gain.
After that Mrs. A. was unable to report Ibrahim's weight, although she had to visit the hospital for his "check-ups". At 9 months she gave as her reason for not visiting the Clinic:

"When I go the doctor isn't there. They said they'd give me an appointment, but they didn't. I'm waiting for an appointment".

At the next visit (at 10½ months instead of 12 as the family were going to Pakistan for 3 months) Mrs. A. brought in the bathroom scales and weighed Ibrahim by getting her 8-year old daughter to weigh herself alone, then holding Ibrahim. His weight was calculated as approximately 21lbs - well above average weight gain.

At later visits Mrs. A. never knew Ibrahim's weight, but her brother (who lived permanently with the family and was always present at interviews) explained that their G.P. was a friend of the family and "calls regularly to give the children a check-up".

Ibrahim seemed happy and healthy at all visits. His scores on both the Bayley Mental and Motor Scales were consistently high, and at 18 months he was the highest scorer: MDI: 140, PDI: 128.

Mrs. C. knew Benjamin's weight at 6 weeks, and reported visiting the Clinic next at 6 months. Benjamin's last recorded weight was at 10½ months. When she reported this at 12 months Mrs. C. produced her Clinic card and said: "See how many times (i.e. few times) I've been since he was born". When asked when she'd next be going she replied: "Next week, maybe. I haven't got enough time to go. They say he's well, he's alright, so I don't really have to go every time".

At 15 months Mrs. C. reported that Benjamin had a cold and diarrhoea: "He got sick from the food when we were in Switzerland (a month ago)". A private G.P. called during the Experimenter's visit. Mrs. C. explained that the diarrhoea had persisted for approximately one month. The G.P. prescribed medicine, but no mention was made of Benjamin's weight.
Neither weight nor regular weighing was related to incidence of illness in this sample. Only two babies had more than minor ailments or more than one period of hospitalization. These were Simon C. (S.9) and Caroline (S.12). Both made satisfactory weight gain, throughout the course of the study as far as Caroline was concerned, and on all but one occasion (from 3 - 6 months) for Simon.

Simon had vomiting spells from 3 - 9 months, and from 6 months onwards was treated for ear infections which his mother was told were ENT trouble.

Caroline was hospitalized three times between 11 and 16 months, twice with Virus Broncholitis, and once with Allergic Oedema. Both mothers had their babies weighed regularly despite hospital visits.

While certain mothers may have felt reassured if they had known their baby's weight at a particular time, e.g. Mrs. B. (S.8) before 6 weeks, or Mrs. R. (S.6) between 4 and 11½ months, the same mothers continued to worry about their child's health once they did know he was making adequate weight gain.

In contrast, Mrs. N. (S.16) worried that Sandra was underweight at 11 weeks, despite having had her weighed and seeing that she had gained more than average, as a result of which Sandra continued to gain weight, until Mrs. N. realised at 6 months that she was "too fat".

Birth order appeared to be related to how frequently mothers had their baby weighed. Those mothers with three (or in one case four) children had their babies weighed less regularly than first or second-time mothers. The more experienced mothers may have felt that knowing their baby's weight was no real guide to its health. Time involved in visiting Clinic or G.P. may also have been a deciding factor.

Whether or not a baby is weighed regularly is clearly related to regular use of Clinic or G.P., and this is discussed fully under that section.
II. HEIGHT

In assessing a child's physical development height is the most common measure after weight. Illingworth (1973)\(^1\) recommends that the doctor who is responsible for supervising a child's health should record his weight and height in a centile chart, e.g. Tanner & Whitehouse\(^2\), so that the relationship between weight and height may be checked.

Before two years it is customary to judge a child's height by supine length. (At 12 months supine length is on average 1 cm. greater than height). In the present study height was measured at 15 months and 18 months of all children who were walking. This was done by persuading the child to stand against the wall, placing a flat card on his head, and measuring from the point at which the card touched the wall. While this method is obviously not wholly accurate, a more rigorous method was not possible in the home, and it was felt more valuable to have a rough guide to the subjects' heights, than not to record this.

Heights were as follows:

<table>
<thead>
<tr>
<th>Table 31:</th>
<th>15 months</th>
<th>18 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.1 (♂)</td>
<td>32&quot;</td>
<td>33.5&quot;</td>
</tr>
<tr>
<td>S.2 (♂)</td>
<td>31&quot;</td>
<td>33&quot;</td>
</tr>
<tr>
<td>S.3 (♂)</td>
<td>not standing</td>
<td>not visited</td>
</tr>
<tr>
<td>S.4 (♂)</td>
<td>29&quot;</td>
<td>31&quot;</td>
</tr>
<tr>
<td>S.5 (♂)</td>
<td>31&quot;</td>
<td>33&quot;</td>
</tr>
<tr>
<td>S.6 (♂)</td>
<td>30&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>S.7 (♂)</td>
<td>31&quot;</td>
<td>31&quot;</td>
</tr>
<tr>
<td>S.8 (♂)</td>
<td>31.5&quot;</td>
<td>32&quot;</td>
</tr>
<tr>
<td>S.9 (♂)</td>
<td>31&quot;</td>
<td>32.4&quot;</td>
</tr>
<tr>
<td>S.12 (♀)</td>
<td>not standing</td>
<td>28&quot; (measured at hospital)</td>
</tr>
<tr>
<td>S.14 (♀)</td>
<td>29&quot;</td>
<td>29.75&quot;</td>
</tr>
<tr>
<td>S.15 (♀)</td>
<td>31.75&quot;</td>
<td>33&quot;</td>
</tr>
<tr>
<td>S.16 (♀)</td>
<td>31&quot;</td>
<td>32&quot;</td>
</tr>
<tr>
<td>S.17 (♀)</td>
<td>31&quot;</td>
<td>33&quot;</td>
</tr>
<tr>
<td>S.19 (♀)</td>
<td>31&quot;</td>
<td>measurement not possible</td>
</tr>
</tbody>
</table>

Table 31: (cont'd.)

<table>
<thead>
<tr>
<th>Group mean at 15 mths: 30.78&quot;</th>
<th>Group mean at 18 mths: 31.67&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male mean: 30.8 (n = 9)</td>
<td>Male mean: 32 (n = 9)</td>
</tr>
<tr>
<td>Female mean: 30.6 (n = 4)</td>
<td>Female mean: 31.15 (n = 4)</td>
</tr>
</tbody>
</table>

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III. TEETHING and "teething troubles"

There is considerable variation in the age at which the first tooth appears. According to Illingworth (1973),

"The child may be born with a tooth or teeth, or the first tooth may not appear until the child is 13 or 14 months old",

and "The Baby Book":

"The average age at which a baby produces his first tooth is around 6 months .... it is not at all uncommon for a baby to be a year old before he gets a tooth".

Teething is useless as a milestone of development (Illingworth 1973), but to most mothers the first tooth is one of Baby's developmental advances, and is a sign to her that he or she is growing up.

In the present study mothers were asked at each interview from 6 months onwards, whether Baby had any new teeth, and reports of any "teething troubles" were recorded. (In three cases teething was reported at the 3-month interview).

The following table shows the age stage at which the first teeth were reported, together with number of teeth at that time:

Table 32:

<table>
<thead>
<tr>
<th>6 months</th>
<th>9 months</th>
<th>12 months</th>
<th>15 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.14 Celia (2)</td>
<td>S.12 Caroline (4)</td>
<td>S.2 Ibrahim (2)</td>
<td>S.4 Clifford K. (4)</td>
</tr>
<tr>
<td>S.16 Sandra (2)</td>
<td>S.18 Nkeruka (2)</td>
<td>S.3 Simon A. (4)</td>
<td>S.5 Mohamed (2)</td>
</tr>
<tr>
<td>S.1 Rory (4)</td>
<td>S.15 Charlotte (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.5 Benjamin (3)</td>
<td>S.19 Ashni (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.8 Harjit (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.9 Simon C. (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.7 Leroy (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.11 Uchenna (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As can be seen, appearance of first teeth ranged from 4½ months to between 12 and 15 months. (The premature baby, Simon A. (S.4) cut his first tooth between 9 and 12 months, and had seven teeth by age 15 months).

In 50% (8:16) of the sample this was before 9 months, and by 18 months all infants had cut their first tooth. This is in accordance with the normal pattern of dentition.

"Early teethers"

At 18 months the number of teeth reported ranged from five to "all" (12 reported cases). "Early teethers" (those who had cut teeth before 6 months) continued to cut teeth quickly, for example:

Celia, S.14: first tooth reported at 4½ months, 18 by 18 months.
Sandra S.16: first tooth reported at 5 mths 3 wks., "all" by 18 months.

"Late teethers"

"Late teethers", those who cut their first tooth after one year, had the least number of teeth at 18 months, for example:

Mohamed, S.5: 2 teeth reported at 15 months, 5 " " at 18 months.
Clifford S.4: 4 teeth reported at 15 months 6 " " at 18 months.

The proportion of mothers who were able to report how many teeth their child had decreased with age, and at 18 months only two were able to report the number without checking to see whether more had come through. Most mothers had difficulty in persuading their child to open its mouth so that the teeth could be counted.

One child, Ashni (S.19) was so upset throughout the interview that he would not allow his mother to look; she did not know how many teeth Ashni had. Mrs. K., mother of Charlotte (S.14) reported:

"I don't think she's got any more, but I daren't try to feel - she bites my hand".
Order of dentition

In all but two of the sample first teeth were lower or upper central incisors (usually the first two teeth are the lower central incisors). The exceptions were Simon C. (S.9) whose mother reported him as cutting two upper canine teeth at the same time as two lower central incisors, and Charlotte (S.14) who cut a lower molar just after a lower incisor (at 9 months). (The molars usually appear after the first six incisors).

Onset of teething

There was no relationship between first reports of teething and actual appearance of teeth. At the 3-month interview three mothers spontaneously mentioned teething. One (a first-time mother) reported that the Clinic said her baby definitely was teething; one who reported that she had thought 3 months too early for teething was told by the Clinic that her baby (her second child) was "probably" teething. The third mother said:

"Look, I think he's got two coming. He practically tries to get two hands into his mouth - he chews, dribbles and moans."

In common with 50% of the sample, this baby (Rory, S.1) cut his first tooth between 6 and 9 months. Charlotte (S.14) whose mother reported "teething" from 3 months and who was said by the Clinic to be "probably" teething, cut her first tooth between 9 and 12 months. Mrs. M. (S.11) who had had her baby's teething "confirmed" by the Clinic before 3 months, was lost from the sample after 6 months, but at this interview Clifford had not yet cut a tooth.

"Teething troubles"

63% (12:19) of mothers reported "teething troubles" at one or more interview. Reports included mention of isolated crying spells, ear-pulling, general irritability and temperature. One mother associated a cough with her baby's teething:

Charlotte (S.14)

"With the first one (at 9 months) she had a cough, but it didn"t really make her miserable."
Two mothers associated stomach upsets with teething:

Harjit (S.8)

"I had a really bad time with him when he was vomiting all the time (18 months). He couldn't eat anything - it was because of his teeth, I think."

Ruth (S.13)

"She did have a pretty bad bout of diarrhoea, whether that was related or not I don't know. They seemed to be giving her a problem".

It is to be expected that mothers' reports of severity of symptoms are related to how recently they had occurred. For instance, some mothers had to reflect on whether or not their child had shown any upset whilst teething. Others reported: "He's teething at the moment".

Mrs. K., mother of Clifford (S.4) reported at 18 months:

"He's teething at the moment. Yes, he's in a right mood. When he does bring any teeth out he gets really miserable, points at his teeth and says 'it's hurting'", whereas Mrs. U., mother of Celia (S.15) reported at 18 months:

"Those two did (trouble her) - the back ones - a little bit grotty, but not too bad".

Celia was the first in the sample to cut a tooth (at 4½ months), and at the 6-month interview Mrs. U. reported:

"The only trouble we had - she'd wake up hot and sweating during the night .... but it (teething) wasn't as bad as I'd expected it to be - she had no colds or anything".

There may have been little difference between Clifford's symptoms and those of Celia, but the recency of Clifford's upset resulted in his mother perceiving and reporting the symptoms as more severe.

Celia attended a nursery during the day (her mother worked full-time), so that Mrs. U. would not have been aware of any irritability or upset which may have occurred during the day. In Clifford's case Mrs. K's reports were of day-time irritability. She had 24-hour contact with him, so was more affected by his disturbed behaviour than she would have been, had her caretaking activities been shared.
Only one mother reported more than isolated incidents of teething-related troubles. This was Mrs. C., mother of Simon (S.9).

Mrs. C. reported that Simon's ear troubles (ENT) were worse when he was teething: "Sometimes it's all swollen". At 12 months she attributed his disturbed nights to teething, and reported:

"He's had a tooth there for ages which hasn't come through. I think that's what's doing it .... he got them altogether - I think that's why he's been a bad baby. He never seemed to stop teething".

And at 18 months:

"He's got all his teeth now - he's just cut four - the mid ones - I don't know whether he cut another one yesterday, because his cheeks were raw! He's miserable, anyway. If there is anything wrong with him I wouldn't know the difference anyway, because he's always miserable!"

"Soothing" methods

Mothers who reported teething troubles were asked what they did to comfort their baby. Four mothers reported using teething-gel to rub on the gums (three mentioned Bonjel); one reported Calpol; two reported giving their baby a "plastic bracelet" (filled with water and refrigerated so that it has a cooling effect on the gums); one reported "some sort of depressant - cherry-coloured syrup"; one reported "teething-powder", and was seen giving this to her baby on a dummy".

Only one mother mentioned "nursing" to comfort her baby while teething. This was Mrs. U. who at 6 months reported Celia as waking "hot and sweating during the night, then I'd nurse her".

Conclusion:

This group showed a normal pattern of teething, i.e. appearance of first teeth ranged from 4½ to 15 months. Only two cases of abnormal order of dentition were reported. 63% mothers reported some form of "teething trouble". Mothers reporting most upset were those who also reported their baby as "difficult", "crying a lot" and having a number of ailments.
IV. FEEDING

The Freudian view of the feeding situation as the "wellspring of attachment" (1915) is currently out of favour (Harlow & Zimmerman 1959), (Schaffer & Emerson 1964). Nevertheless, feeding occupies the most important place in the early stages of the mother-infant relationship, and how effectively a mother adjusts herself to her baby's demands for food sets the pattern for subsequent interaction.

The major question for most mothers is whether or not to breast-feed. While most hospitals officially promote breast-feeding, stressing both the physiological and psychological benefits to mother and child, official policy often amounts to little more than lip-service. Consequently, the mother who is undecided about feeding rarely receives sufficient encouragement and advice to enable her to successfully breast-feed, so that the number of mothers who even attempt breast-feeding is steadily declining.1

Successful breast-feeding is determined by characteristics of both mother and infant. Blauvelt & McKenna (1961) found that the way in which the mother holds her baby partly determines the success of his rooting for the breast, while the particular shape of her nipple may very quickly modify the sucking response (Gunther 1961). As far as the infant is concerned, whether he is alert or drowsy will affect his success at feeding (Levy 1958).

The strength of the infant's sucking response is vital for successful feeding, whether breast or bottle. As a number of studies have shown, the sucking response is poorer in babies whose mothers have received medication during labour.

Above all a calm and relaxed atmosphere is necessary for breast-feeding, and it is precisely this which is lacking in hospitals. Anxiety can inhibit the flow of milk via the let-down reflex (Newton, 1963); lack of sleep has been shown to have a similar effect (Gunther 1977).

1. According to the OPCS survey of a nationally representative sample of babies born in England and Wales between 20. September and 23. October 1975 (Martin 1978) only 4% of mothers were breast-feeding fully at 6 weeks, and by 4 months the proportion was less than 1%.

Martin, J. (1978)
OPCS: Social Survey Division, London, HMSO.
Many mothers do not realize that babies do not suck continuously, but suck and then pause. According to Schaffer (1974), the burst-pause pattern of sucking suggests that the newborn infant already possesses a behavioural organization which influences the mother's subsequent actions, every bit as much as does her own personality and mothering ability. Kaye & Brazelton (1971) feel that it is the function of the pauses between bursts of sucking to act as signals to the mother to initiate social interaction by such activities as jiggling and patting. The sensitive mother will delay her response to coincide with a pause in sucking, rather than interfering with the sequential flow of the infant's behaviour.

Table 27: Mothers still breast-feeding babies at various ages.

<table>
<thead>
<tr>
<th>6 wks</th>
<th>3 mths</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>68%</td>
<td>31%</td>
<td>22%</td>
<td>11%</td>
<td>5.5%</td>
<td>(1:18)</td>
</tr>
</tbody>
</table>

In the present study 73% (14:19) mothers were still breast-feeding when interviewed at 6 weeks. Of the remaining 26% one stopped at 5 weeks and 4 did not breast-feed at all. Of these 4 mothers two had never intended to breast-feed, both giving as their reason that they had been unable to successfully breast-feed their previous baby/ies. The third mother simply stated: "It didn't appeal to me at all". Only one of the four reported wanting to breast-feed but being told not to by the hospital, because of "sore nipples and baby's strong suck".

By 3 months the number of babies whose main form of nourishment still consisted of breast-milk had dropped to 68% (13:19), and by 6 months, the figure had dropped to 31% (6:14).

Reasons given for stopping breast-feeding were that Baby "wasn't putting on weight", "was getting hungrier and hungrier", or "she's a bit niggly in the evenings". Other mothers volunteered such explanations as:

"It's a bit of a bind having to breast-feed - it's inconvenient if you go to see people. That's why I want to get her onto solids, at least at lunch-time". (3 months)
"I had to start giving her a bit of solid - a teaspoon of baby rice. Then the Clinic told me to use 4 - 5 ozs. of milk - the breast doesn't satisfy her. She likes breast-milk - it's alright at night, but I try not to eat too much so I can get my figure back". (3 months)

"I think I'm glad in a way, because now I can go out. Because even at the Church (Sikh temple) there was no room where I could feed him. I had to feed him in public and our people think it's bad". (8 months)

By 6 months all mothers but one had started their infants "on solids", i.e. giving some form of solid food in addition to milk. Age at which "solids" were started varied from 2 - 6 months; "about 4 months" was the most frequently reported age.

By 9 months the proportion of breast-feeders had dropped to 22% (4:18). (One mother, S.12, had to stop at 8½ months when she was admitted to hospital for an emergency operation for an ectopic pregnancy).

At 12 months two of the sample were still breast-feeding. One of these mothers who was "hoping to continue until at least 18 months" returned to her own country at 9½ months, so was lost from the sample, but in a letter received at approximately 13 months, reported that she was still breast-feeding at that date. The remaining mother was still giving her child the breast at 18 months. Although at 12 months she reported: "I've tried to stop, but he wants it", and at 15 months and 18 months reported: "It's mainly nights", at both visits this mother suckled her child at some point during the interview in response to his demand.

The percentages reported in Table 27 compare favourably with those of Newson & Newson (1974). (By 6 months only 13% of the Nottingham health visitor sample was still breast-feeding). The number of successful breast-feeders also exceeds that reported in a study conducted in the same area by the present author (Baudin 1977) in which only 30% of mothers were successfully breast-feeding at 6 weeks, compared to 73% at 6 weeks in the present study. Both samples were recruited from the same hospital (with two exceptions in the 1977 study), and both covered a wide range of social class and ethnic origin.

Social class, ethnic origin, sex of infant and birth order were not significantly related to breast-feeding in this study.
Feeding schedules and "demand" feeding

Mothers were asked a number of questions concerning their baby's feeding-times in order to establish whether they were feeding at scheduled times or "on demand".

At the 6-week interview the following questions were asked:

13. "How's the feeding going?"

If information concerning feeding-times was not volunteered, mothers were asked:

15. "How often do you feed him/her?"
16. "How long do the feeds usually last?"

Feeding intervals

The most frequently reported interval between feeds was between three and four hours, i.e. 16 mothers (84% of the sample) mentioned 3-, 4- or 3-4 hourly intervals between feeds. This was the case for both breast and bottle-feeders.

"Demand" feeders

All but three mothers (84% of the sample) reported feeding "on demand". Only three mothers used the words "on demand" or "demand-feeding" spontaneously; most spoke of feeding "when he wakes up" or "if she cries". For example:

"He only cries when he's hungry .... I feed him then he stops crying. Every time I see him crying I feed him." (Mrs.A., S.3)

"Sometimes he'll go to sleep and won't wake up until 5 hours later, and sometimes after 2½ hours, and then I feed him, because I don't suppose he knows when he's hungry". (Mrs.K., S.4)

"I only feed him when he's ready. No, he won't take the bottle if he's not hungry, he goes off to sleep or pokes it out". (Mrs.C., S.9)
If these mothers were leaving at least 3-hourly intervals between feeds, as they reported, it is unlikely that they were always feeding "on demand". 1.

Three mothers, all breast-feeders, were unable to report regular intervals.

Mrs. C. (S.5) reported: "It changes every time". This mother's description of a "typical" day suggested approximately five feedings each 24 hours at approximately 4-hourly intervals.

Mrs. B (S.13)

"Every 2 - 4 hours, or 6 - just on demand. She'll nurse any time I put her to my breast."

Mrs. N (S.16)

"It depends on her - 3 - 4 hours, sometimes 6 - 7 - I don't bother to wake her up."

Although most mothers appeared to be allowing their baby to establish its own feeding pattern up until 6 weeks, the proportion of mothers attempting to establish feeding schedules gradually increased.

Mrs. U. (S.15) for instance, was breast-feeding "on demand", but already at 6 weeks she reported:

"She's not into a routine like I'd like her to be."

Mrs. U. introduced mixed-feeding just after 3 months, and at 6 months reported:

"She's on two meals a day now. She gets breast-fed in the morning and evening, because she won't go to sleep otherwise."

Only two breast-feeding mothers reported feeding their baby directly in response to demand at or after 6 months.

Mrs. D (S.12) reported:

"The last couple of nights she'd woken up for a night feed". (6 months)

Mrs. J (S.17)

already discussed on page who was observed responding to Leroy's demand for the breast at 15 and 18 months.

1. Richards (1974) points out that since mothers are usually advised to leave a 4-hourly interval between feeds, it is not until 3 hours after a feed that an infant's cry is likely to be responded to by the mother with another feed. (P.90, "Integration of a child into a social world", ed. Richards, M.P.M., CUP 1974).
"Scheduled" feeders

Two mothers' reports suggested they were trying to schedule feeds from birth:

Mrs. D. (S.12) reported breast-feeding Caroline at "approximately four-hourly intervals", except during the night:

"At night it's not so bad, I only get up once in the night".

She reported waking Caroline up in the night for a feed

"... if she doesn't wake. She hasn't had the stomach-ache since I've been doing that - I think it's because she's not famished".

At 3 months Mrs. D. reported:

"She usually cries because she's hungry. Usually she only has three feeds all day, so in the evening she suddenly realises this, and wants one every two or three hours".

At the same interview Mrs. D. mentioned letting Caroline cry for a quarter of an hour before deciding whether or not to give her another feed.

Mrs. R. (S.6)

Mrs. R. had put Mohamed straight on to the bottle (because she had been unable to successfully breast-feed her previous baby). At 6 weeks she reported feeding him "every 4 hours", adding: "he takes one hour - he's lazy to feed".

Mrs. R. was feeding Mohamed during this interview, and he did appear to be a slow feeder.

At 3 months Mrs. R. reported: "He's not feeding - I worry about that". Mrs. R. had probably been advised to feed Mohamed at 4-hourly intervals either at the Hospital or by her health visitor. A 4-hour schedule is that most frequently counselled in lying-in wards and at health clinics.

Although Mohamed made satisfactory weight gain overall, at all interviews Mrs. R. appeared worried about his health, and only on one occasion did she report him "eating well".
Discussion:

The frequent reports of feeding at 3 - 4 hourly intervals may reflect the advice given these mothers at the hospital or by their health visitor. (There were no differences in this respect between first-time mothers and the more experienced mothers).

One first-time mother, Mrs. M. (S.11), who chose to bottle-feed, actually reported:

"It should be every four hours, so they state at the Clinic, but he's about every three hours".

Mothers' reports of feeding at the "recommended" times, i.e. at approximately four-hourly intervals, may have been because mothers were identifying the Experimenter with health authorities, and so were giving what they thought was the "correct" response. (This point is discussed in more detail under "Methodological Critique").

Their subsequent remarks suggest that in the early weeks most mothers allowed their infant to establish its own feeding pattern, and only later did they attempt to modify its demands.
Feeding problems

Most mothers reported isolated occurrences of sickness, vomiting or diarrhoea at some point in the study, but in most cases attributed this to some specific factor such as introduction of solids, a particular food which had disagreed with the child, or gastric 'flu.

In contrast, four mothers reported sickness, vomiting or diarrhoea at more than one interview, and appeared concerned about it. These cases are discussed individually.

Simon C. (S.9)

Vomiting was clearly a problem for one of these mothers (S.9). Simon was Mrs. C.'s second baby, and was bottle-fed from the start. At 6 weeks she reported: "He doesn't vomit, he just brings up a bit", but at 3 months:

"Every time I feed him he brings up vomit. My doctor said he's getting too much. I was giving him 8 ozs - I've started watering it down. But he's still sick - he still gets sick on water. He's put on so much weight, so the doctor said 'don't worry'".

(Simon weighed 8lbs 12ozs at birth, 13lbs 14ozs at 4 months). At the 3-month interview "sporadic vomiting" was observed.

At the 6-month visit, Simon was vomiting so frequently that this dominated the interview and testing. He had also had an attack of diarrhoea in the meantime, and had gained less than one pound since 4 months. Nevertheless, his mother reported him "eating well - he's been on solids since 2 months, he has Farley's for breakfast, two meals a day and 6 bottles instead of 5". He appeared a friendly baby, and smiled instantly to the Experimenter. Despite the vomiting he performed well on the Bayley Scales (MDI: 110, PDI: 120).

The problem that Simon's sickness created for his mother was only too obvious from the all-pervading smell in her home, the buckets of washing in the kitchen, and her reply when asked whether her husband ever fed the baby: "He will sometimes, but not often in case he's sick on him".
At the 9-month visit no vomiting was observed, and Simon's mother reported: "Not a lot, but he still gets it sometimes - he gets it every now and again". There were no reports of vomiting after this, but a variety of other ailments were reported which are discussed in more detail.

Ashni (S.19)

The second mother who was concerned about her baby's vomiting first reported it at 6 weeks:

"He doesn't wind, then he starts vomiting, sometimes every feed - a lot!"

Ashni, the third child in a family of three boys, was bottle-fed from birth. His mother was unable to successfully feed her other two children and so chose to bottle-feed. The family left for a visit to India when Ashni was 2½ months, and on their return the child was sick, "vomiting for approximately one week". The child was taken to the local hospital where it was suggested that over-concentrated milk may be causing the sickness, and advice was given on the correct proportions. At the 4-month interview Ashni's mother, Mrs. M., was observed bottle-feeding Ashni, who was noted to be an "easy feeder".

Mrs. M. did not start Ashni on solids until after 6 months, but at 9 months he was reported as "eating well, taking chicken and vegetables - with a spoon". There was no further mention of vomiting or sickness until the 12-month interview, when Ashni's father reported that he started to vomit if he was forced to eat.

At later interviews Mrs. M. reported Ashni as "eating well". His last recorded weight, at 12 months, was 20lbs 5ozs, which is adequate weight gain for a "small baby"; (birth weight was 6lbs 4 ozs).

At all visits Ashni's performance on the Bayley Mental Scales was above the norm: his MDI ranged from 102 - 117. As far as motor development is concerned his PDI dropped from 119 at 4 months to 84 at 18 months, but this low score was felt to be the result of negativism rather than to delayed development. Discrepancy between performance on the Bayley Scales and ability is discussed in more detail under "Methodological Critique", p.63a.
Mrs. R. appeared worried about her baby's feeding at all visits. She was bottle-feeding Mohamed because "I breast-fed the last, but he wasn't well, breast wasn't enough - at the hospital they told me to change to solids". Mohamed weighed 8lbs 8ozs at birth (above average weight for the sample and well above average weight for an Asian baby).

By three months he weighed 11lbs 10ozs, so was obviously gaining weight well, but his mother reported:

"He's not feeding - I worry about that. I feed him about 9 at night, he sleeps all night. If I wake up at 8 I want to give him milk, but he doesn't like milk until 10 o'clock - he's sick every time .... I worry because this baby sometimes doesn't like eating or drinking. I worry he will be like this one (2½-year old brother).

At 6 months Mrs. B. reported that Mohamed was "feeding well", was no longer vomiting, but had diarrhoea. At this visit Mohamed appeared healthy and happy, and had gained over 3lbs between 2 and 4 months when he was last weighed. He performed well above the norm on the Bayley Scales (MDI: 120, PDI: 116).

He had measles which lasted a week at approximately 8½ months. At the 9-month visit Mrs. R. reported that Mohamed was "eating well", but qualified her reply with:

"I'm not satisfied sometimes. He doesn't take regular meals. If he cries he's sick, sick - all of my children sick, especially if I give him egg - he starts coughing, coughing".

Mrs. R. did not know Mohamed's weight on this occasion, although she had taken him to the doctor when he had measles.

Shortly before 12 months Mrs. R. was visited in order to fix an appointment for interview and testing. She had just returned from the Clinic, where Mohamed had been weighed. Mrs. B. said the Clinic were "pleased with him", and appeared happy about her child's progress.

When interviewed 10 days later, however, Mrs. B. was worried because Mohamed had diarrhoea. She reported it as having persisted for nearly 3 months: "sometimes good, sometimes bad, sometimes better". Again Mohamed appeared to be in good health and performed well on the Bayley Scales (MDI: 117, PDI: 122).
At 15 months Mrs. R. reported that Mohamed "doesn't eat enough", but did not know his weight. No sickness or diarrhoea was reported at this visit. Again he appeared happy and lively and performed well on the Bayley Scales (MDI: 116, PDI: 106).

At 18 months Mrs. B. reported Mohamed as "eating well - everything is O.K. He'll eat everything". But later in the interview she reported:

"If he's got a bad cough, sometimes he's sick, sick. I've got troubles - vomiting, all of my children. You know all of my children like that, that's why I don't tell the doctor again".\(^1\)

On this occasion Mohamed's Bayley scores were lower (MDI: 103, PDI: 94), but his 'General Emotional Tone' was rated at 6 on the IBR (Infant Behaviour Record).\(^2\).

A common factor in the cases discussed above is the fact that all three babies were bottle-fed from birth. Gastro-intestinal infections are much commoner among bottle-fed babies because of poor hygiene and the lack of antibodies present in human milk.

Clifford K. (S.4)

Only one breast-feeding mother in the present study reported vomiting and diarrhoea at more than one interview, in this case throughout the course of the study. This was Mrs. K., mother of Clifford, S.4. Clifford was her second baby. He weighed only 5lbs 5ozs at birth which is below the group mean for Asian babies (6.6lbs).

At 6 weeks Clifford's mother reported that "he vomits a lot. In the hospital they said he drinks too much so it doesn't all go in". Earlier she said:

"If somebody comes - my husband's relatives, and I'm feeding him, I think he knows. I'm not absolutely relaxed, and he won't drink properly, so I'm sitting with him all the time. But if I'm on my own and relaxed he drinks O.K."

She later added:

"Yes, I feel happy about it (breast-feeding), but I think I'll have to give it up. Everyone goes on about it. None of our people carry on after 6 weeks. I said I wanted to carry on after 6 weeks unless I got sore".

---

1. On a previous occasion Mrs. B. had said that her 8-year old daughter was healthy.
2. A score of 6 on this item of the IBR is a rating between 5 and 7:-
   5: Moderately happy or contented; may become upset, but recovers fairly easily.
   7: Generally appears to be in a happy state of well-being.
At 2½ months Mrs. K. was still breast-feeding, and a feed was observed at this visit, during which she appeared happy and relaxed. Before feeding Clifford was tested on the Bayley Scales, on which he scored MDI: 133 and PDI: 126. These scores reflected his alertness and liveliness and his 'General Emotional Tone' was rated 7 (i.e. generally appears to be in a happy state of well-being).

Mrs. K. started Clifford on solids "just after 3 months", although she was still breast-feeding at 6 months. He then weighed 16lbs 2ozs, which is above average weight gain for a "small baby". His Bayley scores were lower on this occasion (MDI: 105, PDI: 116), but again his 'General Emotional Tone' was rated at 7.

At the 9-month visit Mrs. K. reported that she had stopped breast-feeding some three weeks ago, at her doctor's suggestion:

The doctor said: 'It's not good for you. It's upset your whole system'. I kept getting tummy-ache the whole time, and the doctor said it was because of the breast-feeding - he said I should stop it".

When asked: "Were you sorry to stop?" she replied:

"No, not really, I think I'm glad in a way, because now I can go out. Because even at the Church (Sikh temple) there was no room where I could feed him. I had to feed him in public and our people think it's bad".

When questioned about Clifford's reaction, Mrs. K. replied:

"Yes, he did (mind). He still knows, but now I know how much he's taking, but before, if I was in a rush, I'd have to - plus, he was being sick a lot because I'd have to rush - I've been so busy since he was born. If you don't get any rest the milk's no good. So when I started feeding him he used to be sick every time, unless, of course, I relaxed, but that was hardly ever, and then he was O.K."

On this occasion Mrs. K. reported that "the only time he's sick is when he's got a cold or something".

At this testing Clifford's MDI was below the norm (91), over 10 points below his score at 6 months. His PDI remained well above average (116), and again he appeared happy, lively and friendly.
Between 10 months and 12 months (-3 weeks) Clifford's weight dropped from 21 to 19.5 lbs. At 12 months Mrs. K. reported:

"He eats well, but he does too much toilet, and every time he's a bit sick. My mother said 'Give him some of this medicine' - Indian medicine you can make yourself. It's some kind of seeds, ground up and boiled. He drank that, and he was better, and I've continued giving him that. At the Clinic they said 'You should see your G.P.' The doctor said 'Don't give him any more tins', so I didn't. So now I give him our dinner and he's getting better".

Clifford appeared less energetic at this visit than on previous occasions. Up till then his 'level of energy' had been rated 'above average' on the IBR. He was tested shortly after waking up (spontaneously) from an "afternoon nap". Although his performance was higher on the Mental Scale on this occasion than at 9 months (MDI: 106, 15 points higher than at 9 months), his PDI dropped to 98.

At 15 months Clifford was no longer losing weight, but his mother was obviously concerned about his "sickness and diarrhoea". She said spontaneously:

"I don't give him something that's not really good for him. He can't eat a lot because if he does he's sick or gets diarrhoea".

Mrs. K. listed cheese, sausage, luncheon-meat and chilli among the foods Clifford liked, but mentioned that he did not like fish-fingers. She reported:

"I went to the doctor and he just gives him this medicine, and as soon as he's finished it, he gets it back again. It's ridiculous, I'm thinking of taking him to the hospital now, because he's been like that since he was born. Because children of that age, they're supposed to drop a little bit of milk, but not like he does".

Clifford's Bayley scores were higher at this visit (MDI: 112, PDI: 95), although he was noted on the IBR to be 'too restless to perform really well'. He was rated 8 on 'Activity'. It was noticeable that Clifford was very advanced as far as social skills are concerned, e.g. feeding himself, drinking from a cup, opening and shutting doors.

1. A rating of 8 on 'Activity' is between 7 and 9.
   7: In action during much of the period of observation.
   8: Hyperactive: cannot be quietened for sedentary tests.
The family had recently returned from a three-week stay with the mother's parents (a large extended family), and it was felt a lack of concentrated attention in these surroundings may have contributed to his restlessness and hindered his performance on the Bayley Scales.

At 18 months Clifford's weight was only slightly more than at 15 months (just over 21 lbs), which Mrs. K. attributed partly to his upset when his four-year old sister went away for a week, and partly to teething:

"He was crying so much, he wouldn't eat anything. He missed J. so much. She was supposed to be going away for two weeks, so I had to bring her back. I think it was that more than the teeth, because now he's eating better".

Despite having gained little weight, Clifford had put on 2" in height (29" at 15 months, 31" at 18 months).

His mother reported diarrhoea "sometimes, not all the time", and vomiting:

"He still drops a bit, sometimes - not as bad as it was. Only sometimes it'll get bad if he's not well - if I give him too much milk - if he's had three or four bottles of milk, then I give him another bottle in the night, so I try not to give him too much milk - I'll give him orange, or something like that".

Testing was carried out after Clifford woke spontaneously from a 2-hour sleep. (Mrs. K. reported "a disturbed night due to teething". This may have contributed to his low scores: MDI: 103, PDI: 94. It was noted that Clifford "approached test objects willingly, but appeared disinterested and non-cooperative". He did take a lively interest in the peg-board and the book. His vocalization was noted as "good", and rated 4 on a 1 - 5 scale. Several words were heard clearly: tea, ball, cup, baba, and his mother reported him using such phrases as "Where is it?", "What is it?"

Discussion:

In two of the above cases, Clifford K. (S.4) and Mohamed (S.6), there appears to be no clear-cut reason for mother's reports of sickness and diarrhoea. Although neither vomiting nor "spitting-up" was observed in these babies, and both appeared to make generally satisfactory progress
throughout the course of the study, both mothers felt they had cause to worry about their child's health.

Mrs. K.'s early reports that she "wasn't relaxed" while breast-feeding, and that therefore Clifford "won't drink properly" suggest that the sickness at this time was related to tensions in the feeding situation. The sickness and diarrrhoea reported once Clifford had been weaned (from 9 months onwards) may have been related to his diet. At 12 months Mrs. K. reported being advised by the Clinic doctor not to give Clifford "tins". However, a change to the family diet had no beneficial effect. Clifford put on little weight between 9 and 18 months, and at all visits Mrs. K. reported "diarrhoea and vomiting".

While Mrs. K.'s concern about Clifford's health was despite regular visits to Clinic and G.P., Mrs. R. appeared to worry about Mohamed for no specific reason, and made only occasional use of her local Clinic. Mohamed's weight gain (when known) was perfectly satisfactory, and Mrs. R. seemed happier once she had had him weighed (at 12 months) and had been reassured that he was well. It is felt that her concern was primarily related to her second child's health. He was approximately 2½ at the time, and Mrs. R. reported him as having been sick from birth. He had had stomach x-rays, but no diagnosis had been given.

These cases are discussed in more detail under 'Use of Clinic or G.P.'.
At each interview mothers were asked a number of questions concerning their infant's sleeping. These were designed both to obtain a picture of the infant's sleeping patterns and the mother's attitudes towards management of sleeping.

At 6 weeks the following questions were asked:
35. Has he started sleeping through the night?
36. Does he sleep much during the day?
37. Where does Baby sleep?
38. What position does Baby sleep in?

At subsequent interviews questions covered approximate length of sleep periods, where and with whom Baby sleeps, and incidence of night-waking.

**Early sleep patterns**

As Parmelee, Werner & Schulz (1964) have shown, sleep averages 16 hours 20 minutes per day in the first week of life, and drops to 14 hours 15 minutes by the sixteenth week.

During the first weeks, changes occur not so much in amount of daily sleep as in the length of the individual periods of sleep and wakefulness and in their distribution around the clock. A newborn tends to sleep for many short periods, randomly distributed throughout the day and interspersed with even shorter periods of wakefulness. With age, both sleep and waking quickly assume a much more regular form: the periods become longer, they are less randomly distributed, and soon become organized in a diurnal pattern (Schaffer 1977).

Parmelee et al. found a slight change in the day-night distribution already in the first week of life; then their subjects slept an average of 7 hours 45 minutes during the day, and 8 hours 20 minutes at night. By 16 weeks these figures had become 4 hours 35 minutes, and almost 10 hours. These changes illustrate how the baby's own internal pattern becomes modified by environmental pressures.
At 6 weeks 77% (47:18) mothers reported their baby as sleeping a lot during the day. In most cases reports suggested that babies were awake during the day and "woke up" at night. For example:

Leroy (S.7)
"He sleeps more during the day than he does at night".

Harjit (S.8)
"Usually he sleeps the full four hours between feeds".

Ashni (S.9)
"He sleeps all day, when he's hungry he wakes up".

Five mothers (22%) reported more than brief periods of wakefulness at 6 weeks. For example:

Caroline (S.12)
"She usually wakes up in the evenings when we're all here".

Benjamin (S.5)
"He finishes feeding about 2 o'clock or 2.30, then he's awake for one hour, looking around, watches everything, then starts to cry because he's bored - about 3 or 4, then I give him a drink".

All but one of these five babies were already reported to be sleeping through the night at 6 weeks or shortly after, so that longer periods of daytime wakefulness were to be expected. The exception, Simon C. (S.9) was reported as "awake all day". Although Simon's mother reported his longest sleep period as 6 hours (10 p.m. - 4 a.m.), by 6 months Simon had become a "night-waker".

Simon A. (S.3)
Simon was slow to adjust his sleep pattern to environmental pressures. When first interviewed (at 3 months) his mother reported:

"He sleeps through the day. At night he doesn't want to sleep - he just wakes up - I don't sleep at night, I have to sleep during the day".

Simon had been in an Intensive Care Unit until 6 weeks of age, when his mother took him home. Research into the environmental characteristics of neonatal intensive-care units suggest that the infants are subjected to excessive amounts of acoustic and visual
stimulation. These high levels of noise and illumination do not always have a stable diurnal rhythm. (Lawson, Daum & Turkewitz 1977), so that the premature baby is slower in adjusting to the normal diurnal waking-sleeping pattern.

By 6 months, however, Simon was reported to be sleeping through the night, and continued to do so throughout the course of the study.

There were no significant differences between early sleep patterns reported by mothers who had had difficult births and those whose deliveries had been "normal": the two babies born by C.S. (S.6 and S.14) were both reported to be sleeping through at 6 weeks. S.13 (induced forceps delivery) and S.16 (posterior-occipital delivery) were reported to be sleeping through by 7 weeks.

"Sleeping through"

Considerable variation was found in the age at which mothers reported their baby first "sleeping through the night". (There is general agreement in the literature that 6 weeks is the average age).

The following table shows the number of babies reported to be "sleeping through" at each age stage:

<table>
<thead>
<tr>
<th></th>
<th>6 wks.</th>
<th>3 mths.</th>
<th>4 mths.</th>
<th>6 mths.</th>
<th>9 mths.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Mothers' interpretations of "sleeping through" varied; those who were used to going to bed earlier reported their baby's last feed as earlier than others, but correspondingly reported an earlier waking time as "sleeping through".

Mothers who later reported their baby as waking frequently during the night had all reported them as "sleeping through" on occasions. These mothers may have been under-estimating the extent of their baby's night-waking, both as a form of wishful thinking (for undisturbed nights), and in an effort to give the desired reply, i.e. wanting to represent their child as a "good baby".
Similarly mothers whose babies shared their beds reported them as "sleeping through" but also spoke of giving them the breast during the night. Had these babies not had immediate access to the breast they would no doubt have been reported as "night-wakers".

There was no significant relationship between breast-feeding and "sleeping through". All breast-feeding mothers except one reported that their infants were "sleeping through" by age 4 months.

Ruth (S.13)
"She did for the whole week before we went away" (at approximately two months).

and at 3 months:
"since about mid-February" (i.e. almost 4 months).

Caroline (S.12)
"She's slept through the night for about the last 4 weeks from 10 at night till 8 o'clock". (3 months)

Ruth's mother, Mrs. B., reported at 3 months that her baby was on a "2-hour schedule", and that "all I want is to be able to sleep through the night. I figure that if I nurse her enough during the day she'll sleep all night".

At 6 months Mrs. B. reported:
"I knocked out a feed so now she's down to five".

When Mrs. B. was interviewed for the last time (at 9 months) her reply to Question 24: Does she sleep through the night now? was:
"Oh yes, I wouldn't have a kid who didn't at this age".
She was still breast-feeding and hoped to continue into the second year.

Night-waking

When assessing the incidence of night-waking difficulties of definition arise. Most young infants wake many times in the course of the night. If they remain quiet and content, so that their waking goes unnoticed, no problem arises. But if they start fussing and crying, and the cries are heard and responded to by parents, a
disturbed night is the outcome. The frequency of such waking and the ease or difficulty with which parents are able to re-settle their child distinguishes the occasional waker from the problem sleeper. Of relevance here is where the child sleeps in relation to the parents and how likely its cries are to be heard.

As a high proportion of mothers reported their baby as waking once during the night for a drink or bottle, and going back to sleep with no difficulty, such reports were not considered as night-waking.

Occasional night-waking was reported by all mothers, usually in connection with a cold, 'flu or teething.

Five babies could be described as regular night-wakers, i.e. their mothers reported night-waking for no clear reason over a period of at least 6 months. These were Clifford K. (S.4) between 9 and 18 months, Simon C. (S.9) between 6 and 18 months, Caroline (S.12) from 12 - 15 months, and Sandra (12 - 18 months).

**Clifford K. (S.4)**

At 2½ months Mrs. K. reported Clifford as sleeping through the night:

"from 10 - 11, sometimes 12. If his last feed is about 10.30 he wakes up at 8 o'clock".

Shortly afterwards Mrs. K. went to stay with her family for 3 months, and this period away from home appeared to have disturbed Clifford's sleep pattern. For example:

"We didn't go to sleep till about 3, just talking and that, and he was always there listening. Towards the end he started sleeping through the night, but now we're back here he's started waking up again". (6 months)

When asked whether Clifford was easy to get back to sleep (Question 27), Mrs. K. replied:

"If I breast-feed, but he wants to be rocked or patted - my brother started that, before he'd go down straight away".
At 9 months when Mrs. K. was no longer breast-feeding Clifford, she reported:

"He's difficult because he wants me, even if he's not hungry. He just wants me to sit there - he just keeps crying until he's next to me. That's what he does in the middle of the night. He wakes up in the middle of the night and he wants me to hold him. Then I take him in bed with me, and sometimes I drop off to sleep with him".

On this occasion Mrs. K. reported Clifford as waking "almost every night".

At 12 months she reported:

"Yes, he does wake up - in the middle of the night - because he likes to sleep with me. Since I was in Wales (from 3 - 5½ months) I'd put him in bed with me. I put him to sleep in his cot, and he'll wake up about 3 o'clock, say, and I have to sort of pick him up at 3 o'clock and put him in my bed".

Mrs. K. added that her 3-year old daughter also slept with her and her husband, and that her husband did not mind her bringing the baby into the bed provided she put him back.

"Sometimes I fall asleep with him and he's there until the morning and John goes mad".

She reported that he was not "easy to get back to sleep":

"You have to sing to him or something like that. Sometimes he does if he's really tired - he'll take his bottle and go back to sleep with his bottle".

At both 15 months and 18 months Mrs. K. reported that Clifford was waking every night, at 15 months:

"Just to give me a cuddle then he goes back to sleep again - he wants to have the bottle",

and at 18 months:

"Sometimes he keeps me awake all night, because he's teething now".

Clifford was then sleeping permanently with Mrs. K. and her daughter, while Mr. K. was sleeping in a single bed.
Simon C. (S.9)

Simon was the only baby whose mother reported that he did not sleep during the day (at 6 weeks). At 3 months his mother reported:

"Usually he goes down about 8 or 9 and sleeps till 8 or 9. But not through the day, sometimes he goes from one feed to another without sleeping".

At 4 months Simon developed an ear infection (which persisted throughout the course of the study). Mrs. C. reported that her doctor had prescribed Phenergan (promethazine hydrochloride) for the sleeplessness, but that "it didn't work".

"Even at night he wakes up (crying). He's a good sleeper but he wakes up - every night. I have to put the dummy in his mouth, or I sh... sh... him back to sleep, but both K. (sister) and me are bad sleepers - we always wake up during the night, so he's probably taking after us".

At 9 months Mrs. C. had moved Simon's cot from the parents' room into her 3-year old daughter's room. Both at 9 and 12 months Mrs. C. reported Simon as waking each night, but her reports suggested he was quite easy to re-settle. For example:

"He'll wake up, but I don't have to feed him, only if he's really grizzly. I just give him the bottle and he goes back to sleep like that". (9 months)

"... not for a bottle, but crying. Then I cover him up and he goes back to sleep - that's been for the last month or so. I put his bottle in his cot, or his dummy, and he'll just go back to sleep again, but not the last couple of nights, I've had to take him into our bed". (12 months)

At 15 months Mrs. C.'s reply to the first question: "How's he been since I last saw you?" was:

"He's been alright, but he's really bad at night - a terrible sleeper! He don't sleep at all. He'll be up all day, maybe sleep an hour during the day. He'll go all day, but it doesn't knock him out at all. I can only remember one night since he's been born that he slept the whole night through. But I'm a bad sleeper and so's his sister".
Mrs. C. again reported giving Simon "sleeping medicine" prescribed by her G.P., but "none of it works".

At 18 months Mrs. C. reported that Simon "sometimes really slept well", but "he wakes up every night, even if it's a good night".

She reported:

"I either put him in bed with me or make him a bottle. He won't have a dummy any more. He went right off his dummy", and added:

"He's back with us now. He kept waking her (sister) up, so we took him back with us".

Simon was obviously a very active child which may have contributed to his restless nights. At 6 months, when asked in which position Simon liked to sleep, Mrs. C. replied:

"I put him on his belly, but he'll end up on his back or side. I really tuck him in, but he never has his blankets on in the morning. He's a right fidget, he disturbs himself".

At 9 months Mrs. C. made similar remarks, and at 18 months reported him as "climbing out of his cot".

Discussion:

There are similarities in Clifford's and Simon's case. Both were very active babies; their IBR ratings for 'energy level' were:- Clifford: 4, 5, 4, 3, 5, 3; and Simon: 5, 5, 5, 5, 5, 3. Both mothers' reports suggested that these babies were restless during the night, which obviously contributed to their night-waking. Both were reported as having high levels of crying throughout the course of the study.

In Clifford's case the night-waking may have been triggered-off by the nearly 3-month visit to relatives (periods away from home are a common cause of sleep disturbances). Clifford had obviously received a great deal of attention during the stay with his maternal grandparents, and although Mrs. K. was one of the mothers rated most highly on "physical contact", it is unlikely that she was able to provide as much picking-up, holding and rocking as Clifford had probably received from her relatives.

1. This item of the IBR is rated from low to high on a 1 - 5 scale.
But it was not until the 9-month interview when Mrs. K. had stopped breast-feeding that her reports suggested that Clifford's waking was becoming a problem. From then onwards he was waking "almost every night", and obviously resented the less frequent contact with his mother. At subsequent interviews, when Mrs. K. reported Clifford as sharing her bed permanently, his night-waking was obviously creating less of a problem.

In Simon's case there were a number of health problems, in particular ear troubles which may have exacerbated his sleeplessness. However, from 3 months onwards Mrs. C.'s reports suggested that Simon needed less sleep than the average baby, and that she found his consequent demands on her time a great strain. For example:

"He's always crying, but if you pick him up, he stops. I just leave him - I'm not going to pick him up all the time". (3 months)

Mrs. C. then reported Simon as usually sleeping during the night for as long as 12 hours:

"Usually he goes down about 8 - 9 and sleeps till 8 or 9".

Her additional comment that he did not sleep through the day:

"Sometimes he goes from one feed to another without sleeping"

and her comparison of Simon with her first baby:

"She was an ideal baby. I just used to feed her and put her down"

indicate that she did not expect a 3-month old to be awake and lively during the day.

While Simon was clearly a difficult baby who obviously imposed a great strain on his mother, Mrs. C.'s reports suggested that she may have been trying to settle him too early. For example, at 6 months, when asked how much time each day her husband (a postman) spend with Simon, she replied:

"Not long, not even an hour, because he's usually in bed by the time he gets home".
At all interviews she made mention of Simon just crying for attention or "just closing the door on his grizzling", which suggests that his demands for attention were not met. Moore & Ucko (1957) in their study of night-waking, found a strong correlation between night disturbances and fear of spoiling and failure to nurse the child in earlier months and picking him up when he wanted it.

Although Simon's cot had been moved from his parents' room to his sister's room between 6 and 9 months, by 1 year Mrs. C. had had to start taking Simon into her bed in order to re-settle him, and at 18 months Simon's cot had been moved back into the parents' room, as he had been disturbing his sister.

Mrs. C.'s reports that Simon was "a bad-sleeper like his sister and me" suggest that his night-waking would continue to be a problem.

Caroline (S.12)

Caroline was put in her own room from the start. Her mother, Mrs. D., reported her as sleeping through at 3 months, but at 6 months said that she had woken every night that week for a feed. (Mrs. D. was a very keen breast-feeder).

At 9 months when Mrs. D. had been hospitalized suddenly for three days, Caroline was still reported to be sleeping right through the night, despite separation from her mother and sudden weaning.

At approximately 11 months Caroline spent five days in hospital (her mother was admitted with her), and at 12 months Mrs. D. reported:

"No, it (hospitalization) didn't set her back at all - it's just that she doesn't like going in her cot. She wakes up every night and screams and screams and won't go to bed for about 3 or 4 hours. It's a shame because she'd got into ever such a good routine before we went into hospital".

At 15 months Caroline had spent another 3 days in hospital (again with her mother), and on return home Mrs. D. reported:

"We put her cot back in our room. Since she's been in our room she's been sleeping all night. It isn't the ideal solution, but it saves a disturbed night".
At 18 months Caroline was still in her parents' room, and was not reported to have woken during the night for "the last couple of months". Mrs. D. said that she and her husband were going to decorate their bedroom, so would put Caroline back in her room then.

As Moore & Ucko (1957) found, a temporary change such as a period in hospital, may upset a good sleeper, but in some cases may have the opposite effect of settling a baby that had always been wakeful before.

In Caroline's case her father was clearly an excellent substitute for the mother, so that no sleep disturbances were reported following Mrs. D.'s hospitalization at 9 months. The onset of night-waking followed Caroline's stay in hospital at 11 months when she shared a room with her mother. By taking her cot into their room Caroline's parents were able to check her night-waking. Caroline was an excessively passive and contented baby, so it was likely that her sleep problem would not persist.

Sandra (S.16)

Although Sandra's night-waking presented less of a problem than Clifford's or Simon's, it appeared to be becoming habitual, and at 18 months its outcome could not be predicted.

Sandra slept in her parents' bed for the first 9 months (the family only had one bedroom):

"She sleeps with us, more or less, in the big bed. The carry-cot is too small - maybe because it's handy for me. I haven't got room for the big cot near my bedside".

(6 weeks)

At 9 months Mrs. N. reported:

"Sometimes she sleeps in our bed. I used to keep her in my bed when she had that little cold. But now she sleeps in her cot".

Sandra was already sleeping through the night at 6 weeks (even though breast-fed). No night-waking was reported until 12 months when:

"She wakes up for a drink, sometimes for water - twice or three times a week depending".
At 15 months Mrs. N. reported Sandra waking up for drinks:
"She'll sit up and drink and go back to sleep".

Mrs. N. was a midwife whose working hours changed frequently so that it was probably difficult for her to get Sandra into a routine. For instance:

"Sometimes she stays with my neighbour, and we go there to collect her, and usually she doesn't seem to settle properly".

At 18 months, after Mrs. N. had been abroad with Sandra for 6 weeks, she reported:

"She's still sleeping right through, but gets up about 5 to have a drink of Ribena. She gets up and wants to come to me in bed".

Like Clifford and Simon, Sandra was a very active child (only once was she rated less than 5 on the IBR (a rating of 4 at 12 months)), but although strong-willed and showing evidence of temper-tantrums at 18 months, was always reported by her mother as "easy" or "easy, considering ...".

Where does Baby sleep?

Whether or not a baby has its own room depends firstly on whether or not the family has a spare room. Five mothers in the present study reported their baby having its own room; all five mothers fell within the upper half of the Registrar General's Classification of socio-economic class (classification according to husband's occupation).

Four of these mothers reported putting Baby in its own room at night from the early weeks. Four weeks was the time mentioned in three cases; the remaining case (Mrs. D., S.12) reported that Caroline had "always" had her own room. The fifth mother reported moving her baby into its own room at 9 months.
Parents are generally advised to move Baby to its own room by the age of 6 months, e.g.:

"The Baby Book", p.90:

"If you have started baby off in your bedroom, do try to have him in a room of his own by 6 months".

In common with other writers, the author advises:

"If he is in his own room from birth it should be near enough to yours for you to hear him if he is in distress".

Parents are frequently advised against responding promptly to night-waking, and are warned of the dangers of habit-formation (Illingworth 1973).

Spock (1976) warns of the danger of the child being wakened by the parents' intercourse, e.g.:

"Another trouble is that young children may be upset by the parents' intercourse, which they misunderstand and which frightens them. Parents are apt to think there is no danger if they first make sure the child is asleep. But children's psychiatrists have found cases in which the child awakened and was much disturbed without the parents ever being aware of it".

He nevertheless minimises the harmful effects of a child's waking-up frightened at night, and finding himself alone.

In most traditional societies young infants sleep with the mother until weaned, and then begin to sleep with a sibling or other family member. Many of the immigrant mothers in the present study made remarks suggesting they did not agree with small babies being left alone, and said that they would not put their baby in its own room, even if they had one. For example:

Simon A. (S.3)

At 6 months Mrs. A. (from Ghana) reported:

"He (Simon) sleeps with us (in our bed) so if he wakes up it's because he wants to know there's someone there, so I put my hand on him and he goes back to sleep".
From 9 months onwards Mrs. A. reported Simon as sleeping in his cot, but in the parents' room. No sleep disturbances were reported except when Simon was teething.

Harjit (S.8)

Mrs. B. (a second-generation immigrant from the Punjab) had no spare bedroom, so both Harjit and his 3-year old sister slept in the parents' room. At 9 months Mrs. B. was asked whether she would put the children in their own room if she had one. Her reply was:

"Yes, I would, I'd put them both in, but it would be near mine".

At 15 months Mrs. B. reported Harjit as waking:

"about every night, but he just asks for his bottle - he's used to sleeping with a bottle in his mouth".

When asked: "Is he easy to get back to sleep?" (Question 17), she replied:

"Yes, always, I suppose because I'm right next to him. Maybe if I was in another room ...."

Throughout the course of the study babies of immigrant mothers were more likely to be sleeping in the same room as the mother, (or in one case the grandmother, from age 4 months).

The only exception was Mrs. C. (from Israel) who put Benjamin in his own room at 4 weeks.

Mrs. C. (S.18) reported moving Nkeruka in with her 2-year old brother between 6 and 9 months. All other babies of immigrant families were still sharing the mother's (or grandmother's) room at 18 months.

Although immigrant families had less rooms per head, reports suggested that it was considered natural that the baby should be with an adult in preference to siblings.
Mrs. R. (S.6) for example, who had three children, at 9 months reported Mohamed as sleeping "half the night in the cot, half the night in the bed with me - he likes to sleep with us". At subsequent interviews he was sleeping in her bed, while the 3-year old brother slept with her husband.

Although most English mothers reported taking their baby into bed with them on occasions, e.g. when sick or crying continuously, only one expressed reluctance at putting her baby into a separate room:

Mrs. K. (S.17)

"We keep saying we'll have to move her out, but I don't think I'd be able to sleep happily. I'm sure that she knows we're here".

In contrast Mrs. D., mother of Caroline (S.12) explained (at 6 months):

"She's always been in her own room. She's never been in our room. I can't bear that, I'd lie awake at night listening to her making funny noises".

From the cases reported it is not possible to conclude that night-waking was related to infant's sleeping arrangements. As already discussed, where the child shares the mother's bed it can be more easily comforted and less disturbance results for both child and parents. The result may be "habit-formation" but a happier, more secure child who, when older, will sleep contentedly alone or with siblings.
Colds

Colds were the most frequently reported and observed ailment. In only one case were reported colds associated with other health factors, i.e. Simon (S.9):

Simon's mother, Mrs. C., attributed Simon's colds to his "bad tonsils". (Simon was receiving hospital treatment for ear infections. Mrs. C. reported colds at all visits except one, but no symptoms were observed.

Two mothers reported colds on more than one occasion:

Mrs. J. (mother of Leroy, S.7) reported colds from 6 months onwards, when the family had had central heating installed. On all but one occasion minor symptoms were observed, but Leroy appeared happy and lively, and performed well on the Bayley Scales. (His overall mean scores were MDI: 124.3; PDI: 123.16).

Mrs. C. (mother of Benjamin, S.5) reported colds at all visits. There were obvious symptoms at all visits and on two occasions (12 and 15 months) Benjamin was noted as suffering from a "bad cold". However, on these two occasions he showed more interest in the Bayley test items than on other occasions when his health was better. At both 12 and 15 months Benjamin's MDI exceeded his overall mean: $x = 110.6$; 12 months: 119; 15 months: 114.

As far as motor performance is concerned, Leeron's PDI was well below the norm at all ages, and lower than his overall mean of 88.8 at both 12 and 15 months: 12 months: 80; 15 months: 77.

Skin rashes and eczema

8 mothers (42%) reported skin rashes (other than "nappy rash"). In all but 3 cases these reports were on one occasion only, and the rash had cleared up by the following visit.

1. Spock (1976) describes eczema as "a rough, red rash that comes in patches ..., caused by allergy, like hay-fever and asthma."
Three cases of eczema were reported:

**Clifford K. (S.4)**

Clifford's "rash" started during his mother's lying-in period. Mrs. K. was kept in hospital for 7 days after Clifford's birth so that she could bath him regularly "because of his rash". At this time Mrs. K. did not use the word eczema, even though her 3-year old daughter clearly suffered from it, and she reported her husband as having had it as a child. She said she thought Clifford's rash was a heat-rash.

Mrs. K. reported rashes at each further visit until 12 months, although the only signs observed by the Experimenter were "blotchy marks on baby's face, not body".

At 12 months Mrs. K. did not spontaneously mention a rash, but when questioned replied: "He seems to be getting a bit worse - he seems to be getting drier".

By 18 months Clifford had developed excessively hard, dry skin, despite his mother oiling him every day. Mrs. K. reported being advised by her G.P. to use the ointment she used for her daughter's eczema. This appeared to be ineffective and Mrs. K. was considering changing her G.P.

**Leroy (S.5)**

Mrs. J. first mentioned Leroy's rash at 3 months. She thought it might be eczema because "it's in the family". Until 9 months Mrs. J. reported the rash as intermittent: "It comes and goes. It's gone now but it'll come back next week".

There were no signs of eczema or other skin troubles until 9 months when Mrs. J. pointed out that Leroy was "losing his hair - it was the eczema". Her doctor had prescribed Betnovate ointment, but at the time Mrs. J. was using Synalar on Leroy's head. He was being bathed, and there were no signs of a skin rash.
At 1 year Mrs. J. reported that the rash had cleared up (Leroy's hair growth was by then perfectly healthy), and at 18 months, when Leroy was again observed in the bath, there were no signs of a rash.

These cases are discussed further under "Use of Clinic and G.P."

Simon C. (S.9)

At 15 months Mrs. C. reported that Simon had "eczema" in his ears, and that this was one of the reasons she had to "go back to the hospital". (Simon was being treated for ear infections). There was no sign of a rash on this occasion, nor at 18 months. Mrs. C. reported Simon as "rubbing his ears, all the time when he's tired", but "I just think that's a habit he's got into".

Other ailments reported were:

Rory (S.1)

Jaundice until 3 months (said by Hospital to be "breast-feeding jaundice").
Conjunctivitis (at 6 months)

Ibrahim (S.2)

Influenza (at 8½ months)

Benjamin (S.5)

Neonatal jaundice until second week.

Mohamed (S.6)

Measles lasting 1 week (at 8½ months)

Charlotte (S.14)

Gastric influenza for "about 1 week" (at 15 months)
Admissions to hospital

3 babies had to be admitted to hospital during the course of the study:

Ibrahim (S.2)

At 2 months for 3 days, for treatment of a hernia. The type of hernia was not known. His mother reported: "They (the hospital) said he had stretched himself".

Clifford M. (S.11)

At 3½ months for 3 days for observation after "infantile colic".

Caroline (S.12)

On three occasions:
1. At 11 months for 5 days for Virus Bronchiolitis.
2. At 14 months for 3 days for Allergic Oedema
3. At 16½ months for 2 days for Virus Bronchiolitis

Circumcisions

Three circumcisions were reported, all carried out in the home:

These were:

Ibrahim (S.2)

At 10 months, at the same time as his 2-year old brother. His uncle reported: "The first two nights they gave us a lot of trouble". His mother replied: "Not Ibrahim, not one day".

Simon A. (S.3)

At 3 months. Only one day's upset reported.

Benjamin (S.5)

At 2 weeks. Reported as "irritable and crying" for a few days.

VII. USE OF CLINIC OR G.P.

Item 23 of the HOME Inventory reads: Child is taken regularly to doctor's office or clinic for check-up and preventive health care. The Manual's guide for scoring suggests: i.e. approximately once a month up to about 8 or 9 months of age, and once every 6 months to a year thereafter.

In the present study where the HOME Inventory was not used until 6 months, mothers were credited on this item if they had visited Clinic, G.P. or hospital at least once during each 3-monthly period until 12 months, then at least once between 12 and 18 months.

On this criteria the figures for regular use of Clinic and G.P. are as follows:

Table 28: Percentage of mothers who had not visited Clinic or G.P. for preventive health care

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<th>6 months</th>
<th>9 months</th>
<th>15 months</th>
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<tr>
<td></td>
<td>16%</td>
<td>27%</td>
<td>13%</td>
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<tr>
<td></td>
<td>(3:19 cases)</td>
<td>(5:18 cases)</td>
<td>(2:15 cases)</td>
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Two mothers failed to score on this item on more than one occasion. These were Mrs.A., mother of Ibrahim (S.2.), and Mrs.C., mother of Benjamin (S.5).

Mrs. A. reported visiting her local Clinic on only one occasion, at 2½ months, and Mrs. C. at approximately 6 months. Both mothers reported either visiting or being visited by a G.P. when their child was ill.

Use of Clinic or G.P. - relationship with parity

"Experienced" mothers, i.e. those with 3 (or in Mrs. A.'s case 4) children, were among the least frequent Clinic-attenders, while most second-time mothers made as much use of Clinic or G.P. as did first-time mothers.
When classed as "experienced" (i.e. 3 or more children) or "inexperienced" (first- or second-time mothers) there was a highly significant association between regular use of Clinic or G.P. and parity. (p < .005). Frequencies were as follows:

<table>
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<tr>
<th></th>
<th>Regular attenders</th>
<th>Irregular attenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Experienced&quot; mothers</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>&quot;Inexperienced&quot; mothers</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

Using the Fisher Exact Probability Test, the probability of occurrence p< .005.

A possible explanation for this association is that the more experienced mothers may have felt that regular visits to a Clinic or G.P. were unnecessary when Baby seemed perfectly healthy, but they nevertheless called or visited a G.P. in cases of illness such as influenza, measles or a sudden attack of diarrhoea.

Time involved in visiting a Clinic or G.P. may also have been a deciding factor here. Two mothers of 3 mentioned having "too little time" as their reason for not having visited the Clinic.

Amount of help in the home varied: Mrs. A. (mother of 4) had both grandparents living at her home, as did Mrs. M. (mother of 3) who worked full-time. Mrs. C. (mother of 3) had a daily home-help. Two mothers of 3: Mrs. R. (S.6) and Mrs. O. (S.18) had no additional help and both worked part-time.

Working mothers were particularly short of time. 4 mothers (27%) resumed full-time work at approximately 6 months. Until then all had taken their baby to Clinic or G.P. regularly. After this visits became more irregular; between 6 and 12 months all babies were taken at least once, but from 9 months onwards more than 6 months elapsed without two babies: Simon A. (S.3) and Ashni (S.19) being taken to Clinic or G.P. A working mother who did manage to take her baby regularly, Mrs. U. mother of Celia (S.15) had flexible working hours and was able to take a certain amount of time off without loss of pay.

Social class was not related to regular use of Clinic or G.P. Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Middle-class</th>
<th>Working-class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>attenders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irregular</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>attenders</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although social class was not significantly related to regular use of Clinic or G.P. in this study, one mother who could afford the fee for a private visit from a G.P. when her child was ill was one of the least frequent Clinic users: Mrs.C. (S.5). Mrs.C. was classified as Social Class II (according to husband's occupation), and was thus classed as "middle class" in the statistical analysis. Mrs.A. (S.2), the other mother who rarely visited a Clinic, reported being regularly visited by a G.P. who was a friend of the family. (Mrs.A. was classified as Social Class IIIIM, and thus classed as "working class").

Use of Clinic or G.P. - differences between immigrant and indigenous mothers

Whether a mother was an immigrant or part of the indigenous population was not related to regular use of Clinic or G.P. Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Regular attenders</th>
<th>Irregular attenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>mothers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>mothers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Classification according to Registrar General's classification of husband's occupation.

Classes I - IIIM: "middle-class"; Classes IIIN - V: "working-class".
As far as immigrant mothers were concerned, regular use of Clinic or G.P. was not related to length of residence in this country, but was related to use of the English language.

Immigrant mothers who regularly visited Clinic or G.P. were either second-generation immigrants (2 cases), had been educated in English-speaking schools (3 cases), or had been living in this country since early childhood (2 cases).

Miss J. (S.7) for instance, who came from St. Lucia at the age of 3, took Leroy (her first baby) to her Clinic regularly, consulted her G.P. about his eczema, and took him to a hospital when he was ill. Her only complaint about her Clinic was the long wait to see a doctor.

Mrs. K. (S.4), whose family came from India, but who was born in Cardiff, reported regular visits to Clinic, G.P. and hospital, and at 18 months was still concerned about Clifford's weight, his diarrhoea and his eczema. At 15 months she consulted her Clinic about Clifford's "being sick", and was told to take him to her doctor. He told her:

"Don't worry, children are like that when they're teething".

At 18 months Clifford was still troubled by diarrhoea, despite medicine prescribed by the doctor, and Mrs. K. reported:

"I'm thinking of changing my doctor now - I've changed twice already. They're getting really bad - doctors. They don't want to give you advice, they don't take any notice - just give you a prescription".

Mrs. K. was born in Wales, and spoke perfect English, so language was obviously no problem in her case.

Mothers whose knowledge of English was less adequate attended their Clinic infrequently, and appeared to have little faith in the advice they received there.

Mrs. R. (S.6) mother of Mohamed, a third baby, consulted her Clinic about Mohamed's rash at 3 months. She reported:

"The Clinic told me to go to the hospital. The doctor there gave me cream, but when I stopped using it it came back. I don't like to go to the Clinic - I can't go with two children. I'm fed up because of J. (her 2½-year old son who had been ill since birth)".
She explained that neither Clinic nor hospital had given her helpful advice: "that's why I don't like to go".

At 18 months when discussing Mohamed's health, Mrs. R. said:

"I've got troubles - vomiting - all of my children. You know, all of my children like that. That's why I don't tell the doctor again".

At both 15 and 18 months Mrs. R. reported not having visited the Clinic for some time (last visit at 12 months), and that: "I'll go when they send me a letter".

Mrs. A. (S.2) was another mother who reported:

"When I go (to the Clinic) the doctor isn't there. They said they'd give me an appointment, but they didn't. I'm waiting for an appointment".

At a later visit she reported being visited by a health visitor:

"she said she'd send me an appointment, but she never did".

Although no English mothers reported misunderstandings of this kind, little mention was made of contact with Welfare Clinics, other than reporting whether or not Baby had been weighed, or received injections. One mother reported a hearing-test at 9 months, two reported developmental tests at 12 months. Mothers usually received a letter asking them to attend on these occasions, though one mother reported being telephoned.

At the start of this study it was hoped that interviews would provide more information on mothers' attitudes towards Welfare Clinics. However, even direct questioning elicited only minimal information (except in the cases already discussed). As no two mothers reported visiting the same Clinic, information could not be obtained from the Clinics themselves.

Of interest here is the advice given in "The Baby Book":

"Remember that the baby clinics are meant to keep well babies from getting ill. They are not meant for ill babies who must be treated by the family doctor, or if he so wishes, by a hospital specialist".
While such caution is designed to deter the over-anxious mother from "running to the Clinic for every little thing", it is also likely to dissuade those mothers who may have good reason to worry about their child's health.

It is not clear in all the above cases whether or not mothers were justifiably concerned about their child's health, nor whether their adverse reports of advice given by Clinic and G.P. were wholly accurate. Nevertheless, lack of communication between mothers and health authorities clearly exists and is to be regretted. This is discussed in more detail under "Special problems of immigrant mothers".
Special problems of immigrant mothers (See also Appendix I.)

Most immigrant families in Britain have to cope with the problems of housing, language and separation from their own country. The first problem is particularly acute in East London, the area of study.

As far as maternity and child-welfare are concerned, our health services are designed to ensure the safest and most efficient antenatal, delivery and postnatal care for all mothers. The failure to reach all women is well-documented, with working-class women and those who speak little or no English being particularly disadvantaged.

Immigrant mothers, who in their own country may have had female relatives to turn to for advice are less likely to be able to do so here. If they should have this opportunity they are likely to find themselves faced with indecision between traditional ideas, and what they have been told at the hospital or clinic. In all cases the mother who is living away from her own culture has her confidence lowered, and this has been shown to affect both her relationship with her child, and the child’s subsequent development.

Although there is ample commercial literature available on pregnancy and child-rearing, all of this is in English, written by Western psychologists or paediatricians with the Western mother in mind. As far as literature distributed at health clinics is concerned, information available in the major immigrant languages is both limited and dated.

Table 13 gives details of immigrant mothers in the present study relevant to their use of Clinic and G.P.

In this study mothers with least knowledge of the English language, Mrs. A. (S.2), Mrs. R. (S.6) and Mrs. M. (S.19) were asked during interviews whether they had ever been offered, or had ever seen leaflets dealing with child-care in their own language (in two cases Urdu, and in one case Punjabi). None of these mothers had knowledge of such leaflets.

Mrs. A. (S.2) reported:

"There is someone (a doctor) who speaks Urdu if I don’t understand".
Table 33:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Country of origin</th>
<th>Length of stay in this country</th>
<th>Education and/or occupation</th>
<th>No. of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.2</td>
<td>Pakistan</td>
<td>approx. 11 yrs.</td>
<td>3 - 4 yrs. schooling</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No occupation</td>
<td></td>
</tr>
<tr>
<td>S.3</td>
<td>Ghana</td>
<td>3 yrs.</td>
<td>Polytechnic until age 18; factory worker since</td>
<td>1</td>
</tr>
<tr>
<td>S.4</td>
<td>India (Punjab)</td>
<td>since birth</td>
<td>Comprehensive school until age 17; no occupation</td>
<td>2</td>
</tr>
<tr>
<td>S.5</td>
<td>Israel</td>
<td>6 yrs.</td>
<td>Teacher/medical secretary (in own country)</td>
<td>3</td>
</tr>
<tr>
<td>S.6</td>
<td>Bangladesh</td>
<td>4 yrs.</td>
<td>Nursery-school teacher (in own country)</td>
<td>3</td>
</tr>
<tr>
<td>S.7</td>
<td>St. Lucia</td>
<td>since birth</td>
<td>Comprehensive school until age 15; no occupation</td>
<td>1</td>
</tr>
<tr>
<td>S.8</td>
<td>India (Punjab)</td>
<td>since birth</td>
<td>Comprehensive school until age 16; no occupation</td>
<td>2</td>
</tr>
<tr>
<td>S.10</td>
<td>Nigeria (West)</td>
<td>5 years</td>
<td>midwife</td>
<td>2</td>
</tr>
<tr>
<td>S.16</td>
<td>Nigeria (East)</td>
<td>7 years</td>
<td>midwife</td>
<td>1</td>
</tr>
<tr>
<td>S.18</td>
<td>Trinidad</td>
<td>20 years</td>
<td>legal executive</td>
<td>2</td>
</tr>
<tr>
<td>S.19</td>
<td>India (Punjab)</td>
<td>11 years</td>
<td>3 - 4 yrs. schooling now works as machinist</td>
<td>3</td>
</tr>
</tbody>
</table>
As far as leaflets were concerned, her brother, who was usually present during interviews and spoke fluent English, replied: "They only give them to those who don't understand".

Mrs. K. (S.4) and Mrs. B. (S.8) who both spoke perfect English and were both regular clinic attenders were also asked whether they had ever seen leaflets in Punjabi, their language. Neither mother could recall having done so, although they felt these might be available.

While it is not possible to provide speakers of each major immigrant language in Welfare Clinics, there is no reason why an adequate supply of literature on child welfare should not be on display, nor the relevant leaflets actually given to mothers whose English is not perfect.

Although it was not possible to visit clinics in the study area, a visit to a local welfare clinic produced a very limited and dated selection of literature, and the comment: "We're out of breast-feeding leaflets" from the Clinic Doctor.

It is hoped that the leaflets and posters now being produced by the Health Education Council will be widely distributed, and reach the mothers for whom they are designed.
Chapter 5: 
SOCIALIZATION

Crying
Discipline
Behaviour problems
Chapter 5: SOCIALIZATION

INTRODUCTION

I. CRYING

How a mother interprets her baby's crying and her response to it is a crucial factor in the growth of the mother-infant relationship and the infant's future social development. Both maternal differences and differences in individual babies are of relevance here.

II. DISCIPLINE AND BEHAVIOUR PROBLEMS

Closely related to a mother's response to her child's crying are her attitudes towards controlling his behaviour, i.e. the extent of her permissiveness or restrictiveness towards thumb-sucking, genital and body play, and methods used to control or punish what she considers undesirable behaviour.

1. Discipline
2. Thumb-sucking
3. Genital and body play

III. TOILET-TRAINING

In our culture toilet-training is often the earliest systematic form of social training, and is frequently a source of conflict between mother and child. Attitudes towards its management have been associated with a variety of factors.
I. Crying

The infant's first cry occurs at the moment of birth, or very soon afterwards. It is therefore greeted by the mother as a sign that her infant is alive and healthy. After the first cry, however, the infant's cries are no longer greeted with such enthusiasm. The mother regards them as a sign that her infant is hungry or uncomfortable, and therefore needs her attention. Thus crying is seen to be the infant's first signal behaviour. Bowlby (1958) defined it as one of five attachment behaviours which serve to bring mother and baby into proximity with each other. In the most extensive study of the development of crying and its functional significance, Wolff (1963) showed that it was possible to distinguish different types of cry. By means of spectrogram analysis he identified three main cry patterns:

1. The hunger cry - so called because it is usually heard while the baby is hungry (Lynip 1951; Karelitz, Karelitz & Rosenfeld 1963; Wasz-Höckert, Vuorenski, Volanne & Michelson 1962). The term does not imply a causal relation between hunger and a particular pattern of crying, it is simply a "basic" pattern to which the infant sooner or later reverts from other crying. It is not surprising, therefore, that hunger is the first thing a mother thinks of when her baby cries.

A typical sequence consists of the cry proper (mean duration 0.6 per sec.), followed by a brief silence (0.2 secs.), a short inspiratory whistle (0.1 - 0.2 secs.) of higher fundamental frequency than the cry proper, and another brief pause before the next cry proper begins. Unless the infant is over-excited, the interval between the cry proper and the inspiration is shorter than the interval between inspiration and the next cry, so that the natural unit is heard as a cry followed by an inspiration, followed by a cry.
Wolff charted the duration of the separate components (cry, rest, inspirations, rest, in order to show the stability of the rhythm in the neonatal period. According to Wolff, such a temporal sequence is observable within ¼ hour of birth and remains constant until the end of the second month.

2. the "mad" or angry cry - this is a variation of the basic pattern; the temporal sequence of the two types is the same, but the excess air forced through the vocal cords when the baby is "mad" creates turbulence or paraphonation (Truby, 1962), which appears on the spectrogram as a dense black distortion of frequency bands.

3. the "pain" cry - the features which distinguish the pain cry from other patterns are:

   (1) a sudden onset of loud crying without preliminary warning;
   (2) the initial long cry, and
   (3) the extended period of breath-holding.

Causes of crying

Wolff showed that while crying during the first week is most commonly caused by hunger, it is also caused by a wide range of physical and physiological conditions. These include cold, wet or soiled nappies, spontaneous jerks and twitches, being undressed, pain, over-stimulation, mis-timing and lack of kinaesthetic or contact comfort.

As far as hunger is concerned, feeding, whether by breast or bottle, inevitably involves some form of contact between mother and infant, even in the extreme case where babies are fed by "propping", so that body contact is restricted to picking them up and perhaps burping them. To rule out the possibility that crying on the third or fourth day was merely a conditioned response to being picked up repeatedly, Wolff asked nursery-nurses to pick up the babies shortly
before their feeding time, and to hold them for as long as it would take to feed them. Many babies stopped crying as soon as they were picked up, others remained quiet as long as they were held. But the majority of those who had not fallen asleep while being held started to cry (or continued to cry) as soon as they were returned to their cribs. The nurses were instructed to feed the babies later by "propping" them, thus minimizing body contact; most of the babies fell asleep during, or within 20 minutes of the completion of feeding and then remained asleep. From these findings Wolff concluded that being fed rather than being held was the intervention which terminated crying.

Wolff (1966) also excluded the possibility that termination of crying when infants are fed is not simply the result of satisfying a need to suck, or for oral stimulation.

The second most common cause of infant crying cited by mothers is that the baby cries because its nappy is wet or soiled. Wolff tested this by asking nurses to pick up all babies who were crying shortly after a feed, then to change them, but to put back the wet nappy on half of the babies, and on the other half, a clean dry one. Babies who had had their wet nappies replaced stopped crying as often after the procedure as those who had been given clean nappies, and settled down happily when put to bed. Wolff found no statistically significant differences in amount of crying in the two groups, thus demonstrating that it is being picked up which terminates crying in these circumstances.

Wolff found that most mothers were able to distinguish between the "hunger" cry, the "mad" cry and the "pain" cry. Wasz-Höckert et al. (1969) identified four basic cry types, also by means of spectrographic analysis: the "pain" cry, "hunger" cry, "pleasure" cry and "birth" cry. They asked different groups of women to identify recordings of the various cries. Not surprisingly, midwives and nurses identified the "birth" cry more quickly than either primiparous or multiparous mothers, while primiparous mothers were slower than mothers in identifying all four types of cry. Like Wolff, however, Wasz-Höckert et al. found that primiparous mothers were soon able to recognize the different cries and that little experience was necessary.
The suggestion that infant's cries contain different messages which can soon be recognized by the mother implies that the cry acts as a signal. There is considerable evidence in favour of this hypothesis. Moss & Robson (1969) for instance, observed 54 mother-infant pairs in their homes during two six-hour periods, and found when the infants were one month, an average of 21.3 crying episodes which preceded maternal contact (that is, crying brought the mother to her baby's side), compared with only 4.1 crying episodes which followed contact with the mother. At 3 months the average had decreased to 11.0 and 2.5. These figures show that crying had significantly more signal value than value as a response (p < .001).

Bell & Ainsworth's (1972) study of the development of crying in the first year of life provided further evidence for the "signal" hypothesis. They observed 26 mother-infant pairs in their homes for four-hour periods at three-weekly intervals throughout the first year of life, so that the infants were seen on an average four times in each quarter of the first year, for a total of 16 hours per quarter. One of the purposes of the study was to explore specifically the relationship between maternal responsiveness to crying and changes in the frequency and duration of crying throughout the year.

They found that maternal responsiveness was the main factor accounting for individual differences in crying. During the first three months for instance, crying for no apparent reason usually brings mother into contact. If a mother frequently ignores her baby's crying, it becomes more persistent after three months of age.

Opposed to the idea of crying as a signal behaviour is Richards (1974). Although he accepts that three types of cry can be distinguished, he feels the difference may be simply one of intensity, and points out that if the "hunger" cry is ignored, it changes to the "mad" cry. Furthermore, while mothers may be able to distinguish their infant's cries, this does not necessarily imply that they respond to them differentially.
As Sander (1969) has demonstrated, it is not the latency of response which is significant in terminating the infant's cry, but rather the quality of the intervention. In this study babies who had spent their first 10 days in a nursery were transferred to one of two nurses on an individual basis for the next 16 days before they were fostered. Those with Nurse B all showed a drop in crying after day 10, while those with Nurse A all continued to cry at the same rate. Total caretaking time was the same for both the nurses, but Nurse B's interventions were each longer on average. Evidence of individual differences in the infants was also found, since some babies were cared for by Nurse A or B right from birth, but on the tenth day were changed from one nurse to the other. None of the infants showed any marked changes in crying rates on day 10. It is clear from this (and other studies) that not all infants are equally responsive to soothing.

Evidence from Richards' studies in Cambridge suggests that crying in the first 10 days does not necessarily result in the mother feeding her baby. A four-hourly feeding-schedule is recommended by local G.P.'s and health visitors, so that mothers tend not to respond to their infant's cry with another feed unless at least three hours has elapsed since it was last fed (Bernal 1972).

Richards feels that rather than crying acting as a signal to the mother, the infant learns how little effect his crying does have on his caretakers. His Cambridge sample, however, can be considered a highly specific one. It was predominantly middle-class, and 50% of Cambridge births are home births. As Richards himself points out, the social context also affects the infant's crying, and it is to be expected that babies born in hospital are likely to cry more in the first days than are babies born at home. (The findings of Sander et. al.: Sander, Stechler, Burns & Julia, 1970, support this hypothesis).
It may be that the irritable infant initiates interaction with his mother more frequently than a placid baby, and to this extent the newborn may be regarded, at least in part, as the determiner of how much attention he receives. This is the view held by Korner (1971) who showed that babies differ significantly in attention-provoking behaviour via crying. She monitored the sleeping and waking states of 32 healthy, full-term two to three-day old, bottle-fed neonates, during four half-hour periods during feeding cycles. She recorded frequency and duration of crying, and found highly significant differences in the frequency and length of crying (p < .01 frequency and p < .05 length).

As far as sex differences in crying are concerned, although boys are consistently reported to be more irritable than girls (Moss, 1967, for instance, found significant sex differences in "fussing"), no such differences have been found in crying immediately after birth (Karelitz, Karelitz & Rosenfeld, 1963, Korner & Grobstein, 1967).

Richards & Bernal (1971) found from their comparison of breast- and bottle-fed babies that the breast-fed infants showed a more extreme 24-hour pattern of restlessness and higher crying scores. Since breast-fed babies are, in general, fed at shorter intervals than bottle-fed babies, it is possible that the increased contact between mother and infant patterns the baby to become more demanding. Richards & Bernal's findings that on the eighth day after birth the breast-fed babies react more quickly and with more crying to the removal of the teat, appears to support this hypothesis.

The consistency of the mother's response to her infant's cry and the consistency in the latency of response are both important forms of feedback to the crying infant. As Thoman (1974) has suggested, whether the mother's response is consistent or not may be expected to crucially affect the development of communication between mother and infant. How confident the mother feels in interpreting her baby's cries, and how confident she feels in being able to soothe him or her determines the mother's consistency of response.
How a mother responds to crying is felt by Thoman to be one of the vital factors in the growth of mother-infant synchrony. In the present study mothers were asked a number of questions about their infant's crying and their response to it. These were:

6 weeks: Appendices B/C Questions 24 - 34
3 months: Appendix D " 10 - 13
6 " " E " 13 - 16
9 " " F " 19 - 21
12 " " G " 21 - 25
15 " " H " 25 - 29
18 " " I " 25 - 29

Figures 18(a-s) show approximate amounts of crying for each infant as reported at each interview from 6 weeks to 18 months. As these graphs show, there was considerable variation in individual crying patterns from birth to 18 months.

Crying in the first 6 months

High levels of crying

57% (11:19) of mothers' reports suggested high levels of crying in the first 6 months. For example:

Clifford K. (S.4)

"When he starts to cry he cries a lot. He does cry a lot. If there's someone there or if he hears a noise. I think he's a light sleeper". (6 weeks)

"Yes, he cries more than before, but it's only if he wants his nappy changed". (3 months)

"More, a lot more. I don't really get anything done. I just can't listen to him crying for long". (6 months)

Benjamin (S.5)

"Yes. In the evening from now (4 o'clock) until he's going to sleep - 6 or 7 - then in the night he wakes up twice. ... for 3 hours - he starts and stops, if you pick him up he quiets, if you put him down he cries". (6 weeks)

1. Crying as a reaction to unfamiliar persons or events is not included here. This is discussed separately in Chapter 6 - "Attachment".
Patterns of crying from 6wks. - 18 mths. as reported by Mother (Males)

Fig. 18(a)

Fig. 18(b)

Fig. 18(c)

Fig. 18(d)
Patterns of crying from 6 wks. - 18 mths. as reported by Mother (Males) cont'd.

Fig. 18(e)  
S.5  
Benjamin

Fig. 18(f)  
S.6  
Mohamed

Fig. 18(g)  
S.7  
Leroy

Fig. 18(h)  
S.8  
Harjit
Patterns of crying from 6 wks. - 18 mths. as reported by Mother. (Males) cont'd.

Fig. 18(i)

"much"

"some"

"none"

S.9
Simon C.

Fig. 18(j)

"much"

"some"

"none"

S.10
Uchenna

Fig. 18(k)

"much"

"some"

"none"

S.11
Clifford M

Fig. 18(l)

"much"

"some"

"none"

S.19
Ashni
Patterns of crying from 6 wks. - 18 mths. as reported by Mother (Females)

Fig. 18(m)

S.12
Caroline

Fig. 18(n)

S.13
Ruth

Fig. 18(o)

S.14
Charlotte

Fig. 18(p)

S.15
Celia
Patterns of crying from 6 wks. - 18 mths. as reported by Mother (Females) contd.

Fig. 18(q)

S.16
Sandra

Fig. 18(r)

S.17
Hannah

Fig. 18(s)

S.18
Nkeruka
Benjamin had been jaundiced for the first week, then at two weeks had been circumcised. His mother, Mrs. C., reported him as being "irritable and crying" for a few days after the circumcision. It is likely that the effects of this and the jaundice may have persisted until 6 weeks +. (At 3 months Mrs. C. reported: "As he grows he's getting better, he doesn't cry a lot".1.

Four other mothers reported crying periods in the late afternoon or early evening. One attributed them to "stomach-ache", but also connected them with Father's arrival home. Two others connected them with Father's presence. For example:

Charlotte (S.14)
"In the evenings she tends to (cry) about 7 - 9. She cries a lot then. I think she gets stomach-ache. She's crafty - she cries to be picked up - by her Dad".2.

Celia (S.15)
"Like last night from about 5 o'clock she was moaning and groaning. Pete put her in the chair and rocked her, and she loved that".

Caroline (S.12)
"She's getting a bit knowing now. Sometimes she stops (crying) when you pick her up, especially in the evenings when Bob's home".

Two mothers attributed their baby's crying to colic: Mrs.M. (S.11) - Clifford was hospitalized at 3½ months for "infantile colic", and Mrs.B. (S.13) who reported at 3 months:
"She's been sort of colicky on and off. She'd cry for the first half hour. Now it seems to be late afternoon. ... I'd given her some anti-spasmodic which my doctor prescribed".

1. One other baby was circumcised before the age of 3 months: Simon A. (S.4) at 2½ months. His mother reported one day's upset after the circumcision, and crying only when hungry during the first 3 months.

2. In this subject's case testing had to be completed on a second visit because of her crying-spells.
Minimal crying

42% (8:19) of mothers reported only minimal crying in the early months. For example:

Leroy (S.7)

"He doesn't really cry - he's a good baby. He doesn't cry when he's hungry. He doesn't really cry". (6 weeks)

"He cries less. He's good now, he hardly cries, only if he's hungry, or if something's wrong". (3 months)

Harjit (S.8)

"Natural crying, just when he wants his milk or when he wants winding, or even if he wants to be put to sleep. (6 weeks)

"I think he's always been the same. He only cries for a reason - either he needs winding or he needs a feed. I don't think he even cries about his nappy at the moment". (3 months)

Sex differences

A higher proportion (66%, 8:12) of boy babies were reported as having high levels of crying in the first 6 months, compared with only 42% (3:7) of girl babies. These figures do not differ significantly.

Type of feeding and early crying

A higher proportion of breast-fed babies (43%, 7:16) were reported as having high levels of crying in the first 6 months, compared to 33% (1:3) of bottle-feeders. Again, these figures do not differ significantly.

Crying from 6 - 12 months

Increased crying

69% (11:16) of mothers reported an increase in their infant's crying some time between 6 and 12 months.

5 mothers mentioned teething in connection with crying at these ages, but in only one case was teething given as the cause of crying (S.5, Benjamin - "Just now this week he starts to cry because he's teething").
6 mothers interpreted their infant's cries as a need for attention, or wanting to be picked up. For example:

Leroy (S.7)

"He cries a lot ... that's because he's spoiled, he likes to be picked up all the time".

Celia (S.15)

"She does cry, usually if she wants attention".

Mrs. K. (S.16), who reported little crying until 3 months, at 6 months replied: "She cries more now through temper", but afterwards qualified her remark: "perhaps not more, but harder and louder".

No other mother reported her baby's crying as being due to temper until 9 months (Mrs. G., S.1).

Little crying was reported until 9 months by Mrs. A. (S.2), who then described Ibrahim as:

"crying if I don't give him what he wants"
or:

"if he's sitting in the push-chair then he's crying 'go outside'".

Decline in crying

37% (6:16) of mothers reported a decline in crying between 9 and 12 months. Mrs. G. (S.1) for example: at both 6 and 9 months Mrs. G. reported increased levels of crying:

"He (Rory) cries more now than he ever did. I don't know whether it's because he likes attention, or because of his teeth, but he does more than when he was younger". (6 months)

"More! He's got the worst temper I've ever seen in a child - screaming! He just screams and screams non-stop". (9 months)

but at 12 months:

"If he cries he cries for a reason - he wants feeding or he wants his milk. He just wants to be held or comforted. You saw his crying-spell this morning. It's unusual for him to cry for no reason".

1. According to Illingworth (1973), the usual age for temper tantrums is 15mths - 3 yrs.+. "A determined child may give displays of temper long before that age, from 6 mths. onwards, but typical tantrums hardly occur before the first birthday." (p.308)
Mrs. P. (5.12)

"Much less. In fact she (Caroline) hardly cries at all now. She has a tiny little cry before she goes to sleep and she'll cry if her nappy's dirty, and that's all". (9 months)

Mrs. K. (S.14)

"She (Charlotte) very rarely cries now at all. I don't think I've heard her crying in the last couple of weeks - she fell over and hit her head once, that's all". (9 months)

**Crying between 12 and 18 months**

At the 12-, 15- and 18-month interviews questions concerning crying were included under "Behaviour Problems". (See Appendices G, H and I).

**Temper tantrums**

73% (11:15) of mothers reported "tempers" or tantrums between 12 and 18 months, but in only three cases were crying spells or an increase in crying also reported. (One mother, Mrs. A., S.3), reported an increase in crying between 12 and 15 months, but no temper tantrums were reported).

Temper tantrums were reported both by mothers whose infants had been "crying" babies, and those who had reported only minimal crying up until 12 months. For example, Rory (S.1), whose crying had increased between 6 and 9 months, then declined between 12 and 15 months: at 18 months his mother reported that he did not cry much in general, but:

"He's got a temper on him which he never had before, and he screams - he just screams and screams".

Mrs. B. (S.8), who reported only "natural" crying until 12 months, at 15 months reported:

"No, he (Harjit) isn't the crying type of baby".

She described his temper tantrums:

"He falls over on the floor - bumps his head on the floor. He doesn't really scream and kick, he just goes quiet and falls on the floor". 
At 18 months Mrs. B. replied similarly:

"No, not much, he isn't a crying baby".

On this occasion Harjit was observed "throwing a tantrum" (squealing, crying and stamping his feet) when his sister and two older cousins left the room to play. His mother reported:

"It's not very often, but when he does, that's what he does - falls on the floor, or lets himself go. When he can't get his own way, that's what he does".

Assertive behaviour was observed in all but three infants (81%) between 12 and 18 months (13:16). This ranged from isolated incidents such as verbal protest or pretend crying on removal of test objects, to extreme negativistic behaviour, including screaming, throwing and hitting, so that testing was difficult.

In six cases actual tantrums were observed. For example:

Ibrahim (S.2) at 15 months
cries and stamps feet in squabbles over toys with older brother

Clifford K. (S.4) at 15 months
bangs head on settee, knocks cup out of sister's hand

Throughout the course of the study Mrs. K. reported high levels of crying, and at 15 months reported:

"Temper tantrums? Oh yes, all the time, every time he doesn't get his own way. Like the other day he wanted to get into the fridge and throw everything out".

She described him as "difficult, very difficult", and at 18 months:

"He's got a very bad temper. He'll cry and cry and cry, and he'll go to his sister. If he doesn't want to cry he'll bang his head,. If you tell him to stop he'll do it again. If you take no notice he'll just go quiet".

On this occasion she described Clifford as difficult, but "not as difficult as some babies, but he is difficult".

1. According to Illingworth (1973), p.323, head-banging "occurs particularly in the child aged 7-12 months when put to bed ... It may be a manifestation of insecurity or an attention-seeking mechanism .... It is a relatively harmless pursuit which usually stops spontaneously between the age of 2 and 3 years, and no treatment is either advisable or necessary".
In contrast Mrs. A., Ibrahim's mother, described him as: "very easy" (in response to Question 42:), but reported happily:

"He's very naughty: he fights with his sisters, he smacks his sisters with the shoes".

During this visit Ibrahim's squabbles with his three-year old brother ended in tantrums on his part. Only on one occasion did his mother (or uncle, who was also present) reprimand the children, and Mrs. A.'s response to Ibrahim's crying was to rock him between her legs.

Although Mrs. A. has four children, her parents and brother share the household and the child-rearing activities. Clifford's mother, Mrs. K., is alone with her two children all day, and receives little help from her husband (according to her reports) when he is home.

Non-assertive infants

The three infants who showed no evidence of assertive behaviour were those who presented as excessively passive on all or most occasions. These were:

**Simon A. (S.3):** who showed no evidence of effort or attention on the Bayley Scales, was overweight and not walking at 15 months.

**Benjamin (S.5):** not walking at 18 months; no evidence of reaching or goal-oriented behaviour.

**Caroline (S.12):** excessively passive until 12 months; not walking until 15 months +, but MDI at 15 and 18 months: 132. At 15 months: requests (verbally) removed test objects and points to bag during remainder of test, but no attempt to reach them. At 18 months: asks for removed test objects, approaches bag of toys but no attempt to touch them.
The most severe tantrum (screaming, throwing and hitting-out) was observed in Sandra (S.16) at 18 months. This behaviour persisted throughout the course of testing, but both before and after, Sandra asked to be picked up by the Experimenter, and smiling alternated with tantrums.

Sandra had shown signs of over-excited behaviour (e.g. banging, throwing and squealing) during testing already at 15 months, but no temper tantrums were reported. At 18 months her mother's reports suggested that Sandra's behaviour was not unusual, but:

"She gets over them quickly".

Her reported method of control was:

"I don't shout at her, because she .... if you tell her 'good girl' she likes it".

She then demonstrated: "Clap hands for Sandra, she's a good girl", to which Sandra responded with smiles.

At 15 and 18 months Mrs. N. reported Sandra as:

"I would say so (easy)", and attributed her naughtiness to the restricted living space (a two-person flat without garden or balcony), and at 18 months:

"She's easy considering she's still a baby".

Temper tantrums were observed at 12, 15 and 18 months in Simon C. (S.9). At all visits up to 12 months Mrs. C. had reported Simon as "difficult", "always crying", and "really miserable".

At 12 months she reported:

"Very! (difficult) With K. (his sister) at this age I didn't do anything - but with him you've got to pick him up all the time",

and replied to Question 21:

"Yes, he's got a really bad temper. If he can't get his own way he just screams".
At 15 months:

"He's got a temper - not tantrums, fits! He goes mad. He starts banging himself, hitting himself on the furniture, really goes mad",

and replied with a very firm "yes" when asked whether Simon was still a difficult baby.

At 18 months Mrs. C. reported Simon's tempers as "worse", and that he was still "difficult".

Despite Simon's negativistic behaviour (moody and whining behaviour at 12 months and 18 months, and tantrums and pretend crying at 15 months) Simon scored well above the norm on the Bayley Scales on all occasions. His case is discussed in more detail under "Attachment", p.305.

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Ashni (S.19)

Prolonged crying spells and excessively temperamental behaviour were observed in Ashni from 9 months onwards. (At the 4-month and 6-month visits crying was minimal).

At 6 weeks Ashni's mother reported that his crying had started on their return from hospital, that he screamed when hungry or upset, but quietened when picked up. When asked whether she thought he cried more or less than his two older brothers had as babies, she replied "the same", and at 9 months described him as "easy, compared with the others".

At 12 months she reported him as "often" having temper tantrums and crying spells. From 9 months onwards it was difficult to test Ashni because of his temperamental behaviour, and at 15, 16.5 and 18 months testing was only possible on a second visit, and then only after initial crying and inhibition.

From 12 months on Ashni was noted as "excessively clinging". His temperamental behaviour was clearly exacerbated by the presence of a stranger (the Experimenter). (This factor is discussed in more detail under "Attachment", p.307.)
Although Mrs. M. (Ashni's mother) never reported him as "difficult", nor reported worry about his crying, at 18 months her husband was present at the interview, and made the following comments on his crying:

"He doesn't like anyone - he likes only family members, I think. He always starts crying when he sees different people".

"When he wants something he'll cry a lot - he must have it. I think he just finds an excuse to cry".

To which Mrs. M. added:

"Sometimes, not all the time".

Mrs. M. works full-time, so that Ashni's primary caretaker is his grandmother. Although during interviews Mrs. M. always responded to Ashni's crying by picking him up, rocking and vocalizing to him, on the occasions when her mother-in-law was present, she would pass Ashni to her, and it was Grandmother who appeared to be more successful in comforting him.

Mother's perception of crying

A mother's perception of her baby's crying is not only affected by its frequency and intensity, but also by her exposure to it. A mother who is only with her child in the evenings may be more tolerant of crying spells or temper tantrums than one who has to cope with these all day. Similarly, the mother who can put the child in another room to escape his cries may be perceiving crying as less of a problem than the mother who is in constant contact with her child.

Four mothers, all of whom reported "picking-up" as their usual response to crying, either reported or were observed to leave their baby in another room in an endeavour to ignore its cries. For example:

Mrs. G. (S.l)

"I think he (Rory, a second baby) cries more now, because in hospital he was next to me all the time, so that I could pick him up. Now he cries if I'm not here, if I'm downstairs doing the housework". (6 weeks)
Although Mrs. G. reported "picking-up" as her response to crying at both 6 and 9 months, she reported Rory as crying "more than he ever did", and at 9 months reported: "I pick him up, if I'm not busy".

At 12 months she reported:

"you saw his crying spell this morning. It's unusual for him to cry for no reason".

On this occasion Rory could be heard crying upstairs for some 20 minutes before his mother brought him down, by which time it was a full-blown crying spell.

At 3 months Mrs. G. reported:

"The Clinic said I should put him in a room by himself for half an hour, because I told them I picked him up every time he cries. I said I don't mind as long as I've nothing else to do, I might as well be picking him up".

Mrs. C. (S.9)

At 3 months Mrs. C. reported Simon, her second baby, as:

"always crying, but if you pick him up he stops. I just leave him - I'm not going to pick him up all the time",

and at 9 months she reported his crying as:

"more penetrating now. He grizzles more than anything. He just grizzles and moans. He's still a misery".

Her response to Question 20 was:

"No, it gets on my nerves, but I wouldn't say it's a problem, I just shut the door on him now".

Mrs. D. (S.12)

At 6 weeks Mrs. D. reported Caroline, her second baby, as not crying very much:

"She doesn't cry what I call abnormally. She cries when she's hungry or got a pain".

Her reported soothing method was:

"Well, she usually cries because she's hungry, so I feed her. She's getting a bit knowing now, sometimes she stops when you pick her up, especially in the evenings when Bob's home".
Mrs. D. added:

"She cried for about one hour one night. We got so fed up we stuck her in the cot and left her to get on with it".

When asked whether the crying worried her (Question 27), Mrs. D. replied:

"It doesn't worry me when she cries, but I wouldn't like it if she cried a lot. It worries me more as a noise factor, I wouldn't keep thinking 'whatever's she crying for?' I think if she cried for several hours I'd worry that something was wrong".

By 3 months Mrs. D. reported Caroline as crying less and added:

"All babies cry a little bit. It's their way of expressing their feelings".

On this occasion Caroline was heard crying from upstairs for some 15 minutes before Mrs. D. brought her down.

At 6 months Mrs. D. reported that Caroline's crying:

"varies from day to day. She tends not to cry during the day, but in the evenings",

and felt that teething was exacerbating it at that time.

From 9 months onwards only minimal crying was reported. The only crying or other temperamental behaviour observed was at 18 months in response to a fall.

Mrs. U. (S.15)

At 6 weeks, Celia, Mrs. U.'s first baby, was crying from another room when the Experimenter arrived.

Mrs. U. explained:

"She's crying now, but it's mostly if anyone comes. I don't give her a dummy. I suppose that's another reason she's crying".

Although Mrs. U. reported that Celia was crying less than in hospital (she was born by C.S.), and that the crying was less than she expected, when her attempts to comfort her during the course of the interview were unsuccessful, Mrs. U.'s reaction was:

"I'll put her in her cot, because I can't hear her crying. I'm awful, but you've got to do it sometimes".
Although Mrs. U. reported slightly more crying up until 6 months, but a decline between 9 and 12 months, at 15 months she reported:

"I think she cries more than she ever did. She seems to cry when she wakes up in the morning. It could be because we were away, and she was in our room".

When asked how she dealt with Celia's temper, Mrs. U. replied:

"Just let her cry - sometimes she sobs her heart out".

**Why does Baby cry?**

At 6 weeks mothers were asked:

"Are you getting to know his cries?" (Question 32)

78% (15:19) of mothers' replies suggested that they usually did know why their baby was crying. This was often made clear in their reply to Question 24: Does he cry very much?

A typical reply to Question 24 was:

"Natural crying, just when he wants his milk, or when he wants winding, or even if he wants to be put to sleep". (Mrs. B., S.8).

and to Question 32:

"She's normally either wet, hungry or wants to be held - I think you can tell".

Mothers of first babies reported knowing why their baby was crying as often as did more experienced mothers.

All four mothers who gave less confident replies to this question were mothers of two or more children. For example:

Mrs. K. (S.4) mother of Clifford, her second baby, replied to Question 32:

"Sometimes I do (know). I think perhaps he's hungry again. As soon as I pick him up, put him on my shoulder he's looking for something to suck. But there are times he just wants to suck - that makes him go to sleep".

Mrs. C. (S.5) mother of Benjamin, her third baby, replied to Question 32:

"He want that I pick him up, maybe".
but when comparing her son with her other two children (both girls) she reported:

"Sometimes it's very bad. I'm not sure why he's crying, maybe because he wants to bring up his wind. You see now I've picked him up and he's still crying. I don't know what he wants".

Mrs. C. (S.9)

mother of Simon, her second baby, reported Simon's longest crying period as:

"Monday he cried the whole day until about 9 o'clock at night. I couldn't do anything with him",

and added:

"I asked at the Clinic that day he cried all day, and they said it must be one of his off-days".

Her reply to Question 32 was: "I can tell if it's from pain".

Mrs. B. (S.17)

mother of Ruth, her second baby, replied to Question 32:

"To an extent - I know when she's mad, I can tell when it's pain, and I can tell when it's anger, just basic feelings. I'm not so sure I can tell whether she's wound up".

Of these four mothers two (Mrs. K., S.4 and Mrs. C., S.9) reported high levels of crying throughout the course of the study, and temper tantrums from 9 months (these were also observed), while for Mrs. C. (S.5) and Mrs. B. (S.13) crying no longer appeared to be a problem after approximately 6 months.

Mother's response to crying

Although all mothers reported "picking-up" as their usual response to crying in the first three months, observation and subsequent remarks suggest that this may not always have been as prompt as reported. Four cases have already been discussed in detail.
Replies to Question 26: How long do you let him cry for? ranged from:

"As soon as he goes 'uh .. uh' I pick him up". (Miss J., S.7) to:

"If I decide to ignore him, sometimes 20 minutes. After feeding him I don't expect him to cry". (Mrs. O, S.10)

Mrs. U. (S.15) replied to Question 32:

"I can't really give her a time, as I say, she plays up if anyone's here, but normally if I'm here on my own I do get on with feeding her or changing her or whatever - I never leave her too long".

Ethnic differences

There were clear ethnic differences in response to crying as reported by mothers. English mothers reported and were observed to let their infants cry for longer without responding, and their reports suggested that even in the early months they felt their infant's crying should at times be ignored, because "she tries it on", or "she's getting crafty". (e.g. Mrs. D, S.12; Mrs. K, S.14).

Although those mothers who did not have English as a first language would obviously have had difficulty in expressing such sentiments about their infant's crying, there was never mention of letting the child cry, and only one mother reported ignoring cries. Picking-up, offering milk, rocking or a cuddle were the most frequently reported soothing methods among immigrant mothers, and the most frequently observed. These differences do not reach the conventional level of statistical significance.

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1. At 6 weeks Mrs. O., S.10, reported leaving Uchenna to cry for 20 minutes at times, but added: "If I decide to ignore him my husband picks him up". At 3 months she reported him as only crying "when he's hungry", and said she never left him to cry for more than 10 - 15 minutes.
Figures were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Immigrant mothers</th>
<th>Indigenous mothers</th>
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</thead>
<tbody>
<tr>
<td>&quot;picks-up&quot; as response</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>&quot;ignores&quot;</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Use of dummies

63% (12:19) of mothers reported giving their infant a dummy before 6 months. Most reports suggested that a dummy was of little use as a comforting factor, and only three mothers reported it being effective. For example:

Miss J. (S.7)

"That (the dummy) comforts him. The only trouble - I have to keep getting up in the night and pushing it back every minute - it doesn't send him to sleep".

Mrs. M. (S.11)

"Yes, it does (soothe his crying). I wasn't going to give him one - I don't really like to see babies with dummies, but it helps him so".

At 6 months Clifford M. was seen to quieten straight away when given his dummy and put in his crib.

Mrs. M. was the only mother who was observed using a dummy successfully (i.e. so that it had an immediate soothing effect). Most mothers reported:

"She doesn't like it - she spits it out" (Mrs. K, S.14)

or:

"He doesn't like the dummy, he wants to be picked up". (Mrs. R, S.6)

Of the mothers who reported the highest levels of crying, one, Mrs. M. (S.19) had never given her child, Ashni, a dummy, reporting: "I don't like dummies", while Mrs. K. (S.4) and Mrs. C. (S.9) had both tried them.
Mrs. K. (S.4) reported:

"I did try, but he didn't really like it - it doesn't (comfort him) unless he cries a lot, then it does".

Simon C. (S.9)

Simon was sucking a dummy during the 9-month interview. Mrs. C. reported that he had it to go to bed with but "doesn't use it". At 12 months Simon was not seen to be using it, but his mother reported giving him his dummy or bottle when he woke up during the night, and "he'll just go back to sleep again".

At 18 months Mrs. C. reported giving Simon his dummy or bottle when he was in a temper, but:

"the dummy doesn't work. He isn't a dummy sort of baby".

Three mothers reported dislike of dummies initially, but later reported using them. For example:

Mrs. A. (S.2) who at 6 weeks reported:

"I don't like dummies"

at 6 months said:

"When he (Ibrahim) won't sleep after a feed I give him the dummy".

Mrs. O. (S.18)

"I think she (Nkeruka) is going to start sucking her thumb. Maybe in that case it would be better to give her a dummy". (6 weeks)

At 3 months Mrs. O. reported that she had tried giving Nkeruka a dummy so that she would be less likely to suck her thumb, but that her 15-month old son snatched everything away from the baby.

While a dummy may be a poor substitute for Mother's breast or being held, it may be better than "letting baby cry". As Wolff & White (1965) demonstrated, sucking (on a pacifier) soothes a baby by inhibiting diffuse mobility, lowering the arousal threshold, and promoting the necessary conditions for sleep.
Reservations expressed by mothers about the use of dummies may well be related to fears that the dummy will become a habit. As one mother put it:

"I have visions of them going around at 2 with the dummy in the mouth".

As mothers' reports showed, no baby became habituated to a dummy. (Mrs. M., S.11, who was observed using a dummy effectively, was lost from the study after 6 months, so it is not known for how long Clifford continued to use a dummy).

Of those mothers who reported their baby using a dummy at more than one interview, one reported still using it at 18 months (Mrs. C., mother of Simon, S.9), and then without success.

Mrs. K. (S.14) reported Charlotte as having a dummy to go to bed with, but spitting it out once she was asleep from 3 - 15 months, and "no dummy" at 18 months.

Miss J. (S.7) reported giving Leroy a dummy "sometimes during the day when he cries - not in the night, he has the breast" (6 months), but reported at 12 months that he had "got rid of it (the dummy) himself".

Class differences

There were no significant class differences in mothers who reported giving their baby dummies and those who did not. These figures were as follows:

<table>
<thead>
<tr>
<th>Uses dummies</th>
<th>Middle-class</th>
<th>Working-class</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dummies</td>
<td>4</td>
<td>3</td>
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</table>

Ethnic differences

There were no significant differences according to ethnic group in mothers who reported giving their baby dummies and those who did not. These figures were as follows:

<table>
<thead>
<tr>
<th>Uses dummies</th>
<th>Immigrant mothers</th>
<th>Indigenous mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dummies</td>
<td>4</td>
<td>3</td>
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</table>
Conclusion:

The sample as a whole reported indulgent attitudes towards crying which appeared to be reflected in a general decline in crying in the second year (see Figure 18). This lends support to the findings of Bell & Ainsworth (1972) that mothers who respond promptly to their baby's cries in the first 3 months are those whose babies develop other modes of communication by the end of the first year.

As already mentioned, mothers' reports were not always consistent with their behaviour. Furthermore, of the infants who presented as "crying babies" throughout the course of the study, two appeared to have consistently responsive mothers, while two did not. Similarly, two babies whose mothers were observed ignoring their infants crying on occasions were among those who reported little or no crying in the second year.1

As can be seen from the following figures, in this sample there was no significant association between response to crying and "crying babies" (i.e. those who presented as such throughout the course of the study).

<table>
<thead>
<tr>
<th></th>
<th>picked-up</th>
<th>ignored</th>
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<tbody>
<tr>
<td>&quot;crying babies&quot;</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>non-criers</td>
<td>2</td>
<td>2</td>
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</table>

1. This is in line with the finding of Dunn (1975) that while there was a positive correlation between maternal responsiveness and a low level of crying, there was no such relationship between responsiveness and a high level of crying.
II. DISCIPLINE AND BEHAVIOUR PROBLEMS

1. Discipline

At the 12-month and subsequent interviews mothers were asked a number of questions designed to assess how they controlled behaviour they considered undesirable.

The following questions were asked:

1. How do you stop him doing something you don't want him to do?
2. Do you find you have to smack him? How often?

Questions concerning temper tantrums were also of relevance here. (See previous section for full discussion).

In some cases the subject of discipline arose at the 9-month interview in response to Question 45: Is he getting more demanding?

Replies to these questions were used for assessment by the HOME Inventory, i.e. Item 15 of Scale II: Avoidance of Restriction and Punishment:— "Mother reports that no more than one instance of physical punishment occurred during the past week". 1.

At 9 months and 12 months all mothers reported using some form of warning or verbal censure, or diversionary tactics, such as removing the child from the source of the trouble, or offering an alternative object. For example:

Mrs. A. (S.3)

"When I call him he (Simon) knows what I'm saying - he'll stop. Then if he does it again I'll shout at him again, then if he does it again I take him from the place".

Mrs. R. (S.6)

"Sometimes I give him (Mohamed) another thing".

Mrs. D. (S.12)

"I tell her (Caroline)not to do it, and she goes 'no, no, no'".

1. Mothers used the words "smacking", "tap", "hit" and "spank". All such reports were considered to be physical punishment, except in cases where mothers actually demonstrated that a smack or tap was 'in play'.

Rough shaking is a form of physical punishment which may well be used, but is unlikely to be reported.
By 15 months all mothers but two reported using some form of physical punishment. Two (12%) reported it for the first time at the 9-month interview, 56% (9:16) at 12 months and 18% (3:16) not until 15 months.

A typical report was that of Mrs. K. (S.17) at 12 months:

"Well, I shout first - 'no', or whatever. Nine times out of 10 she (Hannah) just ignores you, so if I smack her hand she just ignores that. I think it's perseverance really - I just have to keep taking her away".

Most mothers qualified their reports of smacking with remarks which suggested that the punishment was not severe. For example:

Mrs. C. (S.9) at 12 months:

"I tap him (Simon) there on the hand. But he never gets hurt with it",
and expressed her dislike of smacking:

"You can't really smack them because they don't know what they're getting smacked for, anyway".

Attitudes expressed by mothers towards physical punishment changed throughout the course of the study. Whereas early reports often included mention of the child being too young to be smacked, later reports were more likely to include immediate mention of smacking or hitting. For example:

Mrs. K. (S.4) at 9 months:

"I don't smack him, I sort of pretend to smack him. You feel like it sometimes, because he really drives you mad sometimes",
and at 12 months:

"I do (smack him), but I don't think it helps. I have once or twice. I don't think it helps because he's too small. You just tell him off and he'll start crying. You don't need to smack him. He's a softy, sort of thing".

At 15 months Mrs. K.'s immediate reply to Question 1 was:

"I hit him".

But when asked: "How often?" she replied:

"Hardly ever. I hardly ever hit him. I just try to keep him away from it. I just sort of tell him off. No, not every day - after a week I think".
She added:
"I should hit him every day - perhaps he'd do as he's told then!"

And at 18 months:
"I do (smack him), not a lot, I try not to - if I have to. He's stubborn you see, if he wants to do something I can't stop him".

To "How often?" Mrs. K. replied: "Every day".

From Mrs. K.'s reports it would appear that daily smacking was not having a controlling effect on Clifford's behaviour. Most mothers' reports reflected not only their dislike of inflicting physical punishment, but also the futility of it.

Mrs. K. (S.17) for example, at 12 months reported:
"She (Hannah) gets smacked, but it doesn't seem to do much good right now, and I don't think you can continue smacking them, can you?"

At 15 months Mrs. K. was very concerned about what she considered spiteful behaviour from Hannah towards a same-aged neighbour's baby. Her reply to Question 1 was:
"I'd shout at her normally. When she does it persistently I smack her".

And to Question 2:
"Every day? Probably. Some things annoy me more than others, for instance, if she smacks S."

During the course of the interview and testing Mrs. K. frequently tried to restrain Hannah, and was observed to smack her (for snatching toys from the neighbour's baby).

At 18 months both Mrs. K.'s remarks and observation suggested a more relaxed manner towards Hannah's behaviour. Spontaneously she reported:
"If I start to correct her or tell her off her fingers are going, she starts to tell me off".
When asked whether she could stop Hannah doing something she
did not want her to do, she replied:

"Yes, I can. I have got control over her. At one time if I shouted, raised my voice, she'd take notice, but she defies you all the time. I find I have to change my method. This morning I put her in her cot three times, but she gets out herself, and the fourth time she came in she was crying, so I let her cry and get her temper out. If I raise my voice she raises hers - she won't be put down, but she still knows when she's gone too far".

When asked about smacking Mrs. K. reported:

"Not much, I don't like smacking her. I think actually I did try because I thought she should be disciplined. I did go through this period when I always used to be smacking her, and it did no good, so certainly I think she should be well disciplined, but I don't think to smack her does much good".

Mrs. K. added:

"If we're out mind, if she smacks another little one, then I do smack her hand. If she smacks someone, I smack her".

Hannah attended a play-school with her mother each morning, and as Mrs. K. reported:

"I think because of some of the older ones over there (at play-school) they try to hit the younger ones, and she's had it done to her several times, so whether that's helped to stop it, or whether she's just grown out of it ...."

Mrs. K.'s change in attitude was not directly related to Hannah's age, but rather to a realization that physical punishment was not an effective method of discipline.

The older and more mobile the child the greater the need for restraint and the likelihood that the mother will resort to physical punishment. Hence, at 12 months the most common reasons given for mothers needing to restrain or punish their child were that he was trying to touch something forbidden or dangerous. Televisions, record-players or electric-plugs were frequently mentioned. For example:

Mrs. B. (S.8)

"It's just the sockets he (Harjit) goes for - they're a bit dangerous, or he's messing around with the telly".

Mrs. B. (S.8)
"He (Rory) kept turning the buttons on the T.V., so his dad smacked him on the hand, but he just laughed, so he smacked him harder".

**Motor development and discipline**

An association between motor development and need for discipline was shown by the pattern of correlation between Scale II of the HOME Inventory (Avoidance of Restriction and Punishment) and Bayley Motor scores. This showed that a high score on the Bayley Motor Scale was related to a low score on Avoidance of Restriction and Punishment. Cross-lagged correlations between Motor scores and HOME scores suggested that the more motorically advanced children were eliciting a greater amount of restrictive and punitive behaviour. (See "Results" Section for fuller discussion).

This was certainly the case with Clifford K. (S.4), Leroy (S.7), Simon C. (S.9), Sandra (S.16) and Nkeruka (S.18), all highly active children who were motorically advanced. In contrast, Caroline (S.12) was an excessively passive child (PDI at 18 months: 78), who appeared to require little restraint:

**Mrs. D.**

"Well, I usually, if she's fiddling with the telly, say, I take her away and tell her about three times, and if she persists I'll tap her hand, but it doesn't seem to make any difference".

**Mrs. C., mother of Benjamin, (S.5)**

who was still not walking at 18 months was one of the two mothers who never reported using physical punishment. When first asked about smacking (at 12 months) Mrs. C. replied:

"Oh no. Smacking's no good, they haven't got sense. I don't believe in smacking children".

At 18 months, although Benjamin was not walking, he was able to pull himself up quite effectively to reach objects and was observed pulling pans out of the kitchen-drawers. Again Mrs. C. remarked:

"I don't believe in smacking children. I can't. How can I smack him. I love him. Anyway, it's not an age you can smack them, it's too young".
When asked how she tried to stop Benjamin doing something she did not want him to do she replied:

"I hold him up and try to sing to him, or show him something".

Mrs. M., mother of Ashni (S.19) never reported using physical punishment. Ashni had two older brothers aged 5 and 2½. They were usually present during testing, but squabbling or snatching was never observed. At 12 months when asked how she stopped Ashni doing something she did not want him to do, Mrs. M. replied:

"Just pick him up. I keep his things separate".

Asked about smacking her reply was:

"No, never, he's tiny. He don't know anything. None of the children - I don't like. They're children, they don't know nothing".

At subsequent interviews Mrs. M. reported "picking-up" as her disciplinary method, but at 18 months when discussing Ashni's temper tantrums her husband reported:

"Sometimes I tell him off and he listens, but he don't listen to anyone else".

Ashni's grandparents were his day-time caretakers (testing was carried out in their presence on three occasions). While it was not possible to question them because they had only a few words of English, no form of restrictive behaviour was used on these occasions by either grandparent.

Mental development and discipline

Whereas the pattern of correlation between motor development and Avoidance of Restriction and Punishment as measured by Scale II of the HOME Inventory suggests that the direction of effect was from child to mother, the relationship between mental development and Avoidance of Restriction and Punishment is more complex.
Not until 18 months were MDI and this environmental variable significantly related ($r = .51$, $p < .04$, $n = 12$). As far as the cross-lagged correlations are concerned, those between MDI and subsequent Avoidance scores were both negative, indicating that the more mentally advanced children were receiving a greater amount of restrictive and punitive behaviour. Correlations in the opposite direction, however, between Avoidance scores and subsequent Bayley Mental scores suggested a weak but positive effect of the environmental variable on MDI, i.e. use of restriction and punishment was having a positive effect on subsequent mental development. (See "Results" Section for fuller discussion).

"Excessive" physical punishment

The comparative severity of the different terms used by mothers, e.g. tapping, smacking, hitting and spanking, can only be judged from their context. In order to assess the relative harshness of the physical punishment used, mothers were asked:

"Does it (usually) make him cry?"

Replies ranged from "doesn't cry" via "sometimes cries" to a definite "does cry". For example:

Mrs. B., mother of Harjit (S.8) at 15 months:

"No, he doesn't cry, it's not that hard you see. He lets his bottom lip drop a bit".

Mrs. R., mother of Mohamed (S.6) at 18 months:

"Oh, sometimes he's laughing, sometimes crying".

Mrs. O., mother of Nkeruka (S.18) at 12 months:

"I do smack her when she takes things from the dressing-table. Not very often. No, I scream more than I smack. How often? I don't know, I just smack her. Yes! (it does make her cry)".

1. Mrs. B., mother of Harjit (S.8) spoke of "spanking" at 15 months: when he keeps turning the telly on I have to spank his hand", and at 18 months: "if he still doesn't stop he gets a spanking on his hand". Mrs. B. had grown up in Leeds, and it maybe that "spank" is a synonym of smack in that area. (The Newsons (Newson & Newson, 1963) point out that "tap" is a Nottingham word for smack and does not imply gentleness in the correction as it does in the south.
Two mothers' reports, together with observations, suggested high levels of verbal reproof and physical punishment:

Miss J., mother of Leroy (8.7)

At 6 months Miss J. was noted on three occasions to tell Leroy to "shut up" in response to his vocalizations. At 9 months no restrictive behaviour was observed, but verbal reproof (albeit gently) included: "Stop touching things", "Don't follow me - he follows me everywhere I go".

Miss J. reported:

"He's really naughty now - I have to smack him",

but nevertheless reported him as still an "easy" baby.

At 12 months no restrictive behaviour was observed. Mrs. J.'s reported method of control was:

"I just shout. Then he stops - sometimes. Sometimes he just ignores me and carries on".

When asked about smacking she replied:

"Sometimes on his hands and legs. Every day? No, not really, only sometimes. I don't like smacking him, he starts to cry".

At 15 months when asked how she dealt with Leroy's temper tantrums she replied:

"Just give him a little slap. He's always getting little slaps".

And when asked how she stopped him doing something she did not want him to do:

"Smack him - always! If you shout at him he doesn't take any notice. Especially when he touches the switches and things".

On this occasion only verbal restraint was used, and as at previous interviews Miss J. frequently picked up Leroy, and nursed him with kisses and hugs.
At 18 months in reply to the same question Miss J. replied:

"Just say 'oi, leave it!'"

and in reply to: "Does it stop him?":

"Sometimes. Sometimes I have to give him a little smack. That stereo he never stops touching".

When asked how often she smacked him her reply was:

"Not very often. Sometimes I lose my temper and fling him across the room. You know, if I'm trying to do something and he messes it up - I smack him really hard, and he cries himself to sleep. That's the only way I can get him to sleep sometimes, isn't it?" (addressed to Leroy)

"Sometimes he's so naughty though. That's why I always have to smack you a lot, isn't it?" (addressed affectionately to Leroy).

When asked how often she smacked Leroy, Miss J. replied:

"Every day? Well, I suppose so. I only give him a tap, anyway. He hits me back - look!"

At the time Leroy was on her lap, and Miss J.'s playful tap was returned. Leroy's performance on the Bayley Scales (both Mental and Motor) was consistently well above average (overall he was the highest scorer), and his vocalization was also advanced. Close physical contact between Miss J. and Leroy (picking-up, kissing and hugging) was always observed, and Miss J.'s comments on Leroy's "naughtiness" were outweighed by her affectionate remarks, both about and to Leroy.

Mrs. N., mother of Sandra (S.16)

Mrs. N. was another mother whose interaction with her baby was of the "hot/cold" variety, i.e. a high level of warm, physical contact alternated with harsh physical and verbal censure.

Restrictive behaviour was first observed at 3 months, when Mrs. N. tried to stop Sandra's thumb-sucking by tapping her hand sharply enough to produce a startle reaction, saying:

"Take your hand from your mouth - that's naughty".
At 6 months no restrictive behaviour was observed, but when asked about crying, Mrs. N. reported:

"She cries when you comb her hair, because it's so tight - it takes 15 minutes to plait each day".

and at 9 months:

"She's worse now - she hates it".

On this occasion Mrs. N. was observed brushing Sandra's hair. This involved considerable restraint, and crying from Sandra, to which Mrs. N. responded with verbal comforting. During the visit both verbal and physical censure (smacks on hand and bottom) were noted, but in all other respects Mrs. N.'s behaviour towards Sandra was warm and affectionate.

At 12 months when asked how she stopped Sandra doing something she did not want her to do, Mrs. N. replied:

"She doesn't stop, she's so stubborn I have to go and smack her hands. But sometimes if she goes to my dressing-table and sees me coming she jumps and turns around, because she knows she'll get a smack".

No restrictive behaviour was observed, but during testing Mrs. N. remarked:

"She's wondering why she's not being smacked - she's usually smacked when she plays with things".

At 15 months Mrs. N.'s reported method of control was:

"I give her something else to attract her attention, and it works so easily if you show her something else".

When asked if she smacked Sandra:

"I do sometimes".

Again no restrictive behaviour was observed, and only mild verbal censure was noted. When asked whether she would still call Sandra an "easy" baby, Mrs. N. replied:

"Well, considering, I would say so. The only thing is that we haven't got space for her to run around - we haven't got a garden - she always wants to get out. Here I feel sorry for her, because she can't move around".
(The family live in a cramped, two-room flat with no play area, and from the beginning of the study they had been hoping for a transfer to a larger flat).

At the 18-month visit Mrs. N. and Sandra had just returned from a 6-week visit to Nigeria. On this occasion Sandra's negativistic behaviour, including throwing and hitting, made testing very difficult, and her score on the Bayley Mental Scale was well below her previous consistently high scores (12 months: 131; 15 months: 122; 18 months: 105).

Mrs. N.'s behaviour towards Sandra was more relaxed than previously, even though she had just finished work and collected her from the nursery.

Mrs. N.'s reported method of control was "shout or smack - she's very naughty, very stubborn!", but when asked how she dealt with her temper tantrums, replied:

"It all depends. I don't shout at her, because she'll be .... she gets over them quickly - nothing. If you tell her "good girl" she likes it. Oh, too much!"

Mrs. N. later demonstrated the effectiveness of this tactic while Sandra was throwing tantrums. Again Mrs. N.'s behaviour was alternately hot and cold: at times taking Sandra on to her lap and persuading her to sing nursery-rhymes, and at other times shouting, smacking, and on one occasion "threatening" with a cushion, at which Sandra turned to the Experimenter for comfort.

Again Mrs. N. reported Sandra as "easy, considering she's still a baby".

Other forms of discipline

Other methods of control mentioned by mothers were picking-up, offering food or a toy, "putting to bed", and ignorai.

Picking-up was the method mentioned by the non-smacking mothers (Mrs. C., S.5. and Mrs. M., S.19), in both cases in response to temper tantrums. Two mothers reported putting the child in its cot (in another room). One mother, Mrs. C. (S.9) was observed doing this at 12 months, telling Simon to "keep quiet and go to sleep", but did not mention it as a means of discipline.
Ignorance was the method most commonly used in response to temper tantrums. (73%, 11:15 mothers reported temper tantrums between 12 and 18 months). For example, Mrs. G. (S.1) mentioned Rory's "temper" as early as 9 months. Her response was:

"Ignore it! He just screams and screams and I walk away, and leave him and he stops, because I find if I shout at him, he'll do it even more, so I just ignore him".

Mrs. K. (S.15) at 12 months:

"I just leave her (Charlotte). That's what I did with my other one, she was exactly the same, and I found if I just left her and let her scream she'd just grow out of it".

At 18 months Mrs. K. was still reporting temper tantrums and screaming, but her reported method of control had not changed:

"I just leave her. I did the same thing with the other one, but she was much worse, but if my husband's home he'll give her whatever she wants, because he can't stand her screaming, but I just ignore her - that's what I did with the other one".

"Permissive" and "restrictive" mothers

From these reports it is possible to clearly distinguish two types of mother:

1. Those who "don't believe in smacking", and whose reports and behaviour were consistent with their expressed attitude, i.e. Mrs. C., mother of Benjamin, S.5, and Mrs. M., mother of Ashni, S.19.

2. Hot/cold mothers: those whose reports suggested harsh punishment, were observed to censure their child frequently (both physically and verbally), but nevertheless exhibited corresponding amounts of physical contact and affectionate interaction, i.e. Miss J., mother of Leroy (S.7), and Mrs. N. (mother of Sandra, S.16).
The remaining 73% (11:15 at 18 months) ranged from those who admitted "occasionally smacking" to those who reported smacking every day.

Mrs. D., mother of Caroline (S.12) for example:

"I must admit I have tapped her hand once or twice when she's gone to the electric plugs. She looks at you with such an injured look as if to say: 'Why did you do that?'

can be contrasted with:

Mrs. U., mother of Celia (S.15):

"I smack her hard on the hand! Sometimes she cries, sometimes she just makes a face as if to say 'it doesn't hurt'. I usually have to get hold of her and give her a little slap on the bum",

and at 18 months:

"I try not to smack her, because they get used to it, and she started going 'contemptuous face', and I thought I might hurt her".

But Mrs. U. still reported smacking Celia:

"a couple of times a week at least".

Reports such as Mrs. U.'s indicated that a battle of wills had already developed between mother and child. While there were clearly constitutional differences in the sample which resulted in different degrees of wilfulness and stubbornness, it appeared that frequent shouting or physical punishment, rather than acting as a deterrent, eventually became ignored or imitated by the child. In contrast, mothers who expressed permissive attitudes towards "naughtiness" and reported only occasional smacking, were less likely to report trouble in controlling their child at the 18-month interview.

For example, Mrs. B., mother of Harjit (S.8) who at 9 months reported "squabbles" between Harjit and his 3-year old sister:

"They'll cry together - he'll want one toy, she'll want the other. I have noticed if I get angry he'll understand, if I give him a little shout, his lips will start going".
No physical punishment was reported until 15 months:
"He's cheeky. Well, for instance, when he keeps turning the telly on, I have to spank his hand. But he still carries on, that's being cheeky you see".

And in response to his temper tantrums ("he just goes quiet and falls on the floor"):

"I just sort of tease him and say 'get up', and give him what he wants".

Mrs. A., mother of Ibrahim (S.2) is another example:

At 15 months Mrs. A. reported "never" smacking Ibrahim, but at 18 months "sometimes". At the 15-month interview squabbles were seen between Ibrahim and his 3-year old brother. Ibrahim appeared to be the more aggressive of the two, and nearly succeeded in snatching a toy from him. Both Ibrahim's mother and his uncle (also present) appeared to ignore this behaviour until it resulted in tears on Ibrahim's part, which Mrs. R. comforted by rocking Ibrahim between her legs.

At 18 months Ibrahim's mother reported temper tantrums, but when asked how long they lasted, replied: "Maybe a few seconds".

His uncle reported:

"When he's playing with something and some other child comes up and grabs it, he goes mad".

On this occasion, none of Ibrahim's sisters or brother were present so this type of behaviour was not observed. During the interview Mrs. A. was seen to smack Ibrahim (when calling him to come away from the television had failed). Although the smack was hard, Ibrahim showed no sign of upset.

When asked how often she had to smack him, Mrs. A. looked questioningly at her husband, then replied:

"Every day? No, not every day".
Ethnic group differences and physical punishment

No clear relationship between ethnic group and use of physical punishment emerged. A breakdown into ethnic group showed that Asian mothers were the least likely to use physical punishment (only one Asian mother's reports (Mrs. K., mother of Clifford) suggested that she frequently resorted to smacking in order to control her child. Both Mrs. A.'s (S.2) and Mrs. B.'s (S.8) reports suggested a mainly permissive attitude, whilst Mrs. A. (S.19) reported never using physical punishment. The second "non-smacking" mother, Mrs. C. (S.5) was from Israel.

As far as English mothers were concerned, use of physical punishment was not significantly related to social class.

1. Dosanjh (1976) states that in the Punjab: "During the first 5 years of life children are treated and referred to as 'kings' and in practice a child can do exactly as he pleases without fear of being scolded". In his study of Nottingham Punjabi families he found "in general, a consensus of opinion amongst Punjabi families that smacking children was undesirable".

Dosanjh, J.S. (1976)
2. Thumb-sucking

At all interviews mothers were asked:

"Does he suck his thumb?"

"Do you try to stop him?"

Observation of this type of mouthing was recorded on the IBR under "mouthing or sucking", Item 22: thumb or fingers (a 1 - 10 scale from 'none' to 'excessive').

Thumb-sucking (sucking thumb, finger or fist) was observed in all but one baby during the first year. This type of sucking was observed most frequently at 3 or 6 months, and had declined by 12 months.

Uchenna (S.10) was never observed thumb-sucking. At 3 months his mother, Mrs. A., reported: "He's trying hard, but he hasn't been able to do that", and said that she would not try to stop him if he did. At 6 months she reported:

"He doesn't know how yet, he tries, but he can't. He tends to put the mid-finger in his mouth".

At 9 months Uchenna showed no signs of thumb-sucking nor mouthing of any kind. Mrs. A. reported having tried him with a dummy, but "he didn't take it". Uchenna was lost from the study after 9 months, so it is not known whether he started "thumb-sucking" later.

In general mothers expressed permissive attitudes towards thumb-sucking, and observations suggested their behaviour was consistent with their reports.

Five mothers (26%) expressed restrictive attitudes towards their baby's thumb-sucking (also observed), while one mother's behaviour in this connection was not wholly consistent with her reports.

All mothers reported stopping their baby's thumb-sucking by removing the hand (also observed), sometimes together with vocal admonition.
Mrs. G. (S.l)

"Just one, on the left hand. L. (2\frac{1}{2}-year old brother) runs over and takes it out. He (Rory) usually does that just after a feed, or if he hasn't had enough". (3 months)

At 9 months Mrs. G. commented:

"I think if he did start sucking his thumb I'd give him a dummy".

At the first interview Mrs. G. had stated firmly:

"I don't believe in dummies".

At both 12 and 15 months, when asked about thumb-sucking, Mrs. G. replied:

"No, not his fingers, and doesn't have a dummy".

On these occasions "minimal" thumb-sucking was observed, (which Mrs. G. appeared not to notice, or did not attempt to check), and at 18 months none was observed or reported.

Sandra (S.16)

Sandra's mother, Mrs. N, was a restrictive mother in this respect. At 3 months she was seen to tap Sandra's hand quite sharply 1. as a response to her sucking, saying:

"Take your hands from your mouth - that's naughty!"

During the same interview she mentioned how Sandra made herself sick:

"She puts her fingers in her mouth, and sometimes both hands".

It is possible that Mrs. N's restrictive behaviour was related to her worry about Sandra's vomiting.

By 6 months Sandra had stopped sucking her thumb. Her mother reported:

"She likes her dummy - she doesn't suck her fingers".

At 9 months Mrs N. reported:

"She doesn't suck anything now".

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1. producing a startle reaction.
No thumb-sucking or dummy was observed, but on this occasion and at subsequent interviews some mouthing of objects was noted (a rating of 2 on a 1 - 5 scale).

Anxiety about vomiting in relation to thumb-sucking was also expressed by Mrs. M., mother of Clifford (S.11) at 3 months:

"I don't like him doing it. He could make himself sick and vomit on it - if he got his fingers to the back of his throat".

However, Mrs. M. did not stop Clifford's hand-sucking during the interview. At 6 months she was giving him a dummy, and reported:

"You take his fingers away, but now that he's teething it's either his fingers or his dummy that goes into his mouth".

Restrictive attitudes towards thumb-sucking are more understandable when the habit is persistent or excessive. Only one such case was observed:

Nkeruka (S.18)

Already at the 6-week interview Mrs. O. reported:

"I think she's going to start sucking her thumb - like her brother. Maybe in that case it would be better to give her a dummy".

At 3 months Nkeruka was sucking her two forefingers almost continuously throughout the interview. When asked whether she tried to stop her sucking her fingers, Mrs. O. replied: "Yes, but they go straight back in", and demonstrated. She reported having tried Nkeruka with a dummy and a teething-ring as a substitute, but this was unsuccessful as her 18-month old son took everything away from the baby (observed). Mrs. O. had changed from breast to bottle-feeding at 6 weeks and reported:

"I think she started sucking much more when she went onto the bottle".
At 6 months the sucking had declined slightly, but was still observed as above average, i.e. a rating of 7 on a 1 - 10 scale; (sucking of test objects was rated as 5). On this occasion Mrs. O. did not move Nkeruka's hand from her mouth, but reprimanded her verbally: "Don't suck your hand!".

At 9 months even less sucking was observed (the rating was 3, and only 2 for objects). At 12 months no sucking was observed, and Mrs. O. reported:

"When she's playing she doesn't suck them - it's mostly when she's tired".

Nkeruka had developed from an extremely passive baby to a highly active and advanced one-year old (3 month Bayley scores: MDI: 102, PDI: 150; 12 months Bayley scores: MDI: 126, PDI: 122. It is felt that her thumb-sucking may have arisen after weaning, but with the development of sensorimotor intelligence, reaching and grasping proved a more satisfying occupation than sucking.

Celia (S.15)

Celia's mother's remarks suggest that her response to her baby's thumb-sucking was not always consistent with her expressed (mainly permissive) attitudes towards it. Although Mrs. U. was only observed to reprimand Celia for this on one occasion - a verbal reprimand at 9 months, when she reported:

"I play with her and say 'I'll have that!'",

and at 12 months when asked whether she tried to stop her, replied:

"Not really, you take it out, she puts it back in - she does it when she's quiet or a bit shy".

At 18 months when Celia was still observed to be sucking her thumb, Mrs. U. reported:

"If I say 'stop sucking your thumb' she makes a face".

By 18 months Celia's behaviour had become noticeably negativistic, and it is felt that further restrictive behaviour at that time would probably result in Celia continuing her thumb-sucking.
Ethnic differences

There was no significant difference in the proportion of immigrant and non-immigrant mothers who expressed restrictive attitudes towards thumb-sucking. These figures were:

- Immigrant mothers: 3 : 11 (27%)
- Non-immigrant mothers: 2 : 8 (28%)

A breakdown into ethnic group showed that all Asian mothers (5) expressed permissive attitudes towards thumb-sucking. (No restrictive behaviour was observed). 2 of the 3 African mothers expressed a permissive attitude. Both the Israeli and the American mother expressed permissive attitudes.

Class differences

Attitudes to thumb-sucking were not significantly related to social class.

Thumb-sucking and use of dummies

At 3 months, when asked whether she tried to stop Celia's thumb-sucking, Mrs. U. replied:

"No, because I don't use a dummy you see. I don't know whether it's a comfort".

Other reports suggested that mothers regarded thumb-sucking as preferable to a dummy, but not always for the same reasons. For example:

Miss J., mother of Leroy (S.7) at 3 months

"Everytime his dummy falls out I have to put it back in. That's why I prefer him sucking his thumb".

One mother viewed her baby's early sucking in a positive light:

Mrs. B. (S.8)

"The more he sucks his hands, the more he's going to take his feeds nicely". (3 months)
Mrs. B.'s sensible attitude to Harjit's thumb-sucking continued. At 12 months she reported him as only occasionally sucking his thumb:

"not because he wants to settle himself, but just to experiment with his fingers he does, now and then".

Babies who become habituated to dummies, and have constant access to them, are less likely to thumb-suck. This was the case with Clifford M. (S.11) (See p. 258) and it appeared to be the case with Simon C.

Simon C. (S.9)

At 6 weeks Simon was seen with a dummy (while asleep), although his mother reported:

"the dummy doesn't work, he spits it out".

At 3 months she reported him as sucking his thumb:

"No, I don't try to stop him, I know it's because he's teething".

At this visit "mouthing and sucking" was noted on "thumb and fingers", "pacifier" and "toys". At 6 months the rating for mouthing of "toys" increased to 5, but only minimal thumb-sucking was observed, and Mrs. C. reported that she did not try to stop this.

At the 9-month interview Simon was sucking constantly on a dummy, and immediately his mother removed it he attempted to put the test objects in his mouth. No thumb-sucking was reported.

At both 12 and 15 months Simon still had his dummy, but at the 15-month interview he spat it out to mouth the test objects (rating of 9).

At 18 months the mouthing had declined. Simon was not using a dummy (his mother reported him no longer having one at night), only minimal mouthing of test objects and sucking of fingers was observed (rating of 2).
Persistence of thumb-sucking

Only two babies were observed thumb-sucking at the 18-month interview: Simon C. (S.9) and Celia (S.14). Both received the lowest rating, i.e. 2. All other babies were reported as "never" or "rarely" sucking their thumb. In this group therefore, permissive behaviour towards thumb-sucking appeared to be as effective in hindering it as did repressive methods.

In Simon's case the regular use of a dummy may have prevented him becoming a habitual thumb-sucker, and from Mrs. C.'s reports, it would appear that the dummy sometimes had a soothing effect on him.
At the 12-, 15- and 18-month interviews (after questioning about thumb-sucking) mothers were asked:

"Is there anything else he has started doing that you don't want him to do?" 1.

"Do you try to stop him?"

The point of interest here was mothers' attitudes towards genital play, and whether or not they tried to restrict this. In general, it was found that the question: "Does he play with his body?" was often misunderstood, and frequently led to embarrassment, both on the part of mothers, and the Experimenter. In some cases it was necessary to gesture before mothers understood; in one case: "Does he play with himself?" was interpreted as: "Does he play by himself". Where fathers or uncle were present during the interview it was decided not to ask about genital play, but to give other prompts, i.e. "Has he developed any bad habits?"

Incidence of genital play

52% (9:17) mothers reported genital play. 3 of these reports were spontaneous, and occurred before 12 months when mothers were first questioned on this subject.

The earliest report occurred at 3 months, from Mrs. M. (S.11) Mrs. M. described encouraging Clifford to play with his rattle, then added:

"He's started playing with something else - yesterday when I was changing his nappy".

Her reported response was:

"Ugh! - naughty boy!"

At 6 months Mrs. M. reported:

"He sometimes has a little game when I change him - he's just found out that he's got something there".

1. A number of prompts were given after this question. These were based on the Newsons' list, e.g. Playing with nose/scratching face/pulling hair/pulling eyelashes/playing with toes/playing with the private parts/head-banging. After the pilot study it was decided to limit these to "plays with his body/pulls hair/scratches face". ('Infant Care in an urban community', p.285.)
Mrs. M. was lost from the study after 6 months, so that no further information is available in this case.

Two other mothers made spontaneous mention of genital play, both at 9 months (Mrs. K., mother of Clifford, S.4) and Miss J., mother of Leroy (S.7). Both mothers expressed permissive attitudes in this connection.

Of the nine mothers who reported genital play, all but Mrs. M. (S.11) (see above) expressed mainly permissive attitudes, i.e. no mother reported trying to stop her child at more than one interview. For example:

Mrs. B., mother of Harjit (S.8) at 12 months:
"If I'm feeding him and he's got his nappy off he'll touch it".
"I do take his hand away because next minute he's going to put it in his mouth",

and at 15 months:
"Yes, especially when he's drinking his milk".
"I leave him, because it isn't as if ...."

Miss J., mother of Leroy (S.7)
spontaneously mentioned Leroy's genital play at 9 months, and at 12 months reported:
"Sometimes, when he's in the bath".
"No. (I don't try to stop him) He laughs, he thinks it's funny",

and at 15 months:
"No, he used to, not any more",

and in reply to:
"Did you try to stop him?"
"No, he just stopped".
Three other mothers who had expressed mainly permissive attitudes to their child's body play at 12 or 15 months made no mention of this behaviour at 18 months. This suggests that they accepted their child's behaviour as normal, self-exploratory behaviour, and did not feel they had to restrict or punish it. Mothers' reports at 18 months suggest that the same three subjects had gone on to explore other parts of the body.

One mother, Mrs. C. (S.9) reported at 15 months not trying to stop Simon:

"because they say all babies do it, so I take no notice",

but added that her 3-year old daughter:

"tries to pull his hand away. She's a right little mother with him. She don't like anything done to him".

Only one mother of a girl reported genital play:

Mrs. M., mother of Hannah (S.17)

"Occasionally she plays with herself a bit, but I just ignore that".

The remaining mothers of girls (5 at 12 months) gave such replies as:

"No, I don't think so", or "No, not really",

when asked "Has she started doing anything else you don't want her to do?"

(Mrs. U., mother of Celia (S.15) replied at 15 months:

"There are quite a few (habits) really, but I can't think of any at the moment".

Genital play is more noticeable in boys, and is more frequently reported by mothers of boys (cf. Newson & Newson (1963), p.131). It may be that mothers of baby girls in the present study had not noticed its occurrence. On the other hand, if these mothers were failing to report it for reasons of embarrassment, it may be that they were also trying to restrain their child's behaviour in this respect. This is also likely to be the case with mothers of boys who failed to report genital play.
Ethnic differences

Expressed attitudes to genital play were not related to ethnic group. As far as Asian mothers (all mothers of boys) were concerned, the two second-generation mothers (Mrs. K., S.4, and Mrs. B., S.8) both expressed permissive attitudes towards this behaviour. Two mothers (Mrs. A., S.2 and Mrs. M., S.19) reported no genital play, while Mrs. R. (S.6) reported it at 12 months, and said she tried to stop Mohamed. In the last three cases, however, mothers' replies were brief, and it was not felt possible to question them in more detail.

Class differences

Expressed attitudes to genital play were not related to social class.

Other forms of body play

Four mothers reported their baby playing with its nose, (Miss J., mother of Leroy, S.7, at 12 months and 18 months; Mrs. K., mother of Clifford, S.4, and Mrs. C., mother of Simon, S.9, both at 18 months. All these mothers had earlier reported genital play (only Mrs. K. still mentioned this at 18 months), which suggests that one form of body exploration was being replaced by another.

Nose play was also reported by the mother of one girl at 18 months:

Mrs. M., mother of Charlotte (S.14)

"She sticks her two fingers up her nose and laughs at you".

Mrs. K. reported not restraining Charlotte:

"No, I think with a child like her it would just make her worse",

but added: "She's only just started".
Miss J. who first reported Leroy "picking his nose" at 12 months reported:

"I pull his hand away, but he just laughs, we both laugh",

and at 18 months:

"He's started picking his nose again, and puts it in his mouth".

Her response was then:

"I smack him!"

Others mothers mentioned playing with the lips, hair-pulling and pulling eye-lashes. None of these behaviours were reported as more than occasional occurrences.

More than one "habit"

Mrs. K. (mother of Clifford, S.4) reported some form of body play from 9 months onwards:

At 9 months she spontaneously mentioned genital play (also reported at subsequent interviews).

At 12 months:

"He's got a habit of banging his head. If I go into a supermarket he'll bang his head. He thinks it's funny sometimes - just to get attention I think. He bangs it on me sometimes".

At 15 months:

"He puts his fingers in his nose. You say to him 'uh!' He'll put his fingers up his nose on purpose because he likes that, for some reason. He plays with himself and with his belly button. He pokes his belly button and his eye".

The only activities which Clifford's mother reported trying to restrain were his head-banging:

"I just get hold of him".
and his eye-poking:

"I pull his hand away" (15 months)
and: "I do try to stop him poking his eye because he might hurt himself".
III. TOILET-TRAINING

Cultures vary in their approach to toilet-training: in some toilet-training may be started almost from birth, while in others the process does not begin until well into childhood. Likewise there is considerable variation in the methods used to train children, ranging from punitive to those where inculcation is gradual and gentle.¹

As far as toilet-training in our culture is concerned, professional advice over the past 40 years has shifted from advocating strict early training to a thoroughly relaxed attitude on the subject. In 1943 for instance, Truby King,² wrote:

"If training is begun on the third day baby will very soon learn to pass a motion at the same time every day".

He warned:

"The child should be made to feel that emptying the bowel or the bladder is a serious job, and he should not be allowed to play with toys or books at these times".

In contrast, current professional opinion (e.g. Jolly, 1975, Spock, 1979) is opposed to any form of training in the first year.

In the present study mothers were first questioned about toilet-training at the 9-month interview.³ (In some cases the topic had arisen at earlier interviews when mothers had mentioned "holding baby out", e.g. Mrs. B. (S.8) and Mrs. K. (S.4).

³. See Appendix F, Questions 41 & 42.

" " G, " 29 & 30.
" " H, " 34 & 35.
" " I, " 34 & 35.
Mothers who reported having started toilet-training at the different age-stages

<table>
<thead>
<tr>
<th>3 mths</th>
<th>6 mths</th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
<th>Not started at 18 mths.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Thus 83% of mothers had started toilet-training by 12 months. (The same figure was reported by the Newsons, p.118). One mother started at 15 months, while at 18 months two had still not started. (Three mothers who were lost from the study at 9, 12 and 15 months had not started toilet-training at these ages).

With the exception of "early" trainers (i.e. those mothers who started toilet-training before 6 months, "training" before 12 months was irregular, and in some cases no more than introducing the child to the potty. For example:

Mrs. A., mother of Uchenna (S.10) at 9 months:

"I tried him once. I saw him straining, so I put him on the potty, but he just got off straight away. He wouldn't sit on it. I think he's a bit too young for that. I should start him when he's about 15 months".

Most reports indicated the child's initial reluctance to use the potty appropriately. For example:

Mrs. G., mother of Rory (S.1) at 12 months:

"I put him on it and he goes stiff. He doesn't really like it - I don't know why. I get some toys - I don't push it. As soon as he realises where he is he'll stand up again. He just doesn't like it".

The clearest difference to emerge from mothers' reports was the early introduction of toilet-training by Asian mothers. All reported starting by 7 months (4 out of 5 before 6 months). Immigrant mothers as a group were more likely to start toilet-training before 9 months (only one English mother reported starting this early), although these figures do not quite reach statistical significance.
The frequencies were:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Immigrant mothers</th>
<th>non-immigrant mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Early&quot; trainers (before 9 mths)</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Late&quot; trainers (9 mths +)</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Two Asian mothers spontaneously reported early training, i.e. "holding baby out".

Mrs. B., mother of Harjit (S.8)

referred to this already at 6 weeks:

"I catch everything he does - I hold him out",

and demonstrated it at 3 months:

At 6 months she reported:

"I'm trying to sit him on the pot, now. He hasn't done anything in it yet. Yes, I always hold him over the tin. I don't usually wash dirty nappies now. It's usually every 24 hours he does it now, so I know when he's going to do it".

At 9 months Mrs. B. reported putting Harjit on the pot:

"every time I open his nappy - about every half an hour - if he's dirty it's my mistake. I don't know whether it's my instinct or him - maybe a bit of both - wet nappies yes, dirty nappies no".

At 15 months Harjit was beginning to indicate his needs so that his mother would sit him on the potty, and at 18 months Mrs. B. reported:

"The other day I said to him, if you want the potty go into the bedroom and do it in the bedroom in the proper place, and that's what he did - he went into the bedroom and did it. ... Well, he has a nappy on usually, but when he wants to do toilet, he takes his nappy off and does it (on the potty)."
Mrs. K., mother of Clifford (S.4) also reported holding Clifford out at 6 months "three or four times a day".

She reported:

"I can usually tell - if I don't take notice he does it (in his nappy), but I try to take his nappy off".

At 9 months she reported having bought a potty, but:

"I haven't put him on it yet. I think he likes doing it in his nappy. I don't want to force him yet".

At 12 months Mrs. K. reported Clifford as using the potty each day, but at 15 months:

"He doesn't like it. There are times he sits down and does it, but hardly ever - once a month - something like that".

But by 18 months Mrs. K. reported:

"He's starting, touch wood, to tell me now. He points there, says 'Mummy'. Sometimes he'll point upstairs and say he wants to go upstairs. I do take him on the toilet, I hold him there".

The remaining three Asian mothers all reported starting training their baby to use a potty by 7 months (Mrs. A., S.2 before 6 months, Mrs. R. at approximately 7 months, and Mrs. M. at 6 months).

Mrs. A., for instance, reported at 6 months:

"No need to change nappies - he always does it in the pot".

and at 9 months:

"He uses it every morning, the morning at 9 o'clock. Yes, I sit him on it. It's my fault if he messes his nappies".

But at 15 months she reported:

"He don't want to sit on the potty - he's crying, he's afraid. But he's not afraid on the toilet. We hold him",

and at 18 months:

"He uses the toilet with a special seat, has nappies during the day".
Similarly, Mrs. R. (S.6) and Mrs. M. (S.19) reported holding their babies on the toilet at 18 months. Both babies were communicating their needs verbally, and Mrs. M. reported Ashni (S.19) as pulling his trousers down himself.

Mrs. M. reported:

"no nappies since about two months - no, no nappy at night because he goes to the toilet when he sleeps at 10.00, then he goes in the morning when he wakes up at 7.00".

Unfortunately it was not possible to judge from these reports what traditional patterns these mothers were following. The only study in this country which has reported on toilet-training methods among Asian immigrants is that of Dosanjh (1976) who found no significant differences between a group of Nottingham immigrants from the Punjab and the Newsoms' sample. However, Dosanjh does point out that bodily cleanliness is one of the tenets of the Sikh religion, and this factor could be of relevance to these mothers' attitudes to toilet-training.

Although the extent to which these five children were toilet-trained varied, all appeared to use the potty or toilet quite willingly, and to indicate their needs. Similarly, Sandra (S.16) whose mother (from Nigeria) had started potty-training her just after 6 months, "when she was sitting alright", reported her as "trained" just after 15 months.

Only two English mothers reported their children as "trained", or regularly using a potty by 18 months. These were Mrs. U., mother of Celia (S.15), who started at 15 months, and Mrs. K., mother of Hannah (S.17).

Mrs. K. had started Hannah at 7 months:

"Every time I change her I sit her on there, and in the morning after she's eaten. She's quite good with it - four or five times a day".
At 12 months Mrs. K. reported the type of lapse which is frequent when babies are first trained:

"Well, she went through a spell - right at the beginning - she was very good, then she went through a spell when she wouldn't use it at all - she'd sit on it and do nothing at all, after she came off she'd go behind the chair, say".

By 15 months Mrs. K. reported Hannah as telling her "when she wants it - 'ugh - ugh' - if the pot's in the room she'll bring it", and "I usually leave her with just a pair of pants now, and she's been really good lately".

Mrs. U., mother of Celia (S.15) thought the first year "too young" for toilet-training, but at 15 months reported:

"I usually keep it (the potty) in here in sight of her. She'll pick it up and sit on it, then move it, then put it on her head and play with it. She knows she's got to sit on it. No, she's not using it at the moment. No, she's not started at all".

And at 18 months:

"Now I'm potty-training her. She's dry during the day now, that's only 3 weeks - that's good, isn't it?"

No other mother, whether regularly training her child or only occasionally doing so, reported more than occasional use of the potty at 18 months.

The extent of toilet-training throughout the group at 18 months was as follows:

<table>
<thead>
<tr>
<th>Regular use of toilet or potty</th>
<th>Occasional use</th>
<th>No toilet-training</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

The proportion of children of immigrant mothers reported as "trained" at 18 months did not differ significantly from the children of non-immigrant mothers reported "trained" at that age.
Frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Immigrant mothers</th>
<th>non-immigrant mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>trained at 18 mths</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>not trained at 18 mths</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

"Late" trainers

Two mothers (Mrs. C., mother of Benjamin, S.5, and Mrs. D., mother of Caroline, S.12) had still not begun toilet-training by 18 months. (A third mother, Mrs. B., S.13, who was last interviewed at 9 months was strongly against early toilet-training, and would probably have been among these mothers).

Mrs. C., mother of Benjamin (S.5) reported at 9 months:

"No, it's too early. With the older one I started very late, with the middle one it was early - about one year, and with him also I want to try early".

At 18 months Mrs. C. had still not started, but reported:

"I will soon, you know".

Although she gave no reason for not starting between 12 and 18 months, the delay could have been connected with two trips abroad during this period.

Mrs. D., mother of Caroline (S.12) reported at 18 months:

"I haven't tried the potty yet. I've been waiting for the warmer weather. I thought I'd buy some little towelling pants that she can have on on the beach, then perhaps she'll get the idea of it. I think it's better to wait until they know. I waited until L. (older sister) understood - she was about 20 months then - I had her completely dry during the day in about two weeks".

As the Newsons (1974) have pointed out, attitudes towards toilet-training are not simply a matter of what parents consider best for the child's well-being, but are inevitably affected by the family's standard of living and hence, economic circumstances.
Both Mrs. C. and Mrs. D. had a garden and employed a home-help, so that obviously dirty nappies were not a major problem. And as Mrs. D. put it:

"I'd sooner have a wet nappy than have to clean the carpet".

Working mothers

"Time" or lack of it is particularly likely to influence both attitudes and behaviour of working mothers. In this group children of working mothers were more likely to be "trained" at 18 months: of the five working mothers all but two started toilet-training by 7 months, and had their babies "trained" at 18 months. The fourth mother introduced training at 15 months and reported her child as "trained" at 18 months.

Successful toilet-training involves offering the child the pot at regular intervals, so that obviously working mothers are less often able to do this. Only one working mother, Mrs. A., mother of Simon (S.3) mentioned lack of time as her reason for not "training" Simon (at 12 and 15 months).

Lack of time was also mentioned by one non-working mother, Mrs. G., mother of Rory (S.1), who despite starting training at 10 months still did not have Rory trained at 18 months, e.g.

At 15 months:

"I put him on it every morning and every night, because I don't usually get time mid-day, but he's only done anything in it once".

Conclusion:

83% of the sample had started toilet-training by 12 months. By 18 months 57% of mothers reported regular use of potty or toilet. Immigrant mothers as a group did not differ significantly from non-immigrant mothers in introduction of toilet-training nor achievement of toilet-training.
All Asian mothers had started toilet-training by age 7 months, and all reported regular use of potty or toilet by 18 months. Early training and achievement of toilet-training were also associated with working mothers in this group.
Chapter 6:

ATTACHMENT

...
Attachment, separation anxiety and stranger protest

Separation anxiety - the child's anxiety upon separation or threatened separation from his primary caretaker - appears to be a universal phenomenon which begins towards the end of the first year (Kagan 1976).

Attachment theorists (Bowlby 1969, Ainsworth 1969) interpret separation anxiety as the child's fear that the "bond" with his mother will be broken by her departure. Such an interpretation rests upon the premise that a "bond" has been formed, i.e. that the child is attached to its mother by an emotional tie. Separation anxiety is therefore accepted as a sign that the child is attached.

Kagan and his associates feel that separation distress is not adequately explained by attachment theory. They see separation anxiety as arising from the cognitive advances of the first year in that the child is now aware of discrepant situations and can activate hypotheses in an endeavour to resolve discrepancy.

The child's mother, who is usually the most salient feature of his environment, becomes a major focus for hypothesis solving and consequent arousal of anxiety.

Stranger protest, which also emerges in the first year (Schaffer, 1966; Emde, Gaensbauer & Harmon, 1976) requires the cognitive maturity necessary for the child to retrieve schemata of prior events, and thus recognise a stranger as discrepant from the mother. (The same processes are responsible for apprehension or inhibition towards discrepant events (Scarr & Salapatek, 1970). Like separation anxiety, stranger protest has been observed with remarkable consistency both across and within cultures (Goldberg, 1972; Kagan, 1976; Konner, 1972).

Although considerable variation has been reported both in the growth function for separation protest and in intensity of distress, it is generally agreed that distress at mother's departure, i.e. crying or inhibition of play, is minimal before 8 months, rises rapidly between 9 and 18 months, and then begins to decline. Stranger protest reaches a peak between 7 and 9 months, but has been observed as early as 5 months (Kagan, 1978).
Separation anxiety and stranger protest are still the most widely used measures of attachment behaviour. In the present study measurement was based on the method used by Clarke-Stewart (1973). This allows for assessment of:

1. Intensity of attachment (social behaviours towards mother in specified situations);
2. Attachment categorization;

**Intensity of attachment**

This was assessed by observing the frequencies of social behaviours towards the mother in specified situations, e.g. entrance of Experimenter, and entrance or exit of Mother. (See Appendix P for check-list of categories used). Relevant items of the IBR (Infant Behaviour Record), e.g. Social Orientation (to E. and to M.) and Fearfulness (reaction to the new or strange) were also used in this assessment. Systematic observations of attachment behaviour by means of the check-list were first made at 9 months. (The IBR was used throughout the study).

A number of difficulties were encountered in using the check-list. In some cases none of the descriptive categories covered observed behaviour, so that "other" had to be recorded. This was particularly so as far as Item C was concerned: 'Behaviour while M. is out of room'. 50% of the sample at age 9 months showed none of the listed behaviours of fretting, crying, calling to Mother, or searching visually or physically. In most cases 9-month olds followed their mother visually as she left the room, then returned their attention to the test objects or to interaction with the Experimenter. Further variables were presence of father, siblings or other familiar persons.

Not all 9-month olds reacted to their mother leaving the room incidentally. In such cases these mothers were asked by the Experimenter to leave the room at some point during the interview. Although mothers were instructed in this procedure in advance, their departure in these circumstances inevitably created more of a "strange situation" than did their leaving spontaneously. In S.12 (Caroline's) case, her mother was not asked to leave the room as she was recovering from an operation, and had to remain seated as much as possible. Caroline's greeting behaviour towards her mother was observed when her mother first entered the room.
At both 9 and 12 months it was possible to categorize observed behaviours so that an assessment of attachment could be made.

The following frequencies of behaviours were observed:

Table 34:

<table>
<thead>
<tr>
<th></th>
<th>9 mths (14 cases)</th>
<th>12 mths (13 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. When M. leaves room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follows or starts to follow</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Follows visually only</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Frets/cries</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>No reaction (too engrossed in other activity)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>C. While M. is out of room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frets/cries till return</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Searches visually</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Continues activity happily</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>1 (stands by door till M. returns)</td>
</tr>
<tr>
<td>D. When M. returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cries till comforted</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Approaches or reaches towards</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Greets (look, smile, vocalization)</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Both</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

As can be seen, all subjects showed some form of attachment behaviour in these situations at both 9 and 12 months. The most noticeable difference between the two ages is the increase in following responses from 28% at 9 months to 53% at 12 months. This increase is clearly related to the advance in locomotor ability by 12 months (only Benjamin, S.5 was not crawling or walking freely at 12 months).

1. S.19 (Ashni) has been omitted from this classification as his extreme distress prevented his mother being asked to leave the room or to put him down. His case is discussed separately.
Although proximity-seeking has been found to be one of the most stable of attachment behaviours, and to increase with age (Schaffer & Emerson, 1964), following as a response to Mother's exit from room was not observed so frequently at 15 or 18 months. (This was observed in only two cases at each assessment).

Also noticeable is the decrease in fretting or crying (only observed in 21% at 9 months). (Ashni, S.19, an extreme case is omitted here.) The incidence of fretting or crying when M. leaves room is surprisingly low at 9 months, the age at which most protest at separation might be expected. The lack of upset is reflected in the 50% (at 9 months) who continued their activity happily while M. was out of the room (i.e. continued playing with toys or test objects, or interacting with the E.), and in the 38% who at 15 months showed no reaction to M.'s leaving the room.

"Intense" attachment behaviour (fretting/crying) was shown by 28% of the sample at 9 months and 23% at 12 months. (These percentages include S.19).

The generally low incidence of fretting and crying during the separation episode may have been because the situation was not potentially threatening. (According to Bowlby, 1969, the conditions sufficient to evoke attachment behaviour are separation and threat).

The situation took place in the home and not in an unfamiliar setting, and the child's interest had in most cases been aroused by the test objects before his mother left the room. The only potential threat involved in the situation was the relative unfamiliarity of the Experimenter. Memory functioning in infancy is too poorly developed in the first year to bridge a 3-month gap, thus producing a familiarization effect.

The Experimenter had already visited mother and child on three previous occasions; she was not regarded as a "stranger" by the mother, and previous experience with each child had sensitized her to individual differences of temperament. To this extent she was not a "stranger" and potentially threatening to the child.
Stranger protest

Stranger protest is the second behaviour which is frequently used to assess attachment. This was measured by observation of the child's reactions to the Experimenter (Items A and G on the check-list), and by relevant items on the IBR (e.g. social orientation to E.) and Fearfulness.

Initial reactions to E. could be classified as follows:
(figures include S.19)

<table>
<thead>
<tr>
<th></th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(14 cases)</td>
<td>(13 cases)</td>
<td>(15 cases)</td>
</tr>
<tr>
<td>1. Shows fear</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Avoids really</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Avoids coyly (i.e. hides face)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Sobers</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Smiles</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Approaches ) usually</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Touches or talks ) smiles</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Other</td>
<td>(crying when E. enters, stops crying &amp; smiles)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

IBR ratings

IBR ratings were used to classify wariness, avoiding/withdrawn behaviour or hesitant behaviour towards E. (Item 2) and extent of Fearfulness (Item 5). (Only high ratings, i.e. 5+ are shown).

<table>
<thead>
<tr>
<th></th>
<th>9 mths</th>
<th>12 mths</th>
<th>15 mths</th>
<th>18 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(14 cases)</td>
<td>(13 cases)</td>
<td>(15 cases)</td>
<td>(14 cases)</td>
</tr>
<tr>
<td>Social orientation to Experimenter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Avoiding or withdrawn</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Hesitant</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watches warily</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fearfulness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rating of 6</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rating of 7</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinging to M.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
On the basis of these observations (social behaviour towards M. in specified situations, Table 34) and stranger protest (initial reactions and social orientation to E., Tables 35 and 36), and information from mothers' reports, it was possible to classify subjects into the following attachment categories (in accordance with Ainsworth & Wittig (1969):

- "low attached" 1 (S.9): weakest proximity-seeking and contact-maintaining behaviour
- "secure attached" 6 (42%)
- "very attached" 5 (35%)
- "mal-attached" 2 (S.5 and S.19)

(Ss. 3 and 18 have been omitted as it was felt too little information was available for adequate classification).

As can be seen, the sample follows a normal pattern of distribution, with only three subjects (21%) in "extreme" groups. These cases will be discussed individually.

Simon C. (S.9)

At both 9 and 12 months Simon showed "normative" attachment behaviours in the separation episodes (i.e. similar behaviours in the separation episodes to most of the sample - at 9 months: follows M. visually only, greets on return; and at 12 months: starts to follow M., searches physically, cries till comforted on return). On both these occasions Simon was crying when the E. entered, but stopped crying almost instantly and smiled. No wariness other than initial sobering at 12 months was observed.

Throughout the course of the study, however, Simon's behaviour was ambivalent towards both his mother and the Experimenter, alternating between approach and avoidance. Simon's attachment could be described as insecure-ambivalent (Ainsworth, Blehar, Waters & Wall, 1978), and his mother's reports substantiated observations.
At the 6-, 9-, 12- and 18-month interviews, Mrs. C. mentioned Simon crying when he saw her, or on her return. For example:

9 months
"He cries sometimes when I go out of the room".
"If he's been good and I come in he'll start crying".

12 months
"As soon as he sees me he starts crying. No, he doesn't cry when we leave him. You say goodbye to him, and he waves 'bye'!".

18 months (Simon had been attending a nursery since 15 months)
"He starts crying - like that (on reunion with Mother). He never really cries when I leave him, but as soon as he goes in he's off".

Only at 12 months did Simon attempt to follow his mother when she left the room. At 15 months no proximity-seeking behaviour towards M. was noted, and at 18 months Simon was noted to hit out at his mother.

Mrs. C. was felt to be well towards the lower end of three of Ainsworth's dimensions of maternal behaviour (Ainsworth, Bell & Stayton, 1971), namely sensitivity-insensitivity, acceptance-rejection, and accessibility-ignoring. Mothers of Group A babies (the category which applied to Simon) in Ainsworth's 1971 study, were rated particularly low on these dimensions.

Benjamin (S.5)

Benjamin was particularly difficult to assess during the separation episodes because of his excessive passivity: he was not observed in spontaneous pre-walking progression until 18 months + (crawls slowly towards open drawers and pulls self up). At 9 months, when his mother was asked to leave the room, Benjamin showed no immediate reaction, but cried when he heard her calling from outside the room. He then cried until her return, when he raised his arms towards her. Additional information on Benjamin's response to separation could not be obtained from questioning, as his mother, Mrs. C., reported only leaving him when he was asleep.

1. Similar reactions were observed at 18 months, as well as crying when M. put him down (also at 12 months).
On two occasions (9 and 18 months) Benjamin received ratings as high as 7 for Fearfulness. His behaviour was less "fearful" at 12 and 15 months, but at 12, 15 and 18 months "clinging" behaviour was observed when his mother put him down, but no attempt at following was made, nor protest other than crying.

Because of passivity Benjamin was clearly unable to use his mother as a secure base from which to explore. By 18 months he was showing some signs of exploratory behaviour, but was still "clinging" to his mother and avoidant of the Experimenter throughout testing and interview.

According to Ainsworth's dimensions of maternal behaviour, mothers of Group C babies (which Benjamin clearly was), tend towards the lower halves of the four dimensions, and are particularly low on sensitivity-insensitivity and accessibility-ignoring.

From her reports and HOME ratings, Mrs. C. was a sensitive, accepting mother, scoring consistently highly on Emotional and Verbal Responsivity. It is therefore difficult to relate Benjamin's mal-adaptive attachment behaviour to maternal behaviour in this case. A possible factor which may have contributed to his apparent insecurity was the family's three trips abroad during the course of the study. Two of these were to his mother's family in Israel, and one, a holiday-trip to Switzerland, at approximately 14 months.

Ashni (S.19)

Ashni's behaviour was characterized by extreme stranger protest (prolonged distress and wariness on Experimenter's arrival), excessive clinging, and crying when put down by mother, grandparents or brother. This behaviour was observed from 9 months onwards.

At the 9-month interview Ashni's crying began when his mother came to sit next to the E. (with Ashni on her lap). Although it was eventually possible to interest him in the test objects, an attempt by his mother to put him down when asked by the E. whether

1. A rating of 7 = Shows evidence of being bothered by the strange situation or persons much of the period.
Ashni could crawl, produced renewed crying, so that his mother had to retrieve him straight away. In the circumstances Mrs. M. was not asked to leave the room, but was asked "Would he cry if you left the room?" to which Mrs. M. gave a definite "yes".

At 12 months Ashni was first brought in by his 5-year old brother. When put down he started crying, was retrieved by his grandmother (his primary caretaker), but again cried each time he was put down. As on the previous occasion it was eventually possible to interest Ashni in the test objects. During testing he allowed himself to be picked up by the E. and seated on a chair (although warily and with a "cry" face), and later allowed himself to be "walked" to his mother. When asked whether Ashni would allow himself to be picked up by the E., Mrs. A. replied: "No, he wouldn't let you pick him up, never!" Later Mrs. M. left the room spontaneously, Ashni started to follow her (walking), remained by the door until her prompt return, and greeted her with a smile on her return. No crying was noted during this episode.

At both 15 and 18 months it was necessary to return a second time for testing, as at the first visit Ashni was too distressed (continuous crying) to take an interest in the test objects. At the 15-month visit Ashni's mother attributed his upset to the rest of the family having gone out. However, on their return home testing was still not possible. At 18 months no specific cause for the distress was given.

Both second visits were carried out in the presence of Ashni's grandparents (his daily caretakers), as Mrs. M. worked full-time. At these visits Ashni was extremely hesitant and wary of the E., clinging to both grandparents, but showed less signs of upset than in his mother's presence. At 15 months Ashni allowed the E. to place him on his back (Item 47, Motor Scale), and got up instantly and happily. At 18 months he eventually approached the E. by himself, and offered her toys.
At all visits it was noticeable that Ashni was more readily comforted by his grandmother than by his mother. From approximately 4 months the grandmother was his full-time caretaker, and by 6 months Ashni was sleeping in his grandmother's room (from 9 months onwards he was sharing her bed).

Although Mrs. M. was rated highly for Emotional and Verbal Responsivity at all but 6 months (when her rating was as low as 4 on an 11-point scale) at all interviews her ratings on "maternal tone and voice" and "emotional tone" were low.

Ashni's grandmother appeared to provide a secure base for his exploration (as observed at 15 and 18 months when testing was carried out in his mother's absence, and Ashni's readiness to be comforted by her, rather than by his mother suggests a secure attachment than to his mother.

A possible factor contributing to Ashni's insecurity may have been the family's 6-week trip abroad when Ashni was 2 - 3 months.

Although all other subjects were classified as "secure" or "very" attached (the main criterion for distinguishing the two groups was that "secure" attached subjects showed little protest or upset during separation episodes), some subjects showed isolated incidents of insecure or avoidant behaviour on one or more occasions. Examples are Caroline (S.12) who at 18 months turned to her mother and pulled her towards the test objects before she would touch them, and Charlotte (S.14), who at 12 months looked to her mother for reassurance before touching test objects, and at 18 months needed to be coaxed towards the E.

Mohamed (S.6) and Harjit (S.8) both showed all signs of stranger anxiety at 9 months (hesitancy, wariness and ratings of 7 on Fearfulness), but at all future visits showed no more than initial wariness.
Individual differences

Ethnic differences

Babies of immigrant mothers as a group showed more intense attachments to their mothers than did babies of English mothers. When classed as "low attached" (low attached or secure attached subjects) and "high attached" (very attached and mal-attached subjects) frequencies were as follows:

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;low attached&quot;</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>&quot;high attached&quot;</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>

Using the Fisher Exact Probability Test the probability of occurrence is p < .05.

Babies of immigrant mothers as a group showed more evident signs of stranger protest than did babies of English mothers. This was particularly the case as far as Asian babies were concerned. Although more extreme reactions to the E. were to be expected from non-English babies for whom the E. presented more discrepancy, both in appearance and voice, no such reactions were shown by West Indian and African babies in the sample, e.g. Simon A. (S.3), Sandra (S.16) and Nkeruka (S.18), who were the most sociable of subjects, and Leroy (S.7) who showed only initial wariness of E.

The few studies that have coincidentally included racial variation for either subjects (Bronson, 1972, Scarr & Salapatek, 1970) or strangers (Cohen & Campos, 1974) have found that race did not have a differential effect.

A recent study by Feinman (1980) did show a race effect. Caucasian infants from a small U.S. city in an isolated rural setting were exposed to both black and white strangers. Feinman found that when the infants were in the sensitive stage for stranger anxiety they were less likely to make approaching movements to black strangers.
An explanation for the racial differences in the present study may be variations in the extent to which the families mixed with others outside their own ethnic group. Mrs. B., mother of Harjit (S.8) referred to this at 15 months:

"No, not usually (hesitant with strangers). I suppose it's because you're English - he's noticing that".

Birth order

Fox (1977) reported a relationship between ordinal position in the family and the probability of separation protest. He found that first-borns became significantly more upset by separation from an attachment figure than later-borns.

No such relationship was found in the present study in which first-borns were the least likely to protest during separation episodes, and showed least signs of stranger anxiety. Although Kagan failed to find a relationship between birth order and separation protest, his data did suggest earlier protest (at age 5 months) among first-borns. As already mentioned, Celia (S.15), a first-born, showed what may have been stranger protest at the early age of 6 months.

Day-care and separation protest

It has been suggested that children in day-care are less secure and show more anxiety in mildly uncertain situations than do home-reared children (Blehar 1974). Hock (1976) compared infants who were cared for outside the home with home-reared infants and found no differences in Ainsworth's experimental situation. Kagan (Kagan et al. 1978) found no differences between day-care and home-reared infants in a similar situation.

In the present study two babies were in full-time day-care: Celia (S.15) from 8½ months, and Sandra (S.16) from 6 months. Simon A. (S.3) spent two weeks with a child-minder at age 6 months, and Simon C. (S.9) attended a nursery daily from age 15 months. All except Simon C. (S.9) showed "normative" attachment behaviour, and none showed more than initial wariness or hesitancy towards E.
Multiple caretaking and attachment

Evidence from both Western and cross-cultural studies suggests that the mother-infant bond may be less intense where the mother's caretaking activities are shared by one or more mother-figures.

Caldwell et al. (Caldwell, Hersher, Lipton, Richmond, Stern, Eddy, Drachman and Rothman, 1963), for instance, in a study of American one-year olds, found that they were more emotionally dependent on their mothers, and were involved in more emotional encounters with them when they had been reared exclusively by their mothers, rather than by other females as well.

Ainsworth (1967) reported that among the Baganda of East Africa, the more people there are in the house, the less attached to the mother is the infant. In other words, intensity of affect may vary inversely with the number of caretakers.

Other reports suggest that the mother-infant bond is not an exclusive one, and infants, when they first become capable of forming specific attachments, may form several simultaneously (29% of Schaffer's sample of infants (Schaffer & Emerson 1964) formed more than one attachment simultaneously, and 10% formed as many as five or more).

The present study included both nuclear and extended families, and the extent of exclusivity of mother's caretaking in both varied considerably. There appeared to be no clear relationship in these families between multiple caretaking and attachment. Sub-groups were too small for statistical testing, so that it is necessary to discuss individual cases.

Extended families

Three Asian families shared their household with parents. In two, Ibrahim's family (S.2) and Ashni's (S.19), grandparents were fully participative in child-rearing activities. In Ashni's case his grandmother was his primary caretaker, and his mother cared for him only evenings and weekends. In contrast, Ibrahim's mother was available to him constantly, but her caretaking activities were shared by her mother and her brother who clearly spent more time with him, and his sisters and brother than did their father. The use of "we" by both mothers when talking about care of their child was felt to be indicative of shared caretaking.
Ibrahim was included among "very attached" subjects, but showed almost as many attachment behaviours to his uncle as to his mother. Ibrahim's grandparents were never seen in close contact with him, so that his behaviour towards them could not be assessed.

Ashni was one of the two infants classified as "mal-attached". He was clearly intensely, but insecurely attached to his mother. Clearest signs of this were his refusal to be comforted by her. His attachment behaviour to his grandmother, on the other hand, appeared to be more normative. She was able to comfort him, and eventually persuade him into exploration.

Father-participation in child-care

Three mothers' reports suggested that their husbands acted as caretakers on more than isolated occasions. These were all cases where mothers worked part- or full-time, (S.3, S.16 and S.17). In addition, one father (Mr. D., S.12) acted as full-time caretaker to Caroline at 8½ months, when Mrs. D. spent a week in hospital.

Simon A. (S.4)

From approximately 6½ months Simon was cared for during the day by his father (his mother worked full-time). Simon appeared to be equally attached to both parents (as assessed by proximity-reaching behaviour towards M. at 9 and 12 months, and Father at 15 months (testing was carried out in father's presence while M. was at work).

Sandra (S.16) and Hannah (S.17)

Both Sandra's and Hannah's mothers were midwives, so worked "shifts". Both babies were left in father's care when their mothers were on night duty, in Sandra's case from 5½ months, and Hannah's from 2 months. Both fathers were students for part or whole of the study, so that they also shared more caretaking activities than did most working fathers. Sandra's father was present at all but one interview and Sandra showed signs of being equally attached to both parents.
Hannah's father was only present at the 3-month interview, so father-infant attachment could not be judged in this case. Both Sandra's and Hannah's mothers often referred to "we" when discussing their child's caretaking.

Caroline (S.12)

Caroline's father, although working full-time (as a Hospital Administrator) appeared to be a highly participative father outside working hours. In her earliest interviews Mrs. D. frequently referred to "we", and at 6 months reported:

"He'll probably be home about 4.30 today - he's always done a lot with the children - at least two to three hours each evening - that's why he comes home early".

When Caroline was 8½ months, her mother had to spend a week in hospital. This separation appeared not to have upset Caroline, despite the fact that Mrs. D. had been breast-feeding her until her admission to hospital. Mrs. D. explained her lack of upset as follows:

"She never worried because she's used to Bob - he'd been dealing with her all the time at home. Both our children have been like that - they've always stayed with one or the other of us. I was a bit surprised because she'd been a bit of a mother's girl before I went into hospital, but because I wasn't there, and Bob was, she was quite happy to have him all the time".

Caroline showed only minimal signs of attachment at this interview, e.g. smiling to mother and father, reaching-up (she was an excessively passive baby). At all future interviews Caroline appeared to be securely attached to her mother, following visually or physically when she left the room, and at 18 months drawing mother towards the testing situation. Caroline's father was not present again during an interview, but Mrs. D.'s reports suggested that her husband continued to share Caroline's caretaking, and that the two were strongly attached. For example:

12 months
"When Bob comes home in the evening she goes mad".

15 months
"Once Bob gets home - once she hears his key in the door, I might as well not exist any more. It's all 'Dad, Dad, Dad!', isn't it?"
Caroline's failure to be more upset by separation from her mother at the crucial age of 8½ months was clearly due to her secure relationship with her father. While the fact that he was used to everyday caretaking activities, such as feeding, bathing and nappy-changing meant less of a change in Caroline's routine, his role as a surrogate mother was felt to be due to the fact that Caroline was already attached to him.

In this study no relationship was found between multiple caretaking and intensity of attachment. In one case, where Father played a highly participative role in caretaking activities, no adverse effects resulted from mother-infant separation at the age of 8½ months. This was felt to be due to the infant having developed simultaneous, secure attachments to both parents.

Early maternal separation

In certain animal species immediate separation of a mother from her young for a brief period after birth (the so-called "sensitive" period) may result in disturbed maternal behaviour (e.g. Klopfer, 1971, Hersher, Richmond & Moore, 1963). Recent studies of Kennell & Klaus (1972, 1974) suggest that there is a "similar, although less fixed period of heightened sensitivity in the human mother during which she interacts with her newborn infant and begins to form a special attachment to it". Kennell et al. consider as indicators of "attachment" behaviours such as "fondling, kissing, cuddling and prolonged gazing which serve to maintain contact with and show affection to a particular individual". The maternal "sensitive period" refers to that time after delivery when the mother forms, or begins to form a special attachment to her infant. Kennell and his colleagues feel that increased contact, or especially separation during this period is likely to alter later maternal attachment.
During clinical experience they observed that a number of mothers who had been separated from their infants were hesitant and clumsy when they began to care for them (whether the infants were full-term or premature). Reports by adoptive mothers on the other hand contradict suggestions that there is a sensitive period during which attachment developed. As Richards (1974) suggests, however, early separation from her infant could well destroy a mother's self-confidence.

One mother in the present study was separated from her infant for an extended period after the birth: Mrs. A., mother of Simon (S.3), who was born 7 weeks prematurely. Simon (a first baby) was in an Intensive Care Unit until the age of 6 weeks, during which time his mother reported visiting him twice a day. Mrs. A. reported breast-feeding Simon for 5 weeks, when her milk "dried up".

At all visits Mrs. A. appeared a sensitive, affectionate mother. Although she was not an outwardly effusive person her behaviour towards Simon included average to high amounts of kissing, bouncing and "en face" interactions. Simon made excellent progress until 6 months when Mrs. A. started working full-time, and left Simon firstly with a child-minder (for 2 weeks), then with her husband. By 15 months Simon's Bayley scores had dropped some 20 points. However, he showed signs of a secure attachment to both parents (assessed by proximity-gaining behaviours), and the only suggestion of mal-attachment in either Simon's or his mother's behaviour is the question whether or not an "attached" mother would leave a premature baby who clearly needed individual attention.

Sociability

There were marked differences in subjects' sociability throughout the course of the study. Most noticeable was the readiness of particular subjects to approach, touch and signal to be picked up by the Experimenter.
All subjects but one (Benjamin, S.5) could, on one or more occasions, be credited with "touches or talks" to E. This includes Ashni (S.19) who despite acute stranger anxiety at both 15 and 18 months eventually approached the E., touched tentatively and offered toys.

Five subjects were markedly sociable, showing little or only initial hesitancy before approaching and touching E., and asking to be picked up. All but one of these five subjects were girls, so that girls were clearly significantly more sociable than boys in this group.

All these girls were noted as "friendly" from the beginning of the study. Celia (S.15) crawled towards E. as early as 6 months, S.7, S.16, S.17 and S.18 from 9 months onwards. Most noticeable was Nkeruka at 12 months who, when brought into the room by her mother at 12 months and set down, immediately walked to the E. and extended her arms to be picked up. Her mother reported that this was her typical behaviour, even to "people in the street". Sandra (S.16) also approached E. at all visits from 9 months onwards, and once walking, climbed onto the E.'s lap.

Girls are generally reported to be more sociable than boys, both to M. and to stranger. Clarke-Stewart and her colleagues (Clarke-Stewart, K.A., Umeh, B.J., Snow, M.E. & Pederson, J.A., 1980) found girls to be more sociable than boys to the mother, and to a marginal extent to a stranger.

In the same study Clarke-Stewart found non-parental care of the child to be negatively related to sociability to strangers. No such relationship was found in the present study where subjects who were cared for outside the home (S.15 and S.16) were the most sociable of subjects.

1. except for Nkeruka (S.18) who at 6 months was still passive and "accepting".
Conclusion:

All subjects showed evidence of attachment, as assessed by attachment behaviours to mother, at 9 months. There was a noticeable increase in fretting and crying between 9 and 12 months, and an increase in following behaviour. 78% of the group could be classified as secure or very attached, two subjects as mal-attached, and one subject as low-attached.

Babies of immigrant mothers as a group showed more intense attachments to their mothers than did babies of English mothers, and more evident signs of stranger protest.

No relationship was found between birth order and separation protest, nor non-parental care and separation protest. Multiple caretaking was not related to intensity of attachment in this study.

Individual differences in sociability were noted. Girls were consistently more sociable to E. than were boys, and showed more sociable behaviours.
Chapter 7:

Summary of Findings

Conclusions

No consistent pattern of correlation emerged between tactile and motor scores on the Bayley Scales. For males the two sets of scores were positively related at all but 5 months (correlations at 1, 12 and 18 months were statistically significant). For females, scores were positively but non-significantly related from 1 to 12 months, but inversely related at 18 months (p < .05), and at 12 months (p < .07).
Assessments of infant development

1. Mental development

Mental development in this group, as measured by the Bayley Scales, was inconsistent. The most stable period was between 6 and 12 months (6-month Mental scores were significantly correlated with both 9 and 12-month scores, \( p < .01 \)).

Scores at 3 months had no predictive value, and by 15 months auto correlations were negatively related (at 15 months significantly, \( p < .01 \), at 18 months non-significantly).

Male and female scores followed a similar pattern, with males scoring higher at 3 months, but females scoring consistently higher from 6 - 18 months. (These differences only reached statistical significance at 9 months).

2. Motor development

Motor development, as measured by the Bayley Scales, showed a high level of consistency. Only between 3 and 15, and 3 and 18 months, and 15 and 18 months were auto-correlations non-significant.

Males and females followed a similar pattern of development until 12 months, characterized by 'infant precocity', i.e. exceptionally high scores at 3 months, followed by a rapid decline. At 15 months female scores drop below the norm (mean PDI: 96), rising rapidly to exceed male scores at 18 months. (Differences were not statistically significant).

No consistent pattern of correlation emerged between Mental and Motor scores on the Bayley Scales. For males the two sets of scores were positively related at all but 3 months (correlations at 9, 12 and 18 months were statistically significant). For females, scores were positively but non-significantly related from 3 - 12 months, but inversely related at 15 months (\( p < .03 \)), and at 18 months (\( p < .07 \)).
3. Symbolic Play Test

The Symbolic Play Test provided an independent measure of cognitive development at 15 and 18 months which did not involve verbal instruction.

Group scores were positively but not significantly related to the MDI. When separated according to sex, the correlation at 18 months was positive but not significant for females ($p<.08$), but inverse (non-significant) for males. The slightly higher mean for female subjects at both 15 and 18 months reflected their higher MDI at these ages.

Play Scores were positively related to Vocalization: significantly so at 15 months ($p<.02$), but non-significantly at 18 months. A similar pattern of correlation was found between Play Scores and Maternal Involvement (Scale V of the HOME Inventory), i.e. a high-positive but non-significant correlation at 15 months ($p<.07$), and a non-significant correlation at 18 months.

Performance on the Symbolic Play Test was inversely related (at a non-significant level) to Provision of Appropriate Play Materials (Scale IV of the HOME Inventory).

4. Language Development

Considerable uniformity of language development was found within the group, irrespective of ethnic group, social class or birth order.

Language development throughout the group was within the normal range, so that at 6 months 77% of the sample scored at the 7-month level on the Bayley Scale, and at 18 months, 78% were scoring beyond the 18-month level.

In common with previous findings, females showed evidence of superior verbal ability. (The lower mean Vocalization score for females at 3 months was thought to be due to two subjects who were exceptionally passive until 6 months. All "advanced vocalization" from 12 months onwards, was from girls.)
There was a positive correlation between language development as reflected in Vocalization scores, and mental development as measured by the MDI. The two measures were significantly correlated at all but 15 months \((r = .26, n = 15)\). This non-significant correlation is unexpected in the second year when the verbal content of the Bayley Scale becomes greater.

A positive relationship was found between Emotional and Verbal Responsivity of Mother (Scale I of the HOME Inventory) and Vocalization scores (correlations were significant at 6 months, and highly significant at 12 and 18 months). This result is in line with previous findings concerning maternal reinforcement of verbal behaviour (Freedle & Lewis, 1977), but fails to reveal the direction of effect (e.g. Clarke-Lewis, 1973).

5. Relationship between the environment (as measured by the HOME Inventory) and infant development (as measured by the Bayley Scales).

Cross-lagged panel analysis revealed two areas in which the infant's mental development was positively influenced by specific maternal behaviours, namely Emotional and Verbal Responsivity of Mother, and Maternal Involvement with Child. The panel analysis showed the significant impact of both variables at 6 months on the infant's MDI at 12 months. Infant's level of cognitive ability did not appear to significantly affect these maternal behaviours until 18 months.

12 months marked a change in the relationship between mental development and two types of environmental stimulation. The first, Provision of Appropriate Play Materials (HOME Scale IV) is not linked with mental development in the first year, but between 12 and 18 months the positive effect of this environmental variable on mental development becomes clear.

The second variable, Organization of the Environment, is shown to have a positive impact on mental development between 6 and 12 months, but at 12 months the direction of effect changes, so that between 12 and 18 months those babies with higher MDI's are eliciting this type of experience.
A clear pattern of correlation emerged between Avoidance of Restriction and Punishment and both mental and motor development. This is summarised in this Section under "Socialization," p.325.

Physical development and maternal care

1. **Weight**

Weight, where known, was recorded throughout the course of the study, in order to supplement mothers' reports of their child's health, and the Experimenter's observations.

The proportion of mothers who knew their child's weight ranged from 55% to 89%. Regular weighing was associated with birth order, i.e. mothers with three or more children had their babies weighed less regularly than first or second-time mothers. Neither weight nor regular weighing was related to incidence of illness. Factors affecting use of Clinic or G.P. are also relevant here, and are discussed accordingly.

2. **Teething progress**

Teething progress was recorded throughout the study. The group showed a normal pattern of teething, with appearance of first teeth ranging from 4½ to 15 months. 63% of mothers reported some form of "teething-trouble". Mothers reporting most upset were those who also reported their baby as "difficult", "trying a lot", and having a number of ailments.

3. **Feeding**

Although 84% of the sample reported feeding "on demand" (at 6 weeks), the same percentage reported leaving 3 - 4 hourly intervals between feeds. Only three mothers' qualifying remarks suggested that they were, in fact, feeding on demand.

 Mothers' reports of feeding at the "recommended" times were felt to reflect the advice given at the Hospital or Clinic, and may have been because they were identifying the Experimenter with these authorities, and so giving what they thought was the "correct" response. There were no differences in this respect between breast-feeders and bottle-feeders, nor first-time mothers, and more experienced mothers.
Incidence of breast-feeding (73% at 6 weeks, dropping to 31% at 6 months) compares favourably with previous similar studies.

Social class, ethnic origin, sex of infant and birth order were not significantly related to breast-feeding.

4. Sleeping

At 6 weeks 77% of the sample reported their baby as sleeping a lot during the day and waking up at night. Mothers' reports of "sleeping through" the night varied considerably, and at 6 weeks only 7 babies (36%) were reported to be "sleeping through". Three mothers did not report "sleeping through" until 9 months.

No significant differences in early sleep patterns were reported by mothers who had had difficult births and those whose deliveries had been normal. S.3 who had been in an Intensive Care Unit until age 6 weeks was slow to adjust to the normal waking-sleeping pattern, but by 6 months was reported to be sleeping through the night.

5 babies could be described as regular night-wakers (i.e. night-waking over periods of at least 6 months). In two cases: Clifford K. (S.4) and Simon C. (S.9), a number of additional health and behaviour problems were reported or observed.

Several factors were reported in connection with night-waking: breaks in routine (i.e. hospitalization or other stays away from home, weaning, and taking child into parents' bed). The relationship between night-waking and infant's sleeping arrangements was discussed. No significant association was found.

5. Use of Clinic or G.P.

Percentage of mothers who reported visiting Clinic or G.P. for preventive health care ranged from 84% at 6 months through 72% at 9 months, to 86% at 15 months.

"Experienced" mothers (those with three or more children) were among the least frequent Clinic-attenders, while most second-time mothers made as much use of Clinic or G.P. as did first-time mothers. (The figures were significant at p< .005).

Although regular use of Clinic or G.P. was not related to ethnic group nor to length of residence in this country, it was related to use of the English language.

There was no association between social class and regular use of Clinic or G.P.

Mothers who frequently reported ailments were those who expressed most dissatisfaction with health services (Hospital, G.P. or Clinic). While it was not always clear whether these mothers were justifiably concerned about their child's health, lack of communication between mothers and health authorities was evident, particularly as far as immigrant mothers were concerned.

Socialization

1. Crying

The sample as a whole reported indulgent attitudes towards crying which were reflected in a general decline in crying in the second year. There was no significant association between response to crying and "crying babies". Possible explanations are discussed.

Inconsistency between expressed attitudes and behaviour was observed: all mothers reported "picking-up" as response to crying in the first 3 months. Qualifying remarks and observations suggested that this was not always the case.

Clear ethnic differences in response to crying emerged. English mothers reported and were observed to let their infants cry for longer without responding, and expressed more punitive attitudes towards crying. When grouped as immigrant or indigenous mothers these differences were not statistically significant.

Although a higher proportion of boy babies were reported as having high levels of crying in the first 6 months (66% compared to 42% of girls), the figures do not differ significantly.

Babies who were reported as having high levels of crying throughout the course of the study were all boys, e.g. S.4, S.5 S.9 and S.19.
2. Discipline and behaviour problems

Two types of mother whose reports and behaviour were consistent with their expressed attitude to discipline could be distinguished. These were:

i) "Permissive" mothers: those who spoke strongly against "smacking", and whose behaviour was consistently permissive (Mrs. C., S.5, and Mrs. M., S.19).

ii) "Hot/cold" mothers: whose reports suggested harsh punishment, and who were observed to censure their child frequently (both physically and verbally), but showed corresponding amounts of warm physical contact and affectionate interaction, i.e. Mrs. J., S.7, and Mrs. N., S.11.

At 18 months the remaining 73% ranged from those who admitted "occasionally smacking" to those who reported smacking every day.

Mothers' reports suggested that frequent shouting or physical punishment did not act as a deterrent. Rather it eventually became ignored or imitated by the child. Mothers who expressed permissive attitudes towards "naughtiness" and reported only occasional smacking were less likely to report trouble in controlling their child at 18 months.

Motor development and discipline

There was a clear association between motor development and discipline: a high score on the Bayley Motor Scale (PDI) was related to a low score on Avoidance of Restriction and Punishment, indicating that the more motorically advanced infants were receiving a greater amount of restrictive and punitive behaviour. The pattern of correlation indicated that after 12 months the direction of effect was from child to mother.
Mental development and discipline

The relationship between mental development and Avoidance of Restriction and Punishment was more complex. This environmental variable was not significantly related to the MDI until 18 months. Cross-lagged correlations indicated that the more mentally advanced children were receiving a greater amount of restrictive and punitive behaviour. A weak but positive effect of the environmental variable on MDI was indicated, suggesting that use of restriction and punishment between 12 and 18 months was having a positive effect on 18-month MDI.

Ethnic differences

No clear relationship between ethnic group and use of physical punishment emerged. A breakdown into ethnic group showed that Asian mothers were least likely to use physical punishment. Social class was not related to use of physical punishment.

Thumb-sucking

Mothers expressed generally permissive attitudes towards thumb-sucking, and observations suggested their behaviour was consistent with their reports. Thumb-sucking was observed in only two subjects at 18 months.

Genital play

52% of mothers reported genital play in response to questioning. In only one case was this the mother of a baby girl.

Mothers expressed generally permissive attitudes to genital play. Reports at 18 months suggested that the behaviour had either not persisted or had been replaced by another form of self-exploratory behaviour.

Expressed attitudes to genital play were not related to ethnic group, nor to social class.
Toilet-training

83% of mothers had introduced toilet-training by 12 months. By 18 months 57% of mothers reported regular use of potty or toilet. Whereas immigrant mothers as a group did not differ significantly from non-immigrant mothers in introduction or achievement of toilet-training, all Asian mothers reported early introduction of training (by age 7 months), and achievement of training. Early training was also associated with working mothers.

Attachment

All subjects showed evidence of attachment as assessed by attachment behaviours to mother at 9 months. 78% of the group could be classified as secure or very attached, two subjects as mal-attached, and one subject as low-attached.

Five mothers' reports suggested strong attachment between father and child. In three of these cases fathers were full-time caretakers while mother worked. Observation of father and child on more than one occasion was only possible in two of these cases.

One subject, assessed as mal-attached to mother, showed evidence of a strong, more secure attachment to his grandmother, his primary caretaker since 4 months.

Babies of immigrant mothers as a group showed more intense attachments than did babies of English mothers, and more evident signs of stranger protest.

No relationship was found between birth order and separation protest, nor non-parental care and separation protest. Multiple caretaking was not related to intensity of attachment in this study.

Individual differences in sociability were noted. Girls were consistently more sociable to Experimenter than were boys.
CONCLUSIONS

The findings of this longitudinal study of mothers and infants of different ethnic groups show both commonalities and contrasts with related studies. Despite widely diverse early experiences, both in caretaker-infant relationships, and in the physical environment, overall normative development was the outcome at 18 months.

The failure to find significant class-related differences in mental development as early as 18 months is in line with related studies. Bayley & Schaefer (1964) for instance, reported that not until two years were infants' mental scores positively correlated with parents' IQ. Wachs (1979) found no significant class differences in his study relating physical environment to cognitive-intellectual development. A possible explanation lies in Tulkin's observation (1968) that given the overlapping nature of environmental variables for different social classes, a large sample may be required to reach statistical significance with small mean differences.

Overlapping of class-related variables is all the more probable in a study such as the present one, involving both different social classes and ethnic groups, so that differences related to social-class may be confounded with those related to ethnic group.

Workers who have endeavoured to link specific class-related environmental measures to infant development have been more successful in finding significant associations between cognitive development and the quality of stimulation available in the early home environment, e.g. Bayley & Schaefer (1964), Bradley & Caldwell (1976), Elardo, Bradley & Caldwell (1975) and Yarrow et al. (1973).

The studies of Bradley and his colleagues (Elardo et al. 1975, Bradley & Caldwell, 1976a, Bradley & Caldwell, 1976b, Bradley & Caldwell, 1980) made use of the HOME Inventory, a screening instrument which assesses different aspects of maternal and environmental stimulation. Bradley et al. reported a high level of consistency for these environmental measures, and found that infants' mental test scores were more strongly related to specific environmental measures than to gross indices of socio-economic class.
Bradley & Caldwell (1978) reported low but significant relationships between HOME scores in the first year and 6-month and 12-month Bayley Mental scores (MDI). In the present study MDI was not significantly related to HOME scores until 9 months (Scales III and V).

The two measures of maternal behaviour, Emotional and Verbal Responsivity of Mother (Scale I), and Maternal Involvement with Child (Scale V), were the scales most strongly related to MDI. Maternal Involvement is significantly related to MDI at both 9 months ($p < .02$) and 18 months ($p < .03$). The correlations between Maternal Responsivity and MDI are also quite high at these ages, but fail to reach the conventional level of significance (at 9 months: $p < .07$; at 18 months: $p < .08$). At 12 months, however, Maternal Responsivity is significantly related to MDI ($p < .02$).

These types of maternal behaviour (HOME Scales I and V) are those reported by Bradley & Caldwell (1976a) as showing the most substantial association with mental test performance at 54 months.

Provision of Appropriate Play Materials (Scale IV) is the environmental variable Bradley & Caldwell (1976a) found to be most strongly associated with mental test performance. In the present study this type of stimulation showed no significant link with MDI, but the correlations increase progressively from 6 months (-.31) to .408 ($p < .09$) at 18 months, indicating that the association between the Provision of Appropriate Play Materials and mental development increases during the second year.

Cross-lagged panel analysis (this allows primary direction of effect to be determined) showed that Provision of Appropriate Play Materials was positively affecting subsequent MDI (at 18 months).

In a similar analysis of their data, Bradley, Caldwell & Elardo (1979) attempted to establish the primary direction of effect for this HOME scale, as well as the two scales relating to maternal behaviour. As far as Provision of Appropriate Play Materials was concerned, their data suggested the opposite tendency to the present study, i.e. that between 6 and 12 months level of development appeared to be affecting
Provision of Appropriate Play Materials. In the second year there was no primary direction of effect, but their data suggested that brighter children continue to receive the type of play materials appropriate to their developmental level.

As far as the maternal variables were concerned, the cross-lagged panel analysis of the present study data indicated that in the first year the infant's mental development was significantly related to both types of maternal behaviour, and suggested that the direction of effect was from mother to child. Between 12 and 18 months the positive relationship in both directions, rather than a pronounced direction of effect between Maternal Responsivity (Scale I) and MDI, suggests a mutually reinforcing "steady state" relationship.

In the second year, however, the impact of the infant's level of mental functioning on Maternal Involvement (Scale V) is now greater than in the first year, but again, there is no pronounced effect in either direction.

The finding of primary direction of effect from mother to child contrasts with the findings of Bradley et al. (1979) whose results suggested that the child's influence on maternal behaviour was greatest in the first year, whereas during the second year the direction of effect was from mother to child.

In the present study there were two areas in which primary direction of effect was from child to mother, but again this was not until the second year. These were Avoidance of Restriction and Punishment (Scale II) and Organization of the Physical and Temporal Environment (Scale III). (Bradley et al. have not yet explored direction of effect for these environmental variables.)

Organization of Physical and Temporal Environment was one of the scales which Bradley & Caldwell (1976b) found distinguished between "increasers" and "decreasers" on mental test scores between 6 and 36 months, i.e. decreases in performance were related to inadequate organization of physical and temporal environment.
In the present study the more advanced infants (both mentally and motorically) were receiving higher levels of restriction and punishment in both the first and the second year. As far as mental development was concerned, there appeared to be no primary direction of effect, but for motor development the direction of effect was from the child, i.e. it was the more active babies who were eliciting more restrictive and punitive behaviour.

These findings may be compared with those of White & Watts (1973), who found that mothers of 'A' children (the more competent children) were more likely to use restrictive behaviour up to two years than were mothers of the 'C' children, but after two years they decreased their restrictive behaviour, whereas the mothers of 'C' children increased its use.

Hence, in the present study we see use of restriction and punishment having a positive effect on subsequent MDI (i.e. from 6 - 12 months, and from 12 - 18 months). Motor development (PDI) was also related to use of restriction and punishment, and from 12 - 18 months the impact of child on environment was greater than that in the opposite direction.

In common with Bradley et al. the present study shows a change in direction of effect around 12 months, but in contrast to their findings, maternal influence was greater in the first year, and not until the second year does the child begin to have a significant impact.

As Bradley et al. point out, cross-lagged panel analysis only allows for weak causal inferences, so that these results concerning direction of effect should be regarded with caution. This analysis does not allow direction of effect to be determined prior to 6 months. As many studies, particularly in the last ten years have shown, the infant effects both maternal response and its wider environment from birth onwards (see Lewis & Rosenblum, 1973). By 6 months a considerable amount of reciprocal patterning of behaviour may have occurred, so that it is no longer possible to clearly distinguish cause and effect. Of interest here are the different responses of mothers in the present study to their exceptionally passive babies.
What is clear from the present findings is the positive influence of maternal responsivity and involvement, and provision of appropriate play materials on cognitive development in this group.

As Kagan (1978) has observed, certain experiences cannot be expected to have a uniform effect on all infants. A study by Wachs (1979) indicated a number of important sex differences in the relationship between cognitive development and the physical environment, while a recent study by Bradley & Caldwell (1980) revealed sex differences in the relationship between maternal responsivity and 3-year IQ. Whereas IQ in boys was most efficiently predicted using 6 and 12-month HOME scores for Play Materials, and language competence at age 1, for girls the most efficient predictor was 12-month HOME scores for Play Materials and Maternal Responsivity.

Although the present study does not examine possible sex differences in the pattern of correlation between development and environmental experiences, a number of sex-related findings were apparent. Firstly, female scores on the Bayley Scales showed more variance than did male scores at all ages for Motor scores, and at all but 12 and 18 months for mental scores, when male scores showed greater variance. This was surprising considering the smaller proportion of females throughout the study (12:7 dropping to 9:5), and the generally higher scores for females (at all but 3 months on the Mental Scale, and all but 3, 12 and 15 months on the Motor Scale.

The positive (nearly significant) correlation for females between 18-month MDI and Symbolic Play Scores, but a negative correlation for males suggests important performance differences in males and females in this sample. A partial explanation may lie in family size: all female subjects were from one or two-child families, whereas four male subjects (33%) were from "large" families, (i.e. three, or in one case four children). Wachs' findings concerning males' increased reactivity to overcrowding and noise confusion in the home (Wachs, 1979) are particularly relevant here.
Furthermore, in all five Asian families studied the subject baby was male (three were "large" families, two were 2-child families). Of interest also is the fact that all "problem" babies were males, both those with a number of health and behaviour problems (Clifford K., S.4. and Simon C., S.9), and those who were insecurely attached (Benjamin, S.5, and Ashni, S.9). A sample which included girl babies from large and/or Asian families may have resulted in fewer differences in performance between males and females.

Although it is clear from the present study that maturational forces are indeed more powerful than environmental variation, to accept such a conclusion would be too simplistic. Adequate living space, congenial surroundings and financial security were not synonymous with good parenting, nor with advanced infant development in this study.

These and other socio-economic differences, however, may be expected to have a more pronounced effect after the second year. There was already a suggestion of this in those homes where living space was restricted, or where financial circumstances resulted in Mother working. Similarly, the shortage of day-care centres and over-crowding in primary schools are both socio-economic factors which are likely to emerge as class differences in later years.

Parents who are oppressed by cramped living conditions and preoccupied by financial worries are less likely to provide a nurturant environment for their child's development. Only when the socio-economic structure of our society enables all parents to feel secure in these respects will they be able to provide an optimal environment for their children, thus allowing them to develop their full potential.
APPENDICES

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IMMIGRANTS IN BRITAIN

Nearly 3 million immigrants live in Britain. Of these about half are white immigrants who have come from Europe, the White Commonwealth and Ireland, the other half have come from the New Commonwealth countries of Asia and Africa, and from countries throughout south-east Asia where 'overseas Chinese' have settled. Recent figures, from an article by Derek Humphreys in 'The Sunday Times' (January, 1977), show white immigrants 1,433,000, including 615,000 Irish and 265,000 Mediterranean Europeans; Asians 618,000; West Indians 236,000; Africans 30,000; Chinese 81,000. The Franks Report estimates that 1.9 million people from the New Commonwealth and Pakistan (NCWP) live in Britain, or one in every 30 of the population (3.3%).

The highest concentrations are found in industrial areas. For Greater London the 1971 Census showed the following figures: total born in U.K.: 6,276,405; total born outside U.K.: 1,113,275. Census data under-estimate the level of coloured concentration, and in "Stress Areas" it has been estimated that one in four residents is coloured. (GLDP Inquiry Proof, 11/1 and E11/2, GLC.)

In Tower Hamlets, the area of study, this estimate was confirmed at the 1971 Census which gave the following figures: total population 165,775; total born outside U.K. 39,260.

Housing

The most discriminate feature of immigrant life in London is poor housing. Although more of the indigenous population live in poor housing conditions, the relative proportion of families of New Commonwealth origin living in poor quality housing is much higher. This is so in spite of the fact that many coloured families own their own houses, and some have moved into council properties. Moreover, the coloured population is highly concentrated in areas of housing stress.
Density of occupation is far higher among coloured households than among the rest of the population. 34% of West Indian households and 41% of Asian households live at a density of two or more persons per bedroom, compared with only 11% of the rest of the population (1974 PEP).

The evidence suggests that coloured and white households do not differ in the quality of housing they aspire to, nor in those who aspire to owner-occupation. Figures for owner-occupation (1974 PEP) were West Indian: 50%, Asians 76%, compared to 54% of the General Population (Housing & Construction Statistics, 1974).

As far as council housing is concerned, the quality of housing allocated to those coloured families moving into the public sector tends to be inferior to that occupied by white families. The degree to which this happens varies from area to area, but nationally Asian and West Indian council tenants are substantially worse off than their white counterparts (1974 PEP).

Fertility

At the time of the last census (1971) the fertility of women born overseas, particularly those from the Irish Republic, the West Indies and the Indian sub-continent, was higher on average than that of the general population. (Britain 1980, HMSO). Since then, in keeping with the general decline in the birth rate, that of our immigrant population has also declined, but the drop is about 10% in comparison to a 20% drop in the indigenous population. There are also an increasing number of babies born to girls of West Indian and Asian origin but born in Britain, who are not included in the census figures.

The higher birth rate among coloured immigrants, (those of New Commonwealth and Pakistani origin) is because virtually all of these immigrants are of child-bearing age. Furthermore, immigrant families tend to be larger. The original reasons were the agricultural basis of the economy of the Third World countries, their illiteracy and
their cultural-religious beliefs. An agricultural economy encourages the birth of many children who can later be used as cheap manual labour and will also support and provide for the parents' old age. Children, especially sons, are considered to have a sacred duty to their aged parents, even though the family have become integrated into a different culture and economy where the state is expected to provide for old people. Sons are considered particularly desirable, and Asian women are under considerable pressure to conceive in the hope of producing a son.

Female illiteracy leads to a lack of knowledge of contraception in both Asia and Africa, and attempts to spread family planning advice have met with opposition in Moslem or Roman Catholic dominated cultures, where marriage is regarded as a sacred institution for the procreation of children.

While exposure to Western ideas may persuade immigrants of the desirability of small families, cultural-religious beliefs are more firmly entrenched, and it is often not until a mother has given birth to a third or subsequent child that contraceptive advice is given during her stay in hospital.

Some health problems of immigrant mothers and infants

Maternal stature

A large proportion of Asian mothers fall into the "high-risk" category when giving birth, by virtue of their small stature, i.e. height 158 cm. (5ft.) or less. A study in Birmingham (Smalley & Bissenden, 1977) found a number of health-related differences between Asian and European mothers. Asians were older, shorter, always married, had more children, had lost more babies, and if they were poorly nourished, the babies were at risk of poor intra-uterine growth. They stayed in hospital longer after childbirth.
Infant feeding

Until recently breast-feeding was taken for granted in all traditional societies. In recent years, especially in West Africa, tinned, powdered cow's milk has been advertised and promoted as a more convenient and scientific alternative to breast-feeding. In Britain, the majority of English women still bottle-feed their babies. Those who successfully breast-feed are mainly middle-class mothers, with whom the immigrant mother has least contact. The few English mothers they do meet are the working-class mothers who still bottle-feed. Just as the working-class mother's resistance to middle-class ideas is aggravated by communication difficulties, so the immigrant mother is even less likely to be influenced by expert opinion. It is no wonder then that many immigrant mothers believe that breast-feeding is "old-fashioned", and that bottle-feeding is more scientific and nutritious.

There are various problems in feeding babies on cow's milk, and they are all magnified in the case of the immigrant mother by her lack of knowledge of the language, poor housing conditions, and poor knowledge of hygiene. The nutritional drawback to cow's milk is that small babies cannot tolerate the high mineral content of sodium and phosphorous. The mother who is unable to understand, or to read the instructions on how to prepare the feed can make it up either too weak or too strong. If too strong, the baby can become too fat and be liable to hypernatremia (too much salt in the blood). If too weak, the caloric content is too low and the baby does not thrive, predisposing it to infection.

The risk of gastro-enteritis is much higher with bottle-fed babies because of poor hygiene and the lack of antibodies present in human breast-milk. In Luton and the East End, Asian infants are the ones most frequently seen in the isolation cubicles for gastro-enteritis. Next in frequency are the infants of the working-class English, and least often the infants of West Indian origin. These admission figures are directly proportionate to the incidence of breast-feeding: lowest in the Asian, next in the English, highest in the West Indian communities (de Lobo, 1978).
Infantile gastro-enteritis is often followed by the equally dangerous after-effects of milk allergy and lactose intolerance.

Iron-deficiency, anaemia and diet

The child of Asian parents is fed on milk for a prolonged period. Weaning on to cereal preparations fortified with iron and vitamins is not possible in Asian villages because these foods are not available, and the tradition has been to keep to milk for the first two years. When weaning does take place, it is to a home-made preparation of rice, potatoes, milk puddings and sweetened fruit preparations. Eggs, meat and fish are not featured in the Asian toddler's diet. The consequence of this iron-deficient diet is the high incidence of anaemia in plump children. Surveys among children of Asian parents in Britain demonstrate that the age of three is the time when the anaemia is most noticeable. (De Lobo, 1977, p.22). From three years onwards the child becomes more demanding, and is able to eat lentils, wholewheat flour chapattis, and vegetables containing iron and protein, and the frequency of iron-deficiency anaemia is reduced.

De Lobo (1977) quotes the following figures from a 1975 survey of 3-year old children born in Luton to mothers of Asian origin in 1972: 84 of 224 children were tested for their haemoglobin levels: 21 children (24%) were found to be anaemic (less than 70% Hb.); of the 21, one was so severely anaemic as to necessitate admission to the hospital for a blood transfusion, two others were less severely so. Of the control group of English and West Indian children, none had anaemia.

Asthma and eczema

There is a higher incidence of asthma in Britain among children of Asian and West Indian parents than in India and the West Indies (de Lobo, 1977). The typical eczema of the elbows and behind the knees is seen first in the infants. Later, wheezing associated with colds, and mild bronchitis, develops. Then, in the pre-school years, the nocturnal attacks of wheezing, the cough with exertion, and the coughing and wheezing during the day occur.
Asthma seems so much more prevalent among Asian immigrant children, according to Asian doctors who have had experience of children in both countries. There are probably many factors, such as (1) over-crowding, and the increased ability of the house-dust mite to survive in the warm, upholstered settees and blankets that are used in Britain; (2) the frequent use of paraffin heaters and the irritant effect of paraffin on the lungs; (3) the damp, cold weather and greater tendency to live indoors; (4) the high incidence of home piece-work done for the clothing industry by immigrant women. Pets, which can be another cause of asthma, are rarely kept by Asian and West Indian immigrants. (De Lobo, 1977, pp. 34-35).

Child-rearing practices

Child-rearing practices vary widely both across and within cultures, but in most social groups, a close, loving relationship between mother and child in the early years is taken for granted. This is particularly so in cultures where a woman's role is defined in terms of her position as a wife and mother. Among immigrant families, Asians tend to adhere to traditional roles as far as mothering is concerned. Mothers and infants are usually very close, the mother spending most of her time with her children. If the mother does work, there is often a grandmother living with the family who takes over the mother's caretaking role. In fact, she may already play an important role in caring for the children.

Child-minding poses more of a problem for the nuclear family, and is most acute in the case of single mothers. There are many different types of baby-minders, and they provide widely differing types of care. Recent reports have shown that even in the care of "good" child-minders, young children interact and vocalize far less than they do with their own mothers (Mayall & Petrie, 1977). The poorer, immigrant working mothers are most vulnerable here. They can only afford to pay a minimum sum for child-minding, and may not be aware of the lasting damage that lack of stimulation can cause. Particularly
at risk are children of West Indian immigrants. Hood et al. (1970) found as many West Indian as native mothers were working outside the home. De Lobo (1977) quotes West Indian women as the immigrant mothers who are most likely to be working, followed by the Asian Hindu, the East African Asian, the Chinese, and least frequently, the Pakistani Muslim.

Certain writers have reported on the curiously cold and unmotherly relationship between many West Indian mothers and their children, both in Jamaica and in London (de Lobo, 1978, Poliak, 1970). There is no culturally based single mother figure in traditional West Indian child-rearing. The child is looked after by a variety of minders who vary from day to day. There is also no tradition of the West Indian mother playing with her young child as a toddler and pre-school child and giving him her undivided attention for regular periods during the day.

Provision of toys

The lack of toys in homes of Asian immigrants has been noticed by many observers (de Lobo, 1978, James, 1974). It is the youngest children of the poorest and illiterate families who are most affected. Those families with children who go to school have some books, writing and painting materials, but families with pre-school children may have few toys. When toys are provided they are often considered as "treats" to be brought out on special occasions, rather than as everyday play-things.

While these parents may have had no formal toys as children, they probably had the freedom of village streets or fields to play in, and the opportunity to improvise with sticks, stones and cans. Few children of immigrant families are lucky enough to have gardens to play in, and thus an important source of learning is denied them.

Language acquisition

Language acquisition poses a particular problem for the child of immigrant parents. Even though the child may have been born in Britain, he learns his mother tongue at home, and may have little contact with the English language until he starts school. De Lobo (1978) reports
as many as 91% of Asian parents and 85% of their children as speaking their mother tongue at home. While learning the mother tongue is a vital part of identity formation for the immigrant child, when he starts school he is disadvantaged by the need to spend a year or more acquiring English before formal teaching can begin.

Whereas the Asian child learns a language which has no linguistic links at all with English (as is the case for Africans), the West Indian child is more fortunate in learning Caribbean English as a mother tongue. While Caribbean English differs widely from the grammatically correct English the child will be required to speak and write at school, it does pose less of a communication problem.

Nevertheless, it is West Indian children who appear to be most disadvantaged as far as language ability is concerned. Pollak (1972) looked at the language scores of 3-year olds in Brixton. The West Indian group scored significantly below the English group, but also significantly below "Group Other", i.e. a mixed group of children of other races. These children faced as great a language barrier as the West Indian children, since English was not always spoken at home, yet their scores did not appear to have been adversely affected.

Dr. Pollak reported that the West Indian children did not speak of themselves in the first person, nor use language for expressing recognition or verbalising ideas. She attributed these deficiencies to (1) maternal deprivation, the result of poor West Indian child-rearing practices, and (2) poor environmental stimulation in adverse economic circumstances.

Early language development is influenced by both social and vocal stimulation (Dodd, 1972), and the reinforcing effect of maternal vocalization is well documented. Maternal encouragement of vocalization varies widely, both within and across cultures. Kagan has commented on Caucasian-American differences in reinforcement of babbling, while Caudill showed that although Japanese mothers in their own country vocalized comparatively little to their infants, Japanese-American mothers chatted to their infants more than Anglo-
American mothers, and their babies did more vocalizing in return. In Lewis & Ban's (1977) multi-cultural comparison of maternal behaviors towards infants, for American mothers, "vocalize" was second only in frequency to "holding", and the frequency of vocalization differed considerably across the other cultural groups.

Of relevance here is LeVine's observations of the Gusii and Luo tribes of Kenya, where "the relatively traditional mothers are more likely to think talking to a baby or toddler is 'silly' and purposeless", (Blount, 1972).
FAMILY PROFILES

(Names have been changed in order to preserve subjects' identity).

All information is based on observation or mother's reports. Sociological data was obtained during the 6-week interview (see Appendices B and C). At subsequent interviews a number of questions were asked concerning Father's participation in child-care, whether or not the family ate together, and the extent of Mother's social contacts both within and outside the home (i.e. how frequently she visited or was visited by friends or relatives, and how often Baby was taken out, e.g. shopping. These aspects of the child's environment are assessed on the HOME Inventory as follows:

1. Scale III: Organization of physical and temporal environment.
   21. Someone takes child into grocery store at least once a week.
   22. Child gets out of house at least 4 times a week.

2. Scale VI: Opportunities for variety in daily stimulation.
   41. Father provides some caretaking every day.
   43. Child eats at least one meal per day with mother and father.
   44. Family visits or receives visits from relatives.

S.1: Rory, G.

Rory's parents are both "Eastenders" who now live in a residential area on the outskirts of the East End in a spacious semi-detached house with garden. They married when Mrs. G. was 20 and Mr. G. (a telephone-engineer) was 33. Two years later the first baby (a boy) had arrived and 2½ years later Rory was born. Mrs. G. had not worked in the meantime, and did not intend to - "Not while I've got children!"

1. HOME Inventory: Home Observation for Measurement of the Environment. Copyright 1978 by Bettye M. Caldwell. (See Appendix G for example.)
Mrs. G. had no relatives who lived nearby (at the first interview she spoke warmly of her own mother, regretting that she did not live closer so that they could see each other more than once a week), and only once referred to a friend or neighbour whom she visited (at 15 months). On one occasion only did anyone call during an interview (the local vicar to discuss Rory's baptism). Mr. and Mrs. G. were not regular church-goers but wanted to have Rory christened.

Mr. G. was seen at two visits, once when he arrived home from work early, and once when he was "off sick". On both occasions he seemed sociable and eager to talk, and Mrs. G. appeared relaxed in his presence. Mrs. G.'s early reports suggested her husband was highly participative:

6 weeks
"He does everything but feed him - stands up at night and rocks him",

and at 3 months reported him as spending '2 - 3 hours' each evening with the children. At 6 months and 9 months she described the time he spent with Rory as "just average - about an hour usually".

At 12 months when Mr. G. was present at the interview it was obvious that he was sharing at least the evening caretaking activities, e.g.:

Mrs. G.
"Usually I feed him while you're cooking, or you feed him while I'm doing it".

At both 15 and 18 months Mrs. G. reported that the family always had the evening meal together, and she used "we" frequently when referring to Rory in general. Other information volunteered on Mr. G.'s fathering role was Mrs. G.'s comment at 12 months:

"L. says what's the point of getting them toys - they play with them once and that's it".

And at the same interview, when asked about smacking, Mrs. G. reported:

"Well, he (his Dad) has, but I believe he's too young".
Mrs. A. originally came to this country with her own parents from Lahore, West Pakistan. She attended Secondary School here for 3 or 4 years, then returned to Pakistan where she married (at 17 or 18). Her first baby (a girl) was born while she was still in Pakistan, but soon after she and her husband returned to England and moved in with Mrs. A.'s parents (an unmarried brother lived in the same house). Two more children (a boy and a girl) were born before Ibrahim.

The family lived in a semi-detached house with garden in a residential area on the outskirts of London. A large proportion of the houses in the same road were occupied by Pakistani families, including two of Mrs. A.'s sisters and their families.

Mrs. A. is employed as a railway-guard, and in his spare time acts as an official for the Muslim Educational Trust. At the time of the 6-week interview he was away on a pilgrimage to Mecca, together with the older daughter.

Mrs. A.'s brother, who spoke fluent English, was always present at interviews. He gave the impression of being "master of the house", (although this may have been just in Mr. A.'s absence), and clearly played a major role in the children's upbringing, and a very supportive role to Mrs. A.

Although the family were living in Mrs. A.'s parents' home, her parents were never observed interacting with Ibrahim or the other children, as the Experimenter was always received in the front-room, and the grandparents usually remained in the back-room adjoining the kitchen where Grandmother was occupied with cooking. According to Mrs. A.'s reports her mother also did most of the housework, so that she herself had plenty of time for Ibrahim and the other children.

1. An organization for the promotion of Islam in this country.
Mrs. A.'s early reports suggested her husband was not helpful as far as Ibrahim was concerned:

6 weeks
"No, he's not helpful".
"He's a very busy man. No, he never feeds him. When he comes home from work - one hour or two hours he goes to the children".

At 15 months Mrs. A.'s brother reported that Mr. A. spent "a few hours each day" with the children, but "never" fed Ibrahim.
At 18 months Mr. A. was present during the interview, and when asked whether the family ever ate together, Mr. A. replied:

"No, not together. Children's food is different really. Sometimes we eat together, it all depends - the trouble is I'm on shift-work".

In Ibrahim's case Mr. A.'s lack of availability was amply compensated for by other family members, as explained by Ibrahim's uncle at 6 months:

"There's always someone to take him (play with him). If we don't talk to him he scratches our face - he says 'talk with me'".

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S.3: Simon, A.

Both Mr. and Mrs. A. are from Ghana. Mrs. A. had only been in this country for 3 years (since her marriage at age 22), but Mr. A. had been here for 6. Mrs. A. had "aunts and cousins" who also lived in London, not in the immediate vicinity, but near enough for regular visiting.

The family lived in a modern council flat in a residential area of East London. Although the flat was large enough for a couple with one baby, there was no balcony, garden or play-area. A trip to the nearest park or common involved a journey via heavily congested main roads, but by 6 months Mrs. A. reported taking Simon out each day.
When first asked at 3 months how she felt having a baby here compared to having one "at home", Mrs. A. replied:

"It's different, because if I had this baby at home, if I was at home my mother would have done everything - she'd have taken care of him. Here, I'm glad I can look after him".

From the beginning Mrs. A. reported that her husband was highly participative:

3 months
"Yes, he feeds him and everything".

6 months
"He bathes and changes him - he changed him this morning - about 3 hours each day".

Just after Simon was 6 months Mrs. A. started working full-time (as a machinist). For the first two weeks Simon was with a childminder all day, but then his father (a student of marketing-management) started caring for him at home. (He was then studying for "Finals").

Although according to Mrs. A. this arrangement worked well, from 9 months onwards Simon's development (as measured by performance on the Bayley Scales) declined rapidly. The 15-month interview was carried out in Mr. A.'s presence (while Mrs. A. was at work), and although Simon showed signs of being attached to his father (crawling rapidly after him when he left the room), his father's behaviour towards Simon was noted as rough and abrupt. On this and another occasion Mr. A. commented:

"In Ghana he'd be walking. There are always children for them to play with there. Here they can't go out to play, they're always indoors".

Mr. A. was then planning a visit to Ghana, when he intended taking Simon, and exploring the possibility of leaving him with his family until he and Mrs. A. could return to Ghana permanently.
Mrs. K.'s parents had come to this country from the Punjab shortly before her birth, and had settled in Cardiff, where Mrs. K. was brought up. She stayed at school (Comprehensive) until age 16, when, as she reported:

"I was thinking of staying on till the Sixth Form, but my father said 'you have to get married by the summer holidays'".

It was an 'arranged' marriage, although Mrs. K. reported having "caught a glimpse" of her husband-to-be by accident shortly before the wedding. Her husband's family were also from the Punjab, but Mr. K. had been born in London's East End.

Mr. K., 5 years older than his wife, worked as an installation engineer for the local Borough Council. The couple were buying their own house (a large semi-detached with garden in a residential district of East London). The upstairs rooms were let to two lodgers, thus supplementing the family's income.

The K's.' first child was a girl, so that Clifford's birth three years later was a cause for special celebration by Mr. K. and his family. At 6 weeks Mrs. K. reported:

"While I was away he brought his family around to celebrate - he spent about £500 before I came out of hospital, just on drinks and food, just on his family".\(^1\)

Mrs. K.'s earliest reports suggested Mr. K. was extremely unhelpful, and although at 9 months she reported him spending at least an hour with Clifford each evening it was not until 15 months that Mrs. K. reported:

"Normally I let his dad feed him in the evenings", and described the evening meal as follows:

"Usually they all eat together (Father and the two children) because they like hot chapattis, and I'm cooking".

\(^1\) She had spent 7 days in hospital after Clifford's birth.
Mr. K. was at home during the 6-month interview, and was sociable and talkative to the Experimenter, asking questions about the study, but made no comments relevant to Clifford's daily activities, although he was observed to spontaneously pick Clifford up, and appeared affectionate.

Mrs. K. came from a large family of sisters, all who lived near to each other and to their mother in Cardiff. Mrs. K. made it clear that she missed their company and spent two prolonged visits (each of 3 months) with them during the course of the study.

In contrast, her husband's relatives lived nearby (one sister and her family lived in the same road) so that the Ks.' often visited or were visited by them. Mrs. K.'s comments on them were always hostile, suggesting that her mother-in-law's concern was for her as a "mother of sons" - "she doesn't care about me", and as far as Clifford was concerned:

"My brother-in-law (husband's brother) ... the only person he doesn't like. .... I left him with my brother-in-law and sister-in-law and they said he cried and cried all the time. He just wouldn't be quiet, whereas with everyone else he's been alright". (9 months)

at 12 months:

"With my sisters-in-law (husband's sister) he won't stay, but with my sister he will".

And at 15 months:

"He's very shy of J.'s (Dad's) family".

Despite Mrs. K.'s dislike of her husband's relatives, they clearly provided the family with a busy social life, and at all interviews Mrs. K. mentioned parties and get-togethers. (Mr. and Mrs. K. were practising Sikhs, and regularly attended the local Sikh temple). She also frequently mentioned neighbours and friends with whom she could on occasion leave the children.
Clifford was clearly attached to his sister (3 years older than him). She was always present at interviews, and they were always observed playing happily together. When Clifford was 17 months his sister had gone to stay at her grandparents, and according to Mrs. K., this is how her absence affected Clifford:

"He lost half a stone just in the week she was going to Wales - he was crying so much, he wouldn't eat anything. He missed J. so much. She was supposed to be going for two weeks, so I had to bring her back!"

S.5: Benjamin, C.

Mrs. C. and her husband, both orthodox Jews from Israel, had been in this country 6 years at the beginning of the study. Mr. C. owned a large clothing manufacturers in the East End, and the family lived in a spacious semi-detached house in a "stockbroker" area on the East London / Essex border.

Mrs. C. was 28 when she had Benjamin, her first boy. (She already had two girls aged 3 and 4). Mr. C. was never seen.

Although Mrs. C. reported at the 6-week interview:

"He helps me sometimes when I'm not well, especially after the hospital".

at all subsequent interviews her comments implied that he spent very little time with the baby or the children. For example:

7 months

"He helps me in the house, but he doesn't want to know about the baby. He plays with him, but doesn't do anything. He doesn't stay in the house during the day - he comes in late. For example, the baby's sleeping, because he comes about 8 or 7 o'clock. So he doesn't see him, only in the morning or Saturdays."

Reports were similar up until 18 months:

"When he sees him - in the morning or the evenings, he spends time with him. He puts him to bed sometimes, but not bath".
The family only ate together at weekends, and during the week Benjamin was always fed separately, and not at the same time as his sisters.

Benjamin's two sisters were present at earlier interviews, but from 9 months onwards were attending nursery or school all day. At both 15 and 18 months Mrs. C. reported her older daughter as reading to Benjamin.

Mrs. C. had help in the house, but only on two occasions was the same person (a cleaning-woman) seen. Mrs. C. did not appear to regard her as "one of the family", and said that if she left Benjamin with her "he'll start to cry". Mrs. C. did not report having friends or neighbours nearby with whom she visited, although on one occasion she had visitors from Israel staying with her.

She took Benjamin out in the pram each morning when she took her daughters to school, but otherwise did not report day-time outings.

S.6: Mohamed, R.

Mrs. R. had come to this country from Bangladesh four years before the beginning of the study, and the birth of Mohamed, her third child. Her husband first came to England some 16 years ago, but returned to Bangladesh to marry Mrs. R. Their first baby, a daughter, was born there, after which they came to England and settled in the East End.

Mr. R. worked in a knitting-factory near to the family's home - 3½ rooms in a very dilapidated tenement building in the heart of East London. The family had managed to buy the rooms at a very low price, and had since been ineligible for council property, and unable to afford better private accommodation.
When first interviewed Mrs. R.'s reports suggested her husband was helpful (Mohamed had been born by caesarian section (C.S.)), and at 6 months she reported that he would "sometimes" feed Mohamed. Although at 9 months she reported that her husband did not eat with the children - "he goes to the work 6.30 and comes nearly 8 o'clock" she added that the children did not go to bed until 10.30 or 11, and so her husband spent "two or three hours, I think", with them.

Mr. R. was only seen once (when Mrs. R. was in hospital after a miscarriage). Mohamed was with a neighbour at that time, so his relationship with his father could not be assessed. However, his father was looking after the children during his wife's stay in hospital (3 days), and the separation did not appear to have affected Mohamed (judged from his behaviour at the next visit less than two weeks later).

Mohamed's 8-year old sister was present at all but one interview. She appeared very involved in his activities, and helped out during testing by sitting with him, and instructing him in Urdu (the family's language). She also contributed to the interview data by adding to her mother's replies. Mohamed appeared responsive and securely attached to his sister, and this attachment may have allowed for more individual attention than Mohamed was able to elicit from his mother.

In the second half of the study, when Mohamed was crawling and walking, Mrs. R. appeared harassed by having to cope with her children's squabbles in such cramped surroundings. (Her older son was in poor health, excessively clinging, and obviously jealous of Mohamed, a livelier, more outgoing child).

Although Mrs. R. reported having no relatives in London, on two occasions she was visited by neighbours and their children who were obviously frequent visitors.
Miss J. was born in London to parents who had immigrated from the West Indian island of St. Lucia. When she was 4 her mother returned there, leaving her to be brought up by her father. He had died two years prior to the start of the study, and fortunately Miss J. was allowed to remain in their council-flat in the part of East London where she had grown up. She had known her boy-friend (a photographer) for some 4 years when Leroy was born (she was then 16), and although they were living together, they had no plans to get married.

Miss J. had an older brother living in another part of East London, but as she explained:

"I was the one my dad used to tell everything to, trust with the money. It was me who had to make all the arrangements for the funeral".

When Leroy was approximately 9 months, his 4-year old cousin (the son of Miss J.'s brother) came to live with the family, as his mother had left home.

At 6 weeks Miss J. reported:

"He (Leroy's father) doesn't change him, but he does everything else".

Only on one occasion did Miss J.'s reports suggest her boy-friend did not spend much time with Leroy (at 6 months), and from 12 months onwards she reported that they all ate together in the evenings each day.

From the beginning there were spontaneous mentions of Leroy's attachment to his father, for example:

3 months

"He never stops talking when his dad's home. He gets all interested when he hears a man's voice".

9 months

"He comes home about 6, then he spends the rest of the evening with him, and before he goes to work he plays around with him - he cries when his dad's going".
At all interviews Miss J. made frequent mention of friends and neighbours, and on two occasions female neighbours were present.

S.8: Harjit, B.

Mrs. B. was born in Leeds of parents who had immigrated from the Punjab nearly 30 years ago. She had stayed at school until age 16 (a year past leaving age) having taken CSE's, then left when her marriage was arranged. Mr. B., a toolmaker, had come to England with his parents (also from the Punjab) at the age of 10.

The couple were living with Mr. B.'s parents in an old terraced house in a depressed area of East London. Since council development in this area, many houses have been left unoccupied, and Asian inhabitants in the B's' road have recently been the victims of racist attacks.

Mrs. B.'s first baby, a girl, was born a year after her marriage, and Harjit approximately 2½ years later. Although Mrs. B. reported her husband as being 'overjoyed' at her having given birth to a boy, there were no reports of celebrations, as in Clifford's family.

When interviewed at 6 weeks Mrs. B.'s reports suggested she had help in the home but no supportive relationship:

"I was hoping to bring my sister down (from Leeds) - I was getting lonely".

She reported "my mother-in-law doesn't help, anyway, by taking things over", and as far as her husband's interest in the baby was concerned:

"He just about holds him!"
At all interviews her reports suggested minimal involvement on the part of her husband, and dissent between them because of this:

9 months
"We're always quarrelling about that. Sometimes he even forgets to pick them up - I have to remind him".

12 months
"I suppose it's his work now. He goes out before they wake up and comes back when they're asleep. Some days they don't see him at all. Weekends? Well, he's at work - overtime, to get the money. When he's home he'd rather have his nap than play with the children".

Although Mrs. B. lived in her in-laws' house, the two families appeared to live separately, and Mrs. B. resented the fact that she and her husband and children were not allowed the run of the house, but were restricted to two cramped rooms plus kitchen. Although her mother-in-law was present during interviews on two occasions, and was seen interacting with the children, there appeared to be tension between her and her daughter-in-law, and no obvious affection.

In particular Mrs. B. mentioned her mother-in-law's "interfering":

"Granny says you can't give him a bath, it's too cold - he can't play on the floor, she says - it's really difficult!"

Like Mrs. K., Mrs. B. reported Harjit preferring her relatives to her husband's.

Apart from one month's visit to her own family, Mrs. B. only once mentioned visiting friends or neighbours. (On one occasion two young cousins were present). Harjit was with her each day when she took his sister to the nursery, and she tried to take him out elsewhere "once or twice a week at least".
Both Mrs. C. and her husband are Londoners. Although Mrs. C. grew up in North London, her parents and her sisters all moved to East London and were living in the same area. Mr. C. was an Eastender whose family also lived nearby. The couple occupied a well-furnished council flat on a new housing-estate not far from the hospital where Simon was born.

Mrs. C. was 19 when she had her first baby, a girl, and Simon was born 3 years later. Her earliest reports of Mr. C.'s participation were critical:

At 6 weeks:

"No! He wasn't (helpful) with the first. He doesn't mind making them, but that's all. He'll only help me for a little while - he's got no patience. No, he hasn't changed one nappy, he did once or twice with K. (the first child)".

By 6 months she reported:

"He plays with him, but that's all",

and at 12 months:

"About an hour a day (Dad spends with him). Every time he comes near him he'll start playing with him. If Simon's in here he'll always get on the floor and play with him on the floor".

By then the family were eating their evening meal together each day and this was still the case at 18 months.

Mr. C. was at home on two occasions when the Experimenter called, but he left the room almost immediately, and was not observed interacting with Simon. At 15 months Mrs. C. reported that her husband looked after Simon "some nights" because she had an evening job, and reported that he was spending 5 hours a day with Simon, as he finished work at 1.30 (he was a post-man).
Mrs. C.'s comments on Simon's attachment to his father were:

"He's a real daddy's boy - if T. comes back he always runs to the stairs to meet him, or goes down if the gate's not there",

and at 18 months:

"He can't lay down in front of Simon, otherwise he jumps all over him - he's always got to play".

She reported that whereas she smacked Simon, his father did not do so.

Simon's sister was only seen briefly on one occasion (when her grandmother brought her home), so that her relationship with Simon could not be judged. Mrs. C.'s reports suggested her daughter spent a lot of time with both sets of grandparents, often staying overnight, and had been away on holiday with her husband's parents.

Mrs. C.'s mother-in-law was then collecting Simon from his nursery, and according to Mrs. C. "he always runs to her".

Mrs. C. was obviously glad that both sets of grandparents were nearby, so that she could go back to work without the problem of finding a child-minder.

S.10: Uchenna, O. (6)

Mrs. O. had come to England from Nigeria 5 years before the start of the study. She continued her work as an S.R.N. midwife here until she married her husband (an engineer), also from Nigeria and already living here, and had her first baby, a boy. Two years later Uchenna was born. The family lived in a modern council flat very near to Simon's family.

Although Mr. O. had relatives in London (not nearby), Mrs. O. had no family here, and felt that this made child-rearing more difficult than it would have been in Nigeria:

"I have no relatives here, I'm all on my own. At home I wouldn't even feel the weight of having to bring up kids".
At 6 weeks Mrs. O. reported her husband as "helpful".

"Yes, he is, but the type of job he does, doesn't allow him to do that much - he has to go from place to place from time to time".

At the same time she reported that if she decided to ignore Uchenna's crying, her husband would pick him up.

At 3 months Mrs. O. had started working two nights a week, and was leaving Uchenna with her husband: "he bats and changes him". Otherwise she reported him as spending 1½ hours each day with Uchenna, and at 9 months, approximately two hours per day. Uchenna was lost from the study at 9 months when Mrs. O. and the children returned to Nigeria.

S.11: Clifford, M.

Both Mr. and Mrs. M. are Eastenders, living in a modern tower-block overlooking the docks. They had been married 18 years, had "tried for a baby" the first 3 years of their marriage, then after Mr. M. had been told he had "a low sperm count", had abandoned hopes of having a baby. Mrs. M.'s pregnancy when she was 39 was completely unexpected.

At the first interview Mrs. M. said how helpful her husband (a transport manager) was with Clifford:

"He was with me (at home) for about 10 days, he was a great help, as you can imagine".

She reported:

"He'll feed him, get him to sleep, but he won't change his nappy - that's one thing he won't do".

Already at 6 weeks Mrs. M. reported that her husband "sits there singing to him and telling him fairy-stories, and I'm talking to him throughout the day".
But at 6 months Mr. M. was no longer feeding Clifford. According to Mrs. M.:

"No, he doesn't feed, bath or change him - he's all fingers and thumbs with him. He gets a bit panicky I think".

She reported him as spending "a couple of hours each evening with Clifford", and there were frequent mentions of "we" in connection with Clifford's care.

At all interviews Mrs. M. mentioned her mother-in-law, sister-in-law and own sisters, and had left Clifford with her sisters and sister-in-law during the day by 3 months, and overnight by 6 months.

When Clifford was approximately 7 months Mr. and Mrs. M. moved out of London, so Clifford was lost from the study.

S.12: Caroline, D.

Mr. and Mrs. D. were the only couple living outside Inner London, on the Essex border. Mr. D. was Administrator at the hospital where Mrs. D. had Caroline, and where she had also worked as a nurse until her first daughter was born. Mrs. D. was older than most of the mothers in the study, having had her first baby at age 35. Caroline was born 6 years later (Mrs. D. had had three miscarriages in that time). After Mrs. D.'s first child was born she trained as a childminder, and had minded children off and on since then.

As she explained:

"I like them at all ages - I just like babies, full stop!"

The family lived in a well decorated semi-detached house with garden back and front. The living-room was crammed full of toys for all ages, some neatly stacked on shelves, and others lying around.

Although Mrs. D.'s mother did not live nearby, she came to stay for a week when Mrs. D. came out of hospital. Mr. D. also took a week off work to help out.
Mrs. D.'s earliest reports suggested that her husband was highly participative in the children's caretaking - each evening he bathed the older daughter and put her to bed, he was willing to change nappies, and by 6 months he had fed Caroline. At that time Mrs. D. reported him as spending at least two or three hours each evening with the children: "that's why he comes home early, to be with the children".

Although Caroline was not then having her meals with the rest of the family, Mrs. D. reported:

"When I've got her established we probably will. I'm a great believer in that - the family eating together".

By 9 months Caroline was "sitting up to the table in her highchair" with the family. This was observed on this occasion when the Experimenter was invited to join the family for lunch.

Shortly before the visit Mrs. D. had been in hospital for three days during which time Mr. D. was full-time caretaker. The separation from her mother appeared to have had no adverse effects on Caroline. As Mrs. D. said:

"She's used to Bob - he'd been dealing with her all the time at home".

Caroline's 7-year old sister was seen on two occasions on her return from school. On both, she went straight to Caroline, picked her up and engaged her in play. Caroline's sister clearly played a more stimulating role in her development than did either parent, providing more vigorous interaction. Both Mr. and Mrs. D. believed in letting children develop at their own pace, and were never observed in lively interaction with Caroline. Mrs. D. reported Caroline and her sister as being very attached to one another, and at 6 months:

"She often gets spoiled you know - what with F. playing with her all the time".

At 9 months she mentioned them often bathing together.
When discussing Caroline's reactions to other people, Mrs. D. commented:

"She loves Susan" (the 3-year old then being child-minded).

Susan was present on three occasions, when Caroline was observed playing happily with her.

Mrs. D. took Caroline out in the pram each day when she took her sister to school, and at 3 months reported:

"In the afternoon we go out - to the mother-and-baby club, or to friends",

and at 6 months:

"Nearly every day we go to someone, or someone comes visiting".

S.12: Ruth, B.

Mrs. B. had been in London for a year when Ruth (her second daughter) was born. Both she and her husband were from the U.S., and Mr. B., an investment banker, had been posted to London for two years. In contrast to the other mothers in the study, Mrs. B. had been a private patient at the hospital when she had Ruth. She did not live in East London, but in a fashionable part of Chelsea, where the family occupied a basement flat with small garden.

Mrs. B. had had plenty of help on leaving hospital (it had been a difficult birth):

"My mother-in-law - she came for three weeks, my sister came, and I've a lady who comes to clean once a week".

When asked at 6 weeks whether her husband was helpful she replied:

"Of course, when he's home he does everything equally".

At 6 months Mr. B. was reported to have fed the baby:

"So far my husband has fed her a bit - she'll accept it from anyone".
Mrs. B. was then managing to get out most days "for a walk, to the park, etc." with the children, but when asked whether she took Ruth visiting, replied:

"No, I prefer to leave her at home with the baby-sitter".

At all visits Mrs. B. had different people present - either a home-help, an au-pair, or on one occasion, a cousin of hers who was staying with the family, and was seen feeding the baby.

The family returned to the States shortly after the 9-month visit, so Ruth was lost from the study.

S.14: Charlotte, K.

Mrs. K. was born on the outskirts of London (both her parents were Londoners). Her husband was from Iraq (but of Armenian origin) and had been in England some 10 years. He worked as a bus-driver, and the couple had been living in East London in a council tower-block since their first daughter was born. Six years later, when Charlotte was born, the family were still waiting to be transferred to a more congenial environment.

Mrs. K.'s reports suggested her husband was concerned for Charlotte from the beginning. She reported him as having noticed her smile before she herself did, and:

"He'll always pick her up the instant she starts crying. She's crafty - I'm sure she knows when he comes in - she'll start the moment he comes in because she knows she'll get picked up".

At 6 months Mrs. K. reported her husband as bathing and changing Charlotte, and feeding her "when I was ill". She could not state a regular amount of time he spent with her, as he worked shifts, but estimated 2 - 3 hours per day. And at 9 months she reported this as:

"A lot of time - once he's in I don't really see much of her - he's got her all the time".
At 15 months Mr. K. was present during the interview, and on this occasion Charlotte directed more attachment behaviours towards him than to her mother, retreating to him between test items, and glancing backwards and forwards between Mother, Father and the Experimenter.

At all interviews Mrs. K. referred to neighbours and friends:

"I've always got people coming in and out of here", and as early as 3 months reported leaving Charlotte with her next-door neighbours "quite a bit".

Charlotte's 7-year old sister was seen on two occasions when she returned home from school with friends. At the 9-month interview, when Mrs. K. was explaining that Charlotte still slept in the parents' room, her sister asked:

"When can she come in my room?"

At 18 months Charlotte had moved to her sister's room (they slept in bunk-beds, side by side, and Mrs. K. reported:

"She likes being with D. (her sister), more than us now - she always used to prefer to be with her dad".

Mrs. K.'s daily outing, apart from shopping-trips, was to her older daughter's school where Charlotte was known: "They always say 'let's get her out'". Although the area was dominated by a busy main road, Mrs. K. reported trips to a local park and swimming-pool with the children.

S.15: Celia, U.

Mrs. U. was born in Liverpool and had been living in London for some 7 years, working as a tax-officer until Celia was born. Her husband, a council labourer, was born and grew up in London, of an English mother and an Indian father (a second-generation immigrant). They had been married 5 years when Celia was born. (Mrs. U. was then 28). 1.

1. In statistical analyses involving socio-economic class, Mrs. U. is classified according to her own occupation, i.e. Class II.
The family had a flat on the 19th floor of a council tower-block on a new East London estate. Although Mr. and Mrs. U. were not local people, Mrs. U. was obviously happy in this area of London, and apart from the lack of a garden, was quite satisfied with their flat which was expensively and well furnished.

Mrs. U. had no family in London, but both her parents and her sister came to stay for a week when she returned from hospital (Celia had been born by C.S.). She reported her husband as "very good" (helpful), both changing nappies and bathing Celia.

At 6 months Mr. U. was still bathing and changing Celia, and Mrs. U. reported:

"He does try in the morning if she's awake - he'll play with her for a while on the bed before he goes to work. Sometimes he'll feed her if I'm doing something else. He often takes her into the bedroom at night for half an hour while I watch T.V. He throws her up in the air and that - she loves that".

Just after 6 months Mrs. U. returned to work leaving Celia with a registered child-minder (she minded five children in all).

At all interviews Mrs. U. frequently used "we" when referring to Celia's care-taking, but at 12 months reported that Celia:

"doesn't like being picked up by a lot of people - the only time she'll go to P. (Dad) is when he's making her bottle at night. He does it every night. It's a habit now".

And at 18 months:

"He still picks her up (collects her) from the child-minder. He sometimes gives her her tea before I'm home - she's used to her dad looking after her in the evenings".

At 9 months Mrs. U.'s father was staying with the family, and Celia was noted to divide her attention more or less equally between him, her mother and the Experimenter (vocalizing to and crawling from one to the other), as well as exploring the room.

Mrs. U. never mentioned neighbours or friends in the area, although a work colleague was present during one interview. At 18 months she had still not left Celia with anyone other than her family or the child-minder (except once while on holiday).
Mrs. N. (from Nigeria) had been in England approximately 8 years at the start of the study, having trained here as a midwife. She had met her husband (also from Nigeria) here, and the couple had settled in East London, near the hospital where Mrs. N. was working. The couple lived in a cramped council flat in a very depressed area, and had been trying for a long time to get a transfer to a pleasanter environment. Despite their surroundings and the restricted living space, the Ns.' flat was colourfully decorated and well furnished, and the couple appeared happy and relaxed at all visits.

Mr. N. (a sales manager) was highly participative from Sandra's birth:

"He took two weeks' holiday - he helped a lot - he was tired himself - he's been washing all her nappies".

At 6 months when Mrs. N. had gone back to work part-time, she reported:

"Yes, he feeds her. He baths her often. If I'm working Sundays he stays with her and takes her out with the push-chair. When he comes home from work he sits with her while I do the cooking".

At 9 months Mr. N. was studying for exams, so was at home most of the day. Mrs. N. reported:

"All the time (he spends with her) - in fact he looks after her more than I do. He takes her to the nursery, brings her back, and if I do night duty he stays with her".

Although Mrs. N. encouraged Sandra to eat by herself, allowing her to eat with her fingers, she reported that her husband did not:

"I don't mind (her making a mess) because she's too little to understand. My husband won't let her eat by herself - she makes a terrible mess".

Mr. N. was present at all interviews, and Sandra appeared as attached to him as to her mother.
Despite working part-time Mrs. N. reported frequent visits to relatives living in London (outside the immediate vicinity), and on two occasions neighbours called in while the Experimenter was there.

S.17: Hannah, K.

Like Mrs. N., Mrs. K. was a midwife at the hospital where their babies were born. Mrs. K. was originally from the North of England, and her husband from Jordan. He was a student ophthalmologist, and the couple hoped to move nearer Mrs. K.'s family once her husband had qualified. They lived in a modern council tower-block flat not far from the hospital where Hannah, their first baby was born.

At 6 weeks Mrs. K. reported that her husband was helpful: "Yes, he is - he is good", adding that he frequently changed nappies and bathed Hannah.

Mr. K. was present throughout the 3-month interview and was obviously interested in the questioning and the nature of the study. He remained in close contact with Hannah, and engaged her in bouncing and face-to-face interaction. His behaviour towards her was noticeably more energetic and stimulating than was Mrs. K.'s, and Mrs. K. commented on this at 6 months when discussing playing with Hannah:

"I think my husband does more with her - he's very active with her, things which I think are too much, but she seems to enjoy. I'll give her something to play with, show her how to do something. He'll do more with her".

At 3 months Mrs. K. started working two nights a week, when Mr. K. cared for Hannah.

Already at 6 months Mrs. K. reported having tried feeding Hannah at her and her husband's meal-time:

"She'd come on top of the table in the chair - she was screaming when we'd try to eat. Now I usually feed her just before".
And at 12 months:

"She still sits in her chair with the little table. I should really put her high-chair up, but she'll sit at the side in the little chair. She likes that, she thinks it's good".

Mr. K. was still highly participative:

"Every morning he gets up to give her her breakfast. I don't get up until she's had her breakfast. Most evenings he's in, so it's about 3 hours - up to 3 hours in the evenings before she goes to bed, and now in the morning, say about 4 hours. I think he likes to get her breakfast in the morning, and it's nice for me".

Although Mrs. K. had no relatives in London, she was close friends with a neighbour living in the same block of flats whose baby was born on the same day as Hannah. Mrs. K. reported exchanging visits with her and her baby "most days", and on two occasions they were present during part of the interview and testing.

At 15 months Mrs. K. reported:

"I try to get out each day, even if it's to the shops, once a day - possibly two days in every week where I don't".

By 18 months she had started taking Hannah to a local play-school on weekdays (where mothers were required to stay with their children), and she reported:

"As soon as I take her out of the buggy she's off, and she doesn't like coming away - we've had a few tears now and then when she's coming away".

S.18: Nkeruka, O. (?)

Mrs. O. had been brought to England from Trinidad by her mother at the age of 10, and grew up here. She had been working as a legal executive when she met her husband, a law student from Nigeria who had been here 7 years. The family lived in a terraced house (which they rented) in a residential area of East London. Mrs. O. had had her first baby, a boy, when she was nearly 32, had "worked between babies", and had her second, Nkeruka, at 33.
At 6 weeks Mrs. O. reported her husband as "helpful" - he took a week off work when she came home from hospital. Otherwise she reported that he would not change the baby's nappy: "he thinks she's too small yet", but would change her son's (still only 15 months).

Approximately one month later Mr. O. left for Nigeria to make arrangements for the family to settle there. Mrs. O. was also caring for her sister's daughter (aged 1½) who was always present during interviews.

Both Mr. and Mrs. O.'s relatives lived nearby, and Mrs. O. reported often staying at her sister's with the children, and:

"I don't go visiting often, but I have a lot of people visiting me".

Because of the family's financial circumstances, Mrs. O. had to work whenever she could (she found work through an agency), and would either leave the children with her sister, or her sister would come to the house to care for them.

From the beginning Nkeruka was reported to be used to a lot of people:

"She doesn't grumble when different people hold her, but I think that's because I've got a very large family, so she's used to people picking her up - another one's not going to make any difference".

At 6 months Mrs. O. reported having left Nkeruka for a week with her sister:

"It's like nothing really. I suppose it's because I have a very large family, and there are always strange faces in the family - it's like nothing - her behaviour (on reunion) was the same towards me".

Nkeruka was initially a very passive baby (she was still rated on the IBR at 6 months as "accepting"). By 9 months she was "friendly", crawling rapidly, and showed strong signs of a secure attachment to her mother.
At 12 months when Mrs. O. brought Nkeruka into the room, she immediately ran to the Experimenter, and asked to be picked up. On this occasion it was not possible to assess her attachment to her mother, as her brother and cousin were constantly interacting with Nkeruka, and an aunt was also present, but Mrs. O. reported: "She does follow me around" (while doing her housework).

Nkeruka was lost from the study when the family left England to join Mr. O. in Nigeria.

S.19: Ashni, M.

Both Mr. and Mrs. M. were from the Punjab. Both had come to this country with their parents, Mrs. M. at the age of 15 (11 years ago), and Mr. M. a few years later). The family lived with Mr. M.'s parents in a terraced house with garden, in an "Asian" area of East London. All Mrs. M.'s family (parents, brothers and sisters) were living in East London, while Mr. M. just had a sister and cousin here.

Mrs. M. worked as a machinist in the clothing factory owned by her husband, and at the first interview reported her intention of returning to work when Ashni was 3 or 4 months.

The family left for a visit to India for approximately two months, so were not seen again until Ashni was 4 months. By then Ashni's grandmother was caring for him and his two brothers (aged 5 and 2) full-time, while their mother worked.

Although Mr. and Mrs. M. did not return from work until approximately 7.30, Mrs. M. expressed her willingness to let the Experimenter call at this time. She reported that Ashni and his brothers usually went to bed about 10, and that she spent most of the time in-between with them. Mrs. M. reported feeding Ashni each evening, and at 12 months, that the family (including Father) ate together each evening.
Mr. M.'s time spent with Ashni appeared to increase as he grew up. At 9 months Mrs. M. reported:

"Yes, he plays more with him now he's bigger",

and at one year reported him as spending "the same time as me" with Ashni.

Mr. M. was present for part of all evening interviews, and sometimes added to his wife's replies.

Ashni's grandparents were seen on most occasions, and his attachment to his grandmother appeared to be more secure than to his mother. His two brothers were often present, seemed very fond of Ashni (there were no signs of jealousy or resentment), and proved valuable in stimulating Ashni into play with the test objects. Ashni was observed to be happiest when he was playing with them (at 12, 15 and 18 months), and a major cause of upset on one visit was, according to Mrs. M., because his brothers had been taken out by their father, leaving Ashni at home.
I am a postgraduate student from Bedford College (University of London).

You will probably have had a lot of advice from the hospital on what is best for your baby during its first weeks. I am interested in how mothers themselves feel once they take their baby home.

Could I come and talk to you in your home when your baby is about 6 weeks old? If so, please fill in your name and address below, so that I can contact you later.

Thank you for helping.

Jenny Baudin
6-week Interview Questionnaire (for foreign mothers)

(Questions partly dependent on information given during hospital visit).

1. How are you? How's the baby?
2. What have you called him/her,
3. How long were you in hospital?
4. How have you been feeling since?
5. Have you felt depressed at all? (if appropriate) Reasons?
6. Do you think the depression is natural?
8. Have you anyone to help you,
9. Is your husband helpful?
10. Does he ever change the baby's nappy?
11. You're pleased you had a boy/girl, aren't you? or
   How do you feel now about having a boy/girl? (depending on what
   was said at hospital)
12. What about your husband? Other children? (if appropriate)
   i.e. questions about sibling rivalry.

FEEDING

13. How's the feeding going?
14. What went wrong? (if appropriate) What did they advise you at
   the hospital? Health visitor?
15. How often do you feed him?
16. How long do the feeds usually last?
17. Does that include winding?
18. Is winding a problem?
19. Do you give him a bottle at all/sometimes? (as appropriate)
20. Have you tried feeding him sooner/later, etc.?
21. You haven't tried solids yet, have you?
22. How about vomiting?
23. Do you feel happy about feeding in general?

CRYING

24. Does he cry very much?
25. For how long?
26. How long do you let him cry for?
Appendix B. (cont'd.)

27. What do you do to soothe him? Prompts: dummy?
28. Does it work?
29. Does it worry you when he cries?
30. What about your husband?
31. Did he cry more at the beginning, or is it getting worse?
32. Are you getting to know his cries?
33. Does it get you down?
34. Is it worse than you expected (or worse than with your last baby/babies)?

SLEEPING

35. Has he started sleeping through the night?
36. Does he sleep much during the day?
37. Where does Baby sleep?
38. What position does Baby sleep in?

GENERAL

39. When did you first notice Baby smile?
40. Do you remember when he first smiled at you?
41. Do you think he recognizes you?
42. Do you feel he has a personality?
43. Has he changed much since he was born? In what ways?
44. How does he compare with your other children?
45. At what age do you think a baby is most enjoyable - when he's tiny, or when he begins moving around?

SOCIOLOGICAL

46. You're from...... aren't you?
47. How long have you been living in England?
48. Who did you come here with?
49. Were you already married when you came? (if appropriate)
50. When did you get married? or: How long have you known your boy-friend?
51. Did you already have relatives here? or: Have you any other relatives here?
52. Do you miss your country?
53. Have you been home for a visit?
54. How does life here compare with back home? prompts:
55. Having a baby for example? (if previous births not in this country)
56. As far as bringing up children is concerned?
Appendix B. (cont.)

57. Who would you ask for advice if you needed it? (Clinic/health visitor/friends?)
58. Do you read baby-books at all?
59. Do you find them helpful?
60. How long have/had your family lived in ....?
61. Did you live in the town or the country?
62. How long did you go to school?
63. Did you work at all? What as?
64. What work did you do here? (if appropriate)
65. How does your husband feel about you working?
66. What does your husband do? or Your husband's a ...., isn't he?
67. Do you want to go back to work? When?
68. Who would look after the baby?
6-week Interview Questionnaire (for English mothers)

Questions 1 - 45 as Appendix B. Then:

**SOCIOLOGICAL**

46. You're a Londoner, aren't you? or: You're from .... aren't you?
47. Is your husband from there as well? (as appropriate)
48. What work does your husband do?
49. Did you work? What as?
50. Do you want to go back to work? When?
51. What does your husband think about you working?
52. Who would look after the baby?
53. Have you/haven't you got relatives round here? Do you miss them?
54. Who would you ask for advice if you needed it? Clinic/health visitor/friends/mother?
55. Do you read baby-books at all?
56. Do you find them helpful?
Appendix D.

3-month Interview Questionnaire

1. How has he been since I last saw you:
   Has he been ill at all? (as appropriate)
   prompts: colds, rashes, colic, vomiting?

FEEDING

2. How's the feeding going?
3. Are you still breast-feeding? (if appropriate)
4. When and why did you stop?
5. Have you started him on solids yet?
6. Are you happy about Baby's feeding?
7. How much does he weigh?
8. Questions about Clinic: date of last visit, next expected visit?
9. Are they helpful?

CRYING

10. Does Baby cry more now, or less than when he was younger?
11. How long do you let him cry for?
12. What do you do to soothe him?
13. Is the crying a problem?
14. Does he suck his thumb/ or fingers?
15. Do you try to stop him? (if appropriate)

SLEEPING

16. Is he sleeping through the night now? Since when?
17. Does he still sleep in the same position? Where?
18. Would you say he's an 'easy' or a 'difficult' baby?
19. How does he compare with .... / your other children?
20. How do you manage when you're doing your housework? Do you have him in the same room?
21. Do you feel he's changed much since I last saw you? In what ways?
22. How does he react to other people? Do you think I'm typical?
23. Have you left him with anyone else yet? During the day? At night? If so, who with?
24. Reaction to other person, and to Mother on reunion.

After test:

25. Is this how you would have expected him to respond, or are you surprised at what he can do?
   (Worded according to Baby's test performance and Mother's reaction)
Appendix E.

6-month Interview Questionnaire

1. How has he been since I last saw you?
   prompts: colds, rashes, vomiting, tummy upsets, teething?
   (If M. reports teething troubles, ask what she does to comfort Baby)

FEEDING

2. How's the feeding going?
3. Are you still breast-feeding? (if appropriate)
4. When and why did you stop?
5. When did you start him on solids? (if appropriate)
6. Does he eat well? (i.e. take food well from spoon)
   He makes a mess, does he? / Doesn't he make a mess?
   Do you mind? Has he tried to grab the spoon yet?
   (All questions as appropriate to assess Mother's attitude towards "messy" play, Item 7, Scale I of HOME Inventory).
7. Where do you feed him? (i.e. in high-chair, baby-chair, at table)
   How much time does he (Father) usually spend with him each day?
9. Do you ever all eat together? Every day? (as appropriate)
10. Are you happy about Baby's feeding?
11. How much does he weigh? (if not already mentioned)
12. Questions about Clinic: date of last visit/next expected visit.

CRYING

13. Does Baby cry more now, or less than when he was younger?
14. Is the crying a problem?
15. What do you do to soothe him?
16. Does he suck his thumb or fingers? (According to what was said at 3 months, and observation)
17. Do you try to stop him? (as appropriate)

SLEEPING

18. Is he sleeping through the night now? Since when? or:
   He's sleeping through the night now, isn't he? (if reported at 3 months)
19. What time do you usually put him to bed?
20. What time does he normally wake up?
21. Does he often wake up in the night? Once a week/more often/less often?
22. Is he easy to get back to sleep?
23. Does he still sleep in the same position?
24. Where does he sleep now? (i.e. in parents' room/bed/own room/cot?

BATHING

25. Does he like being bathed?
26. He splashes a lot does he? (according to reply)
   Doesn't he splash around?
27. Do you let him? / Do you mind? (as appropriate)
   (Questions 26 & 27 as appropriate, to assess Mother's attitude to "messy" play, Item 7, Scale I of HOME Inventory).
28. Would you say he's an easy/difficult baby, or neither? (to be asked at relevant point of interview)
29. I expect he's getting more demanding, isn't he?
30. How do you manage when you're doing your housework? Do you have him in the same room?
31. Do you like to sit and play with him sometimes? (as appropriate)
32. Has he any new toys? Books? (Questions on reading as appropriate)
33. Do you keep his toys in a special place?
34. How does music affect him? (Could be asked if T.V. is mentioned)
35. You haven't got one of those musical rattles, have you?
   (Questions 32 - 35 as appropriate, to assess Item 24, Scale III, Item 34, Scale IV & Items 42 & 45 of Scale VI of HOME Inventory).
36. How about shopping - do you take Baby with you? (as appropriate)
37. How often do you think you get out with Baby?
38. Questioning about relatives (visits to/from), or friends.
39. How does Baby react to other people? Do you think I'm typical?
40. Have you left him with anyone else yet? During the day? At night? If so, who with?
41. Reaction to other person and to Mother on reunion.

After test:

42. Is this how you would have expected him to respond, or are you surprised at what he can do?
Appendix F.

9-month Interview Questionnaire

1. How has he been since I last saw you?
   prompts: colds, rashes, ear troubles, teething?
   (If M. reports teething troubles, ask what she does to comfort Baby).

FEEDING

2. How's the feeding going?
3. Are you still breast-feeding? (if appropriate)
4. When and why did you stop?
5. When did you start him on solids? (if appropriate)
6. Is he eating well? (i.e. taking food well from spoon, or with fingers)
7. Does he play with his food?
8. Do you mind? Do you let him? (as appropriate)
9. Where do you feed him? (in high-chair, baby-chair, at table)
10. Do you ever all eat together (i.e. whole family). Father?
11. How much time does Father spend with Baby each day?
    (worded according to reply at 6 months)
12. How much does Baby weigh? (if not already mentioned)
13. Clinic: last visit/next visit?
14. Do you / don't you find them helpful? (as appropriate)
15. Is there someone who speaks your language? (foreign mothers only)
16. Do they have leaflets / information in Urdu/Punjabi? " "
17. Haven't you ever been given any? (as appropriate) " "
18. Question re. health visitor (if appropriate).

CRYING

19. Does Baby cry more now, or less than when he was younger?
20. Is the crying a problem?
21. What do you do to soothe him?
22. Does he suck his thumb or fingers? (According to what was said previously, and observation)
23. Do you try to stop him?
SLEEPING

24. Does he always sleep through the night now?
25. Doesn't he ever wake up? or How often? once a wk./more often
26. Is he easy to get back to sleep?
27. Does he still sleep in the same position?
28. Where does he sleep now?

BATHING

29. Does he still like being bathed? (as appropriate)
30. Does he splash a lot? Doesn't he splash around?
31. Do you let him? / Do you mind? (as appropriate)

Reactions to others

32. Roundabout this age babies are easily upset by strangers, aren't they? Can you remember him being upset by anyone? (as appropriate)
33. Is his reaction to me typical?
34. Do you ever leave him with anyone during the day? Who?
35. Is he good with them?
36. Reaction to Mother on reunion: How does he behave when you come back?
37. Have you had to leave him with anyone else at all, i.e. "unfamiliar"?
38. How did he behave? On reunion with Mother?
39. What's the longest you've ever had to leave him for? Overnight or longer?
40. How did it affect him?
41. Would you still say he's an easy/difficult/neither baby? (as appropriate)

42. How about nappies - are they much of a problem? (where appropriate)
43. Have you tried a potty yet? /You haven't tried a potty yet, have you? (as appropriate)
44. When do you think you will?
45. Is he getting more demanding?
46. How do you manage when you're doing your housework? (if appropriate)
47. Do you enjoy playing with him? (if not made clear)
48. What toys does he seem to like at the moment.
49. Musical toys?
50. Books and reading?

} For assessment on the HOME Inventory.
51. Do you keep his toys in a special place (or with the other children's)? (as appropriate)
52. Do you manage to get out more now with Baby? (as appropriate)
53. Do you take him shopping with you?
54. How often do you think you get out with Baby? or Baby is taken out by others.

After test:
55. Is this how you would have expected him to respond, or are you surprised at what he can do?
12-month Interview Questionnaire

1. How's he been since I last saw you?
   prompts: colds, rashes, ear troubles, teething, etc.

FEEDING

2. Is he eating well? (open question)
   according to reply:
3. What do you do when he won't eat something you want him to?
4. Does he play with his food? Does he try to feed himself?
5. Do you mind? / Do you let him? (as appropriate)
6. Where do you feed him? (i.e. in high-chair, baby-chair, at table)
7. Do you ever all eat together? (i.e. whole family, including Father)
8. How much time does Father spend with Baby each day?
   (according to earlier replies)
9. How much does he weigh? (if not already mentioned)
10. Clinic: last visit/next visit
11. Do you / don't you find them helpful? (as appropriate)

SLEEPING

12. Does he (always) / still sleep through the night now? (as appropriate)
13. Doesn't he ever wake up? or: How often? once a wk./more often/
   less often?
14. Is he easy to get back to sleep?
15. Does he still sleep in your room/own room? (as appropriate)

BATHING

16. Does he (still) like being bathed? (as appropriate)
17. Does he splash a lot?
18. Do you let him? / Do you mind?

BEHAVIOUR PROBLEMS

19. How do you stop him doing something you don't want him to do?
20. Do you find you have to smack him? How often?
21. Does he ever have temper tantrums? Crying spells?
22. What do you do when he's like that?
23. What seems to start them off?
24. Does he cry much in general? (open question)
25. What do you do to soothe him?
26. Does he suck his thumb / fingers? (worded according to previous replies and observation)

27. Do you try to stop him? / Don't you try to stop him?

28. Is there anything else he has started doing that you don't want him to do? prompts: plays with body/pulls hair/scratches face?

28a. Do you try to stop him at all?

29. How is he with the potty now? / Have you tried him with a potty yet? (as appropriate)

30. Does he use it for: wetting/bowel movements? Sometimes/usually?

Reactions to others

31. How is he with other people now? Has he been upset by anyone?

32. Is his reaction to me typical?

33. Have you had to leave him with anyone strange? (During the day/ at night?)

34. Was he good with them?

35. Reaction to Mother on reunion.

36. Would you still say he's an easy baby/difficult baby/neither?

37. Is he getting more demanding?

38. How do you manage when you're doing your housework? (as appropriate)

39. Do you enjoy playing with him? (if not made clear)

40. What toys does he seem to like at the moment?

41. Musical toys?

42. Books and reading?

43. Do you keep his toys in a special place (or with the other children's?)

44. Do you manage to get out more now with Baby?

45. Do you take him shopping with you?

46. How often do you think you get out with Baby? (or other person takes Baby out)

After test:

47. Is this how you would have expected him to respond, or are you surprised at what he can do?
15-months Interview Questionnaire

1. How's he been since I last saw you?
   prompts: colds, rashes, ear troubles, teething, etc.?

FEEDING

2. Is he (still) eating well? (open question)
   according to reply:
3. What do you do when he won't eat something you want him to?
4. Does he try to feed himself? With fingers? Spoon?
5. Do you let him / encourage him? (if necessary)
6. Does he make a mess?
7. Do you mind? (as appropriate)
8. Is he drinking from a cup? with/without help? one/two-handed?
9. Where do you feed him? (in high-chair, baby-chair, at table)
10. Do you ever all eat together? (i.e. whole family including Father)
11. Does Father spend more time with Baby each day now he's getting older? (as appropriate)
12. Do you know how much he weighs? (if not already mentioned)
13. Clinic: last visit/next visit?
14. Do you / don't you find them helpful?

SLEEPING

15. Does he always/still sleep through the night now? (according to earlier replies)
16. Doesn't he ever wake up? or: How often? once a wk./ more often/less often?
17. Is he easy to get back to sleep?
18. Does he have a bottle dummy to go to bed with?
19. Does he still sleep in: your room/own room? (as appropriate)

BATHING

20. Does he (still) like being bathed?
21. Does he splash a lot?
22. Do you let him / Do you mind? (as appropriate)
Appendix H. (cont'd.)

BEHAVIOUR PROBLEMS

23. How do you stop him doing something you don't want him to do?
24. Do you find you have to smack him? How often?
25. Does he ever have temper tantrums / crying spells?
26. What do you do when he's like that?
27. What seems to start them off?
28. Does he cry much in general? (open question)
29. What do you do to soothe him?
30. Does he suck his thumb/fingers? (worded according to previous replies)
31. Do you try to stop him? Don't you try to stop him?
32. Is there anything else he has started doing that you don't want him to do?
33. Do you ever try to stop him at all? (as appropriate)
34. How is he with the potty now? Have you tried him with a potty yet? (as appropriate)
35. Does he use it for: wetting/bowel movements? Sometimes/usually?

Reactions to others

36. How is he with other people now?
37. Is there anyone he's particularly fond of? (other than Mother, Father and known caretakers)
38. Is his reaction to me typical?
39. Can you leave him with other people now? During the day/at night?
40. Is he good with them?
41. Reaction to Mother on reunion.
42. Would you still say he's an easy baby/difficult baby/ neither?
43. Is he getting more demanding? (as applicable)
44. How do you manage when you're doing your housework? (as appropriate)
45. Do you still enjoy playing with him? (if not made clear)
46. What toys does he seem to like at the moment?
47. Has he got a favourite?
48. Musical toys?
49. Books and reading?
50. Do you still keep his toys in the same place? (in special place or
51. Do you manage to get out more now with Baby? with other children's)
52. As much as you'd like? (as appropriate) Visitors? (if not made clear)
53. Do you take him shopping with you?
54. How often do you think you get out with Baby? (or other person takes Baby out)

After test:

54. Is this how you would have expected him to respond, or are you surprised at what he can do?
18-months Interview Questionnaire

1. How's he been since I last saw you? prompts: colds, rashes, ear troubles, teething, etc.?

FEEDING

2. Is he (still) eating well? (open question) according to reply:
3. What do you do when he won't eat something you want him to?
4. Does he try to feed himself? With fingers? Spoon?
5. Do you let him / encourage him? (if necessary)
6. Does he make a mess?
7. Do you mind? (if necessary)
8. Is he drinking from a cup? with/without help? (depending on answer at 15 months)
9. Where do you feed him? (in high-chair, baby-chair, at table)
10. Do you ever all eat together? (i.e. whole family including Father)
11. Does Father spend more time with him now he's getting older?
12. Do you know how much he weighs?
13. Clinic: last visit/next visit?
14. Do you /don't you find them helpful? (as appropriate)

SLEEPING

15. How's he sleeping now? Does he always/still sleep through the night? (according to earlier replies)
16. Doesn't he ever wake up? or: How often? once a wk./more often/less often?
17. Is he easy to get back to sleep?
18. Does he have a bottle/dummy to go to bed with?
19. Does he still sleep in: your room/own room? (as appropriate)

BATHING

20. Does he (still) like being bathed? (as appropriate)
21. Does he splash a lot?
22. Do you let him / Do you mind?
BEHAVIOUR PROBLEMS

23. How do you stop him doing something you don't want him to do?
24. Do you find you have to smack him? How often?
25. Does he ever have temper tantrums / crying spells?
26. What do you do when he's like that?
27. What seems to start them off?
28. Does he cry much in general? (open question)
29. What do you do to soothe him?
30. Does he suck his thumb/fingers? (worded according to previous replies)
31. Do you try to stop him? / Don't you try to stop him?
32. Is there anything else he has started doing that you don't want him to do?
33. Do you ever try to stop him at all?
34. How is he with the potty now? / Have you tried him with a potty yet?
   When do you think you will? (as appropriate)
35. Does he use it for: wetting/bowel movements? Sometimes/usually?
   Does he show you when he wants to go?

Reactions to others

36. How is he with other people now?
37. Is there anyone he's particularly fond of?
   (other than Mother, Father and known caretakers)
38. Is his reaction to me typical?
39. Can you leave him with other people now? During the day/at night?
40. Is he good with them?
41. Reaction to Mother on reunion.
42. Would you still say he's an easy baby/difficult baby/neither?
43. Is he getting more demanding? (as applicable)
44. How do you manage when you're doing your housework? (as appropriate)
45. Do you still enjoy playing with him? (if not made clear)
46. What toys does he seem to like at the moment?
47. Has he got a favourite?
48. Musical toys?
49. Books and reading?
50. Do you still keep his toys in the same place? (in special place, or with other children's)
51. Do you manage to get out more now with Baby?
   As much as you'd like? (as appropriate)
   Visitors? (if not made clear)
52. Do you take him shopping with you?
53. How often do you think you get out with Baby?
   (or other person takes Baby out)

After test:
54. Is this how you would have expected him to respond, or are you surprised at what he can do?
To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Age Placement and Range (Months)</th>
<th>Situation</th>
<th>Item Title</th>
<th>Score</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>0.1</td>
<td>A</td>
<td>Responds to sound of bell</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.1</td>
<td>B</td>
<td>Quiets when picked up</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.1</td>
<td>C</td>
<td>Responds to sound of rattle</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.1</td>
<td>D</td>
<td>Responds to sharp sound: click of light switch</td>
<td>P</td>
<td></td>
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<tr>
<td>5</td>
<td>0.1</td>
<td>E</td>
<td>Momentary regard of red ring</td>
<td>P</td>
<td></td>
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<tr>
<td>6</td>
<td>0.2</td>
<td>E</td>
<td>Regards person momentarily</td>
<td>P</td>
<td></td>
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<tr>
<td>7</td>
<td>0.4</td>
<td>D</td>
<td>Prolonged regard of red ring</td>
<td>P</td>
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<tr>
<td>8</td>
<td>0.5</td>
<td>D</td>
<td>Horizontal eye coordination: red ring</td>
<td>P</td>
<td></td>
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<tr>
<td>9</td>
<td>0.7</td>
<td>F</td>
<td>Horizontal eye coordination: light</td>
<td>P</td>
<td></td>
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<tr>
<td>10</td>
<td>0.7</td>
<td>E</td>
<td>Eyes follow moving person</td>
<td>P</td>
<td></td>
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<tr>
<td>11</td>
<td>0.7</td>
<td>E</td>
<td>Responds to voice</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0.8</td>
<td>F</td>
<td>Vertical eye coordination: light</td>
<td>P</td>
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</tr>
<tr>
<td>13</td>
<td>0.9</td>
<td>G</td>
<td>* Vocalizes once or twice</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1.0</td>
<td>D</td>
<td>Vertical eye coordination: red ring</td>
<td>P</td>
<td></td>
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<tr>
<td>15</td>
<td>1.2</td>
<td>F</td>
<td>Circular eye coordination: light</td>
<td>P</td>
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<tr>
<td>16</td>
<td>1.2</td>
<td>D</td>
<td>Circular eye coordination: red ring</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1.3</td>
<td>G</td>
<td>* Free inspection of surroundings</td>
<td>P</td>
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</tr>
<tr>
<td>18</td>
<td>1.5</td>
<td>E</td>
<td>Social smile: E talks and smiles</td>
<td>P</td>
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</tr>
<tr>
<td>19</td>
<td>1.6</td>
<td>D</td>
<td>Turns eyes to red ring</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1.6</td>
<td>F</td>
<td>Turns eyes to light</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>1.6</td>
<td>G</td>
<td>* Vocalizes at least 4 times</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>1.7</td>
<td>B</td>
<td>Anticipatory excitement</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>1.7</td>
<td>B</td>
<td>Reacts to paper on face</td>
<td>P</td>
<td></td>
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<tr>
<td>24</td>
<td>1.9</td>
<td>B</td>
<td>Blinks at shadow of hand</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>2.0</td>
<td>E</td>
<td>Visually recognizes mother</td>
<td>P</td>
<td></td>
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</table>

* May be observed incidentally.
To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

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<tbody>
<tr>
<td>26</td>
<td>2.1 (1-6)</td>
<td>E</td>
<td>Social smile: E smiles, quiet</td>
<td></td>
<td></td>
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<tr>
<td>27</td>
<td>2.1 (1-6)</td>
<td>E</td>
<td>* Vocalizes to E's social smile and talk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>2.2 (1-6)</td>
<td>AC</td>
<td>Searches with eyes for sound (Specify)</td>
<td></td>
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<tr>
<td>29</td>
<td>2.3 (1-6)</td>
<td></td>
<td>Eyes follow pencil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>2.3 (1-6)</td>
<td>G</td>
<td>* Vocalizes 2 different sounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>2.4 (1-6)</td>
<td>E</td>
<td>Reacts to disappearance of face</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32T‡</td>
<td>2.5 (1-6)</td>
<td>H</td>
<td>Regards cube</td>
<td></td>
<td></td>
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<tr>
<td>33</td>
<td>2.6 (1-6)</td>
<td>D'</td>
<td>Manipulates red ring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>2.6 (1-6)</td>
<td>AC</td>
<td>Glances from one object to another</td>
<td></td>
<td></td>
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<tr>
<td>35</td>
<td>2.6 (1-6)</td>
<td>B</td>
<td>Anticipatory adjustment to lifting</td>
<td></td>
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<tr>
<td>36</td>
<td>2.8 (1-6)</td>
<td>C</td>
<td>Simple play with rattle</td>
<td></td>
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<tr>
<td>37</td>
<td>3.1 (1-6)</td>
<td>D'</td>
<td>Reaches for dangling ring</td>
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<tr>
<td>38T</td>
<td>3.1 (1-6)</td>
<td></td>
<td>Follows ball visually across table</td>
<td></td>
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<tr>
<td>39</td>
<td>3.2 (1-6)</td>
<td>G'</td>
<td>* Fingers hand in play</td>
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<td>40T</td>
<td>3.2 (1-6)</td>
<td>D'</td>
<td>Head follows dangling ring</td>
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<tr>
<td>41T</td>
<td>3.2 (1-6)</td>
<td>I</td>
<td>Head follows vanishing spoon</td>
<td></td>
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</tr>
<tr>
<td>42</td>
<td>3.3 (1-6)</td>
<td>G'</td>
<td>* Aware of strange situation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43T</td>
<td>3.3 (1-6)</td>
<td>G‡</td>
<td>* Manipulates table edge slightly</td>
<td></td>
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<tr>
<td>44</td>
<td>3.8 (1-6)</td>
<td>D'</td>
<td>Carries ring to mouth</td>
<td></td>
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<tr>
<td>45</td>
<td>3.8 (1-6)</td>
<td>G'</td>
<td>* Inspects own hands</td>
<td></td>
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<tr>
<td>46</td>
<td>3.8 (1-6)</td>
<td>D'</td>
<td>Closes on dangling ring (Check hand preference)</td>
<td>Right</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>3.8 (1-6)</td>
<td>A</td>
<td>Turns head to sound of bell</td>
<td></td>
<td>Left</td>
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<tr>
<td>48</td>
<td>3.9 (1-6)</td>
<td>C</td>
<td>Turns head to sound of rattle</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>49</td>
<td>4.1 (1-6)</td>
<td>H</td>
<td>Reaches for cube</td>
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<tr>
<td>50</td>
<td>4.3 (1-6)</td>
<td>G‡</td>
<td>* Manipulates table edge actively</td>
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</table>

* May be observed incidentally. ‡ See Manual, Chapter 4, for explanation of "T."
To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

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<tr>
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<th>Other</th>
<th>Notes</th>
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<tbody>
<tr>
<td>51</td>
<td>4.4 (2-6)</td>
<td>H</td>
<td>Eye-hand coordination in reaching</td>
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<tr>
<td>52</td>
<td>4.4 (2-7)</td>
<td>J</td>
<td>Regards pellet</td>
<td></td>
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<tr>
<td>53</td>
<td>4.4 (2-7)</td>
<td>K</td>
<td>Mirror image approach</td>
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<tr>
<td>54</td>
<td>4.6 (3-7)</td>
<td>H</td>
<td>Picks up cube (Check hand preference)</td>
<td></td>
<td></td>
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<tr>
<td>55</td>
<td>4.6 (3-8)</td>
<td>G²</td>
<td>* Vocalizes attitudes (Describe)</td>
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<tr>
<td>56</td>
<td>4.7 (3-7)</td>
<td>H</td>
<td>Retains 2 cubes</td>
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<td>57</td>
<td>4.8 (3-7)</td>
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<td>Explosive paper play</td>
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<tr>
<td>58</td>
<td>4.8 (3-8)</td>
<td>E¹</td>
<td>* Discriminates strangers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>59</td>
<td>4.9 (4-8)</td>
<td>C</td>
<td>Recovers rattle, in crib</td>
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<tr>
<td>60</td>
<td>5.0 (3-8)</td>
<td>H</td>
<td>Reaches persistently</td>
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<tr>
<td>61</td>
<td>5.1 (3-8)</td>
<td>E¹</td>
<td>Likes frolic play</td>
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<tr>
<td>62</td>
<td>5.2 (4-8)</td>
<td>I</td>
<td>Turns head after fallen spoon</td>
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<td></td>
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<tr>
<td>63</td>
<td>5.2 (4-8)</td>
<td>L</td>
<td>Lifts inverted cup</td>
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<tr>
<td>64</td>
<td>5.4 (4-8)</td>
<td>H</td>
<td>Reaches for 2nd cube</td>
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<tr>
<td>65</td>
<td>5.4 (3-12)</td>
<td>K</td>
<td>Smiles at mirror image</td>
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<tr>
<td>66</td>
<td>5.4 (4-8)</td>
<td>G²</td>
<td>* Bangs in play</td>
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<tr>
<td>67</td>
<td>5.4 (4-8)</td>
<td>D²</td>
<td>Sustained inspection of ring</td>
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<td>68</td>
<td>5.4 (4-8)</td>
<td>D²</td>
<td>Explosive string play</td>
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<td>69</td>
<td>5.5 (4-8)</td>
<td>G²</td>
<td>* Transfers object hand to hand</td>
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<tr>
<td>70</td>
<td>5.7 (4-8)</td>
<td>H</td>
<td>Picks up cube deftly and directly</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>71</td>
<td>5.7 (4-8)</td>
<td>D²</td>
<td>Pulls strings; secures ring</td>
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<td></td>
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<tr>
<td>72</td>
<td>5.8 (4-8)</td>
<td>G²</td>
<td>* Interest in sound production</td>
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<tr>
<td>73</td>
<td>5.8 (4-11)</td>
<td>L</td>
<td>Lifts cup with handle</td>
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* May be observed incidentally.
To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

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<th>Notes</th>
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<tr>
<td>74</td>
<td>5.8 (4-10)</td>
<td>M</td>
<td>Attends to scribbling</td>
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<td>75</td>
<td>6.0 (5-10)</td>
<td>I</td>
<td>Looks for fallen spoon</td>
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<td>76</td>
<td>6.2 (4-12)</td>
<td>K</td>
<td>Playful response to mirror</td>
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<td>77</td>
<td>6.3 (4-10)</td>
<td>H</td>
<td>Retains 2 of 3 cubes offered</td>
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<td>78</td>
<td>6.5 (5-10)</td>
<td>A</td>
<td>Manipulates bell: interest in detail</td>
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<tr>
<td>79</td>
<td>7.0 (5-12)</td>
<td>G</td>
<td>* Vocalizes 4 different syllables</td>
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<td>80</td>
<td>7.1 (5-10)</td>
<td>D</td>
<td>Pulls string adaptively: secures ring</td>
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<td>81</td>
<td>7.6 (5-12)</td>
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<td>Cooperates in games</td>
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<td>Attempts to secure 3 cubes</td>
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<td>Rings bell purposively</td>
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<td>84</td>
<td>7.9 (5-14)</td>
<td>N</td>
<td>* Listens selectively to familiar words</td>
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<tr>
<td>85</td>
<td>7.9 (5-14)</td>
<td>G</td>
<td>* Says &quot;da-da&quot; or equivalent</td>
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<td>86</td>
<td>8.1 (6-12)</td>
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<td>Uncovers toy</td>
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<td>87</td>
<td>8.9 (6-12)</td>
<td>O</td>
<td>Fingers holes in peg board</td>
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<td>88</td>
<td>9.0 (6-14)</td>
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<td>Picks up cup: secures cube</td>
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<td>9.1 (6-14)</td>
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<td>Responds to verbal request</td>
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<td>90</td>
<td>9.4 (6-13)</td>
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<td>Puts cube in cup on command (Note number placed)</td>
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<td>91</td>
<td>9.5 (6-14)</td>
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<td>Looks for contents of box</td>
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<td>92</td>
<td>9.7 (8-15)</td>
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<td>Stirs with spoon in imitation</td>
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<td>93</td>
<td>10.0 (7-16)</td>
<td>Q</td>
<td>Looks at pictures in book</td>
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<td>94</td>
<td>10.1 (7-17)</td>
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<td>Inhibits on command</td>
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<td>95</td>
<td>10.4 (7-15)</td>
<td>M</td>
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<td>Unwraps cube</td>
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<tr>
<td>97</td>
<td>10.8 (8-17)</td>
<td>E</td>
<td>* Repeats performance laughed at</td>
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<tr>
<td>98</td>
<td>11.2 (8-15)</td>
<td>M</td>
<td>Holds crayon adaptively</td>
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To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

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<tr>
<td>99</td>
<td>11.3 (8-15)</td>
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<td>Pushes car along</td>
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<tr>
<td>100</td>
<td>11.8 (9-18)</td>
<td>L</td>
<td>Puts 3 or more cubes in cup</td>
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<tr>
<td>101</td>
<td>12.0 (9-18)</td>
<td>G*</td>
<td>* Jabbers expressively</td>
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<tr>
<td>102</td>
<td>12.0 (9-17)</td>
<td>P</td>
<td>Uncovers blue box</td>
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<tr>
<td>103</td>
<td>12.0 (8-18)</td>
<td>Q</td>
<td>Turns pages of book</td>
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<tr>
<td>104</td>
<td>12.2 (8-19)</td>
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<td>Pats whistle doll, in imitation</td>
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<tr>
<td>105</td>
<td>12.4 (7-18)</td>
<td>D*</td>
<td>Dangles ring by string</td>
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<tr>
<td>106</td>
<td>12.5 (9-18)</td>
<td>N</td>
<td>* Imitates words (Record words used)</td>
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<tr>
<td>107</td>
<td>12.9 (10-17)</td>
<td>P</td>
<td>Puts beads in box (6 of 8)</td>
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<td>108</td>
<td>13.0 (10-17)</td>
<td>O</td>
<td>Places 1 peg repeatedly</td>
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<td>109</td>
<td>13.4 (10-19)</td>
<td>J</td>
<td>Removes pellet from bottle</td>
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<tr>
<td>110</td>
<td>13.6 (10-20)</td>
<td>R</td>
<td>Blue board: places 1 round block (Specify)</td>
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<tr>
<td>111</td>
<td>13.8 (10-19)</td>
<td>H*</td>
<td>Builds tower of 2 cubes (Note number of cubes)</td>
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<td>112</td>
<td>14.0 (10-21)</td>
<td>M</td>
<td>Spontaneous scribble</td>
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<tr>
<td>113</td>
<td>14.2 (10-23)</td>
<td>G*</td>
<td>* Says 2 words (Note words)</td>
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<tr>
<td>114</td>
<td>14.3 (11-20)</td>
<td>L</td>
<td>Puts 9 cubes in cup</td>
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<td>115</td>
<td>14.6 (10-20)</td>
<td>P</td>
<td>Closes round box</td>
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<tr>
<td>116</td>
<td>14.6 (11-19)</td>
<td></td>
<td>* Uses gestures to make wants known</td>
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<tr>
<td>117</td>
<td>15.3 (11-23)</td>
<td>N</td>
<td>Shows shoes or other clothing, or own toy</td>
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<tr>
<td>118</td>
<td>16.4 (13-20)</td>
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<td>Pegs placed in 70 seconds (Note times)</td>
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<tr>
<td>119</td>
<td>16.7 (13-21)</td>
<td>H*</td>
<td>Builds tower of 3 cubes</td>
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<tr>
<td>120</td>
<td>16.8 (12-26)</td>
<td>S</td>
<td>Pink board: places round block (Specify)</td>
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<tr>
<td>121</td>
<td>17.0 (12-26)</td>
<td>R</td>
<td>Blue board: places 2 round blocks</td>
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<th>Item No.</th>
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<th>Item Title</th>
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<th>Notes</th>
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<tr>
<td>122</td>
<td>17.0 (12-24)</td>
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<td>Attains toy with stick</td>
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<td>123</td>
<td>17.6 (14-22)</td>
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<td>Pegs placed in 42 seconds</td>
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<tr>
<td>124</td>
<td>17.8 (13-27)</td>
<td>T</td>
<td>Names 1 object (Check objects named)</td>
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<td>125</td>
<td>17.8 (13-26)</td>
<td>M</td>
<td>Imitates crayon stroke</td>
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<tr>
<td>126</td>
<td>17.8 (14-26)</td>
<td>U</td>
<td>Follows directions, doll</td>
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<tr>
<td>127</td>
<td>18.8 (14-27)</td>
<td>G²</td>
<td>* Uses words to make wants known</td>
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<tr>
<td>128</td>
<td>19.1 (15-26)</td>
<td>U</td>
<td>Points to parts of doll</td>
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<tr>
<td>129</td>
<td>19.3 (14-30+)</td>
<td>R</td>
<td>Blue board: places 2 round and 2 square blocks</td>
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<td>130</td>
<td>19.3 (14-27)</td>
<td>V</td>
<td>Names 1 picture (Check list)</td>
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<td>131</td>
<td>19.7 (14-30+)</td>
<td></td>
<td>Finds 2 objects (Check successful trials)</td>
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<td>132</td>
<td>19.9 (16-28)</td>
<td>V</td>
<td>Points to 3 pictures (Check list at item 130)</td>
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<td>133</td>
<td>19.9 (15-27)</td>
<td>W</td>
<td>Broken doll: mends marginally</td>
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<td>134</td>
<td>20.0 (16-29)</td>
<td>O</td>
<td>Pegs placed in 30 seconds</td>
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<td>135</td>
<td>20.5 (14-30+)</td>
<td>M</td>
<td>Differentiates scribble from stroke</td>
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<tr>
<td>136</td>
<td>20.6 (16-30)</td>
<td>G³</td>
<td>* Sentence of 2 words</td>
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<tr>
<td>137</td>
<td>21.2 (16-30+)</td>
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<td>Pink board: completes</td>
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<td>138</td>
<td>21.4 (16-30)</td>
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<td>Names 2 objects</td>
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<td>139</td>
<td>21.6 (17-30+)</td>
<td>V</td>
<td>Points to 5 pictures (Check list at item 130)</td>
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**Notes**
- Items 124, 138, 146
  - Ball
  - Watch
  - Pencil
- Items 130, 132, 139, 141, 148, 149
  - Names Points
  - Dog
  - Shoe
  - Cup
  - House
  - Clock
  - Flag
  - Star
  - Leaf
  - Purse
  - Book
  - No. Named
  - No. Pair

*May be observed incidentally.
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<td>140</td>
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<tr>
<td>141</td>
<td>22.1 (17-30+)</td>
<td>V</td>
<td>Names 3 pictures (Check list at item 130)</td>
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<td>142</td>
<td>22.4 (16-30+)</td>
<td>R</td>
<td>Blue board: places 6 blocks</td>
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<tr>
<td>143</td>
<td>23.0 (17-30+)</td>
<td>H</td>
<td>Builds tower of 6 cubes</td>
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<td>144</td>
<td>23.4 (16-30+)</td>
<td>X</td>
<td>Discriminates 2: cup, plate, box (Check which)</td>
<td>Items 144, 152</td>
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<tr>
<td>145</td>
<td>23.8 (17-30+)</td>
<td>Y</td>
<td>Names watch, 4th picture (Check at which named)</td>
<td>Items 145, 150</td>
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<tr>
<td>146</td>
<td>24.0 (17-30+)</td>
<td>T</td>
<td>Names 3 objects</td>
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<td>147</td>
<td>24.4 (19-30+)</td>
<td>M</td>
<td>Imitates strokes: vertical and horizontal</td>
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<td>148</td>
<td>24.7 (19-30+)</td>
<td>V</td>
<td>Points to 7 pictures (Check list at item 130)</td>
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<td>Names 5 pictures (Check list at item 130)</td>
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<td>Y</td>
<td>Names watch, 2nd picture</td>
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<td>151</td>
<td>25.4 (18-30+)</td>
<td>S</td>
<td>Pink board: reversed</td>
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<td>152</td>
<td>25.6 (18-30+)</td>
<td>X</td>
<td>Discriminates 3: cup, plate, box</td>
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<tr>
<td>154</td>
<td>26.1 (19-30+)</td>
<td>H</td>
<td>Train of cubes</td>
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<td>155</td>
<td>26.3 (19-30+)</td>
<td>R</td>
<td>Blue board: completes in 150 seconds</td>
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<td>26.6 (19-30+)</td>
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<td>Pegs placed in 22 seconds</td>
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<td>27.9 (22-30+)</td>
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<td>Folds paper</td>
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<td>28.2 (22-30+)</td>
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<td>Understands 2 prepositions</td>
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<td>159</td>
<td>30.0 (22-30+)</td>
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<td>Blue board: completes in 90 seconds</td>
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<td>Blue board: completes in 60 seconds</td>
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<td>Concept of one</td>
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<tr>
<td>163</td>
<td>30+ (23-30+)</td>
<td>Z</td>
<td>Understands 3 prepositions</td>
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Appendix K.

To score: Check P (Pass) or F (Fail). If "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

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<th>Score</th>
<th>Notes</th>
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<tr>
<td>1</td>
<td>0.1</td>
<td>A</td>
<td>Lifts head when held at shoulder</td>
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<tr>
<td>2</td>
<td>0.1</td>
<td>A</td>
<td>Postural adjustment when held at shoulder</td>
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<td>3</td>
<td>0.1</td>
<td>B</td>
<td>Lateral head movements</td>
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<td>4</td>
<td>0.4</td>
<td>B</td>
<td>Crawling movements</td>
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<td>5</td>
<td>0.8</td>
<td>C</td>
<td>† Retains red ring</td>
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<tr>
<td>6</td>
<td>0.8</td>
<td>C</td>
<td>* Arm thrusts in play</td>
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<tr>
<td>7</td>
<td>0.8</td>
<td>C</td>
<td>* Leg thrusts in play</td>
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<td>8</td>
<td>0.8</td>
<td>A</td>
<td>Head erect; vertical</td>
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<td>1.6</td>
<td>A</td>
<td>Head erect and steady</td>
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<td>10</td>
<td>1.7</td>
<td>C</td>
<td>Lifts head; dorsal suspension</td>
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<td>11</td>
<td>1.8</td>
<td>C</td>
<td>Turns from side to back</td>
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<tr>
<td>12</td>
<td>2.1</td>
<td>B</td>
<td>Elevates self by arms; prone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>2.3</td>
<td>D</td>
<td>Sits with support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2.5</td>
<td>A</td>
<td>Holds head steady</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>2.7</td>
<td>E</td>
<td>* Hands predominantly open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>3.7</td>
<td>E</td>
<td>† Cube; ulnar-palmar prehension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>3.8</td>
<td>D</td>
<td>Sits with slight support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4.2</td>
<td>A</td>
<td>Head balanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>4.4</td>
<td>C</td>
<td>* Turns from back to side</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>4.8</td>
<td>F</td>
<td>Effort to sit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>4.9</td>
<td>E</td>
<td>† Cube; partial thumb opposition (radial-palmar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>5.3</td>
<td>F</td>
<td>Pulls to sitting position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>5.3</td>
<td>D</td>
<td>Sits alone momentarily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>5.4</td>
<td>G</td>
<td>* Unilateral reaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>5.6</td>
<td>H</td>
<td>† Attempts to secure pellet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>5.7</td>
<td>G</td>
<td>* Rotates wrist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>6.0</td>
<td>D</td>
<td>Sits alone 30 seconds or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>6.4</td>
<td>C</td>
<td>* Rolls from back to stomach</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* May be observed incidentally. † May be presented during administration of Mental Scale.
To score: Check P (Pass) or F (Fail); if "Other," mark O (Omit), R (Refused), or RPT (Reported by mother).

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Age Placement and Range (Months)</th>
<th>Situation</th>
<th>Item Title</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>6.6 (5-9)</td>
<td>D</td>
<td>Sits alone, steadily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>6.8 (5-9)</td>
<td>H</td>
<td>† Scoops pellet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>6.9 (5-10)</td>
<td>D</td>
<td>Sits alone, good coordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>6.9 (5-9)</td>
<td>E</td>
<td>† Cube: complete thumb opposition (radial-digital)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>7.1 (5-11)</td>
<td>B</td>
<td>Prewalking progression (Check method)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>7.4 (5-11)</td>
<td>I</td>
<td>Early stepping movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>7.4 (6-10)</td>
<td>H</td>
<td>† Pellet: partial fingerprehension (inferior pincer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>8.1 (5-12)</td>
<td>F</td>
<td>Pulls to standing position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>8.3 (6-11)</td>
<td>J</td>
<td>Raises self to sitting position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>8.6 (6-12)</td>
<td>J</td>
<td>Stands up by furniture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>8.6 (6-12)</td>
<td>G</td>
<td>† Combines spoons or cubes: midline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>8.8 (6-12)</td>
<td>I</td>
<td>Stepping movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>8.9 (7-12)</td>
<td>H</td>
<td>† Pellet: fine prehension (neat pincer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>9.6 (7-12)</td>
<td>I</td>
<td>Walks with help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>9.6 (7-14)</td>
<td>I</td>
<td>Sits down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>9.7 (7-15)</td>
<td>G</td>
<td>† Pat-a-cake; midline skill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>11.0 (9-16)</td>
<td>I</td>
<td>Stands alone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>11.7 (9-17)</td>
<td>I</td>
<td>Walks alone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>12.6 (9-18)</td>
<td>K</td>
<td>Stands up: I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>13.3 (9-18)</td>
<td></td>
<td>† Throws ball</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>14.1 (10-20)</td>
<td>L</td>
<td>Walks sideways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>14.6 (11-20)</td>
<td>L</td>
<td>Walks backward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>15.9 (12-21)</td>
<td>M</td>
<td>Stands on right foot with help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>16.1 (12-23)</td>
<td>M</td>
<td>Stands on left foot with help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>16.1 (12-23)</td>
<td>N</td>
<td>Walks up stairs with help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>16.4 (13-23)</td>
<td>N</td>
<td>Walks down stairs with help</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† May be presented during administration of Mental Scale.
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Age Placement and Range (Months)</th>
<th>Situation</th>
<th>Item Title</th>
<th>Score</th>
<th>P</th>
<th>F</th>
<th>Other</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>17.8 (13-26)</td>
<td>O</td>
<td>Tries to stand on walking board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>20.6 (15-29)</td>
<td>O</td>
<td>Walks with one foot on walking board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>21.9 (11-30+)</td>
<td>K</td>
<td>Stands up: II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>22.7 (15-30+)</td>
<td>M</td>
<td>Stands on left foot alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>23.4 (17-30+)</td>
<td>P</td>
<td>Jumps off floor, both feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>23.5 (16-30+)</td>
<td>M</td>
<td>Stands on right foot alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>23.9 (18-30+)</td>
<td>O</td>
<td>Walks on line, general direction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>24.5 (17-30+)</td>
<td>O</td>
<td>Walking board: stands with both feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>24.8 (19-30+)</td>
<td>R</td>
<td>Jumps from bottom step</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>25.1 (18-30+)</td>
<td>N</td>
<td>Walks up stairs alone: both feet on each step</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>25.7 (16-30+)</td>
<td>O</td>
<td>Walks on tiptoe, few steps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>25.8 (19-30+)</td>
<td>N</td>
<td>Walks down stairs alone: both feet on each step</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>27.6 (19-30+)</td>
<td>O</td>
<td>Walking board: attempts step</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>27.8 (20-30+)</td>
<td>O</td>
<td>Walks backward, 10 feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>28.1 (21-30+)</td>
<td>R</td>
<td>Jumps from second step</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>29.1 (22-30+)</td>
<td>R</td>
<td>Distance jump: 4 to 14 inches (Note distance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>30+ (22-30+)</td>
<td>K</td>
<td>Stands up: III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>30+ (23-30+)</td>
<td>N</td>
<td>Walks up stairs: alternating forward foot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>30+ (20-30+)</td>
<td>O</td>
<td>Walks on tiptoe, 10 feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>30+ (24-30+)</td>
<td>O</td>
<td>Walking board: alternates steps part way</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>30+ (23-30+)</td>
<td>O</td>
<td>Keeps feet on line, 10 feet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>30+ (25-30+)</td>
<td>R</td>
<td>Distance jump: 14 to 24 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>30+ (24-30+)</td>
<td>P</td>
<td>Jumps over string 2 inches high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>30+ (28-30+)</td>
<td>R</td>
<td>Distance jump: 24 to 34 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>30+ (30+)</td>
<td>R</td>
<td>Hops on one foot, 2 or more hops</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>30+ (30+)</td>
<td>N</td>
<td>Walks down stairs: alternating forward foot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>30+ (20-30+)</td>
<td>P</td>
<td>Jumps over string 8 inches high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Social Orientation

1. Responsiveness to persons (Circle one)

   Rating
   1. Behavior towards persons is not different from behavior towards objects
   2. Between 1 and 3
   3. Responds briefly to social approach but when not approached directly by persons does not attend to them
   4. Between 3 and 5
   5. Responds to social approach and persons present, but less than half the time
   6. Between 5 and 7
   7. Responds to social approach and continues interest in persons present
   8. Between 7 and 9
   9. Behavior seems to be continuously affected by awareness of persons present

2. Responsiveness to examiner (Circle one)

   Rating
   1. Avoiding or withdrawn
   2. Hesitant
   3. Accepting
   4. Friendly
   5. Inviting (initiating, demanding)

3. Responsiveness to mother (Circle one)

   Rating
   1. Avoiding or withdrawn
   2. Hesitant
   3. Accepting
   4. Friendly
   5. Inviting (initiating, demanding)

---

*The standard score for the Mental Scale is called the MDI (for Mental Development Index); for the Motor Scale it is the PDI (for Psychomotor Development Index). See Manual for discussion.*

**INSTRUCTIONS:** Fill out this form immediately after the Mental and Motor Scales have been administered. For each rating scale, circle the number next to the one statement that best describes the child’s behavior. Additional comments or specific behaviors may be noted in the space to the right of each rating scale; also in this space are partial lists of specific behaviors which may be checked off if observed by the examiner. Space is provided at the end of the form for recording any deviant behavior and an overall evaluation of the child. (For complete instructions, see the Manual.)

**CHECK RELEVANT BEHAVIORS**

**WRITE CLARIFYING DESCRIPTIVE NOTES**
### COOPERATIVENESS

4. Cooperation with examiner, based on interpersonal reactions (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Resists all suggestions or requests</td>
</tr>
<tr>
<td>2</td>
<td>Does not cooperate</td>
</tr>
<tr>
<td>3</td>
<td>Refuses or resists one or two specific tests, or refuses to cooperate during part of the session (e.g., initially, or towards the end), or refuses to attempt the more difficult items he is likely to fail</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Responds to or accepts the test materials or situation; neither cooperative nor resistant in relation to examiner</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Seems to enjoy the give-and-take with the examiner in the testing situation</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Very readily and enthusiastically enters into suggested games or tasks</td>
</tr>
</tbody>
</table>

### FEARFULNESS

5. Reaction to the new or strange; e.g., strangers, strange surroundings, test materials (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accepts the entire situation with no evidence of fear, caution, or inhibition of actions</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Some slight vigilance, and restrained behavior in the first few minutes</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Behavior is affected by the new and strange, but just moderately and for approximately the first third of the testing period</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Shows evidence of being bothered by the strange situation or persons much of the period</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Strong indication of fear of the strange, to the extent that he cannot be brought to play or respond to the tests</td>
</tr>
</tbody>
</table>

### TENSION

6. Tenseness of body (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inert; may be flaccid most of the time</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Body has tone and is generally relaxed</td>
</tr>
<tr>
<td>4</td>
<td>Has bounce</td>
</tr>
<tr>
<td>5</td>
<td>Becomes tense at times although body has relaxed quality; subsequent quick return to supple, relaxed condition</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Body is tense more than half the time; may be stiff or tight in one or more areas; startles, quivers or trembles easily</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Body is predominantly taut or tense</td>
</tr>
</tbody>
</table>
### GENERAL EMOTIONAL TONE

7. **Degree of happiness** (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Child seems unhappy throughout the testing period</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>At times rather unhappy, but may respond happily to interesting procedures</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Moderately happy or contented; may become upset, but recovers fairly easily</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Generally appears to be in a happy state of well-being</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Radiates happiness; nothing is upsetting; animated</td>
</tr>
</tbody>
</table>

### OBJECT ORIENTATION

8. **Responsiveness to objects; toys or test materials** (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does not look at or in any way indicate interest in objects</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>When given materials, glances at them and holds them briefly but does not exploit them</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Plays with materials when presented; discards or loses interest in each after a brief reaction</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Sustained interest in the test materials, in each new one in turn as presented</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Reluctantly relinquishes test materials</td>
</tr>
</tbody>
</table>

### OBJECT ORIENTATION

9. **Plays imaginatively with materials; e.g., arranging them in new relationships, or introducing them into play sequence** (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

### OBJECT ORIENTATION

10. **Is there persistent attachment to any specific toy or to some object of his own?** (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

**Check relevant behaviors**

- Cries
- Fusses
- Whines
- Listless droop
- Protests
- Frowns
- Unhappy expression
- Non-expressive
- Smiles
- Coos or babbles with happy intonation
- Laughs
- Squeals
- Crows
- Animated expressions
- Other (Specify):

**Describe any disturbing incidents or corrections:**

---

**Other (Specify):**

---
### GOAL DIRECTEDNESS

#### 11. Persistence in goal-directed effort (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No evidence of directed effort</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Makes a few attempts at a goal, but is easily distracted or does not show interest in carrying to completion (e.g., attaining an object, solving a problem)</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Makes fairly persistent efforts towards a goal, or repeated attempts to achieve a goal (e.g., to attain an object of interest)</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Persistent efforts to reach goal or solve a problem</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Compulsive absorption with a task until it is solved</td>
</tr>
</tbody>
</table>

#### ATTENTION SPAN

#### 12. Tendency to persist in attending to any one object, person or activity, aside from attaining a goal (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fleeting attention span</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Attends to a toy, task or person, but is easily distracted</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Moderate attention to each new toy, person, or situation; soon ready for another</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Continues interest in persons, tasks or things for rather long periods</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Long-continued absorption in a toy, activity or person</td>
</tr>
</tbody>
</table>

### ENDURANCE

#### 13. Behavior constancy in adequacy of response to demands of the tests (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tires easily; quickly regresses to lower levels of functioning</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Grows restless fairly soon and terminates the test situation</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Adequate tolerance for most of the test; only restless towards the end</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Holds up well throughout testing period</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Continues to respond well and with interest, even during prolonged tests at difficult levels</td>
</tr>
</tbody>
</table>

#### CHECK RELEVANT BEHAVIORS

WRITE CLARIFYING DESCRIPTIVE NOTES

- Tries to retain test materials
- Becomes angry at failure
- Expresses satisfaction with success
- Elated with achievement
- Repeats successful acts
- Talks about task
- Asks for help
- Whines at difficulty
- Cries
- Other (Specify):

Describe any typical goal-directed behaviors, giving quality of actions:
## ACTIVITY

14. Amount of gross bodily movement (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stays quietly in one place, with practically no self-initiated movement</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Usually quiet and inactive but responds appropriately in situations calling for some activity</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Moderate activity; enters into games with freedom of action</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>In action during much of the period of observation</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Hyperactive; cannot be quieted for sedentary tests</td>
</tr>
</tbody>
</table>

## REACTIVITY

15. The ease with which a child is stimulated to react in general; his SENSITIVITY or EXCITABILITY; reactivity may be positive or negative in tone (Circle one)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unreactive; seems to pay little heed to what goes on around him; responds only to strong or repeated stimulation</td>
</tr>
<tr>
<td>2</td>
<td>Between 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Some tendency to be unreactive to the usual testing stimuli, etc.</td>
</tr>
<tr>
<td>4</td>
<td>Between 3 and 5</td>
</tr>
<tr>
<td>5</td>
<td>Moderately alert and responsive in reaction to test stimuli, etc.</td>
</tr>
<tr>
<td>6</td>
<td>Between 5 and 7</td>
</tr>
<tr>
<td>7</td>
<td>Quickly shows awareness of changes in test materials and situations</td>
</tr>
<tr>
<td>8</td>
<td>Between 7 and 9</td>
</tr>
<tr>
<td>9</td>
<td>Very reactive; every little thing seems to stir him up; he startles, reacts quickly, seems keenly sensitive to things going on around him</td>
</tr>
</tbody>
</table>

## SENSORY AREAS OF INTEREST DISPLAYED (Circle one for each item)

Note.—Ratings range from 1 (None) to 9 (Excessive).

<table>
<thead>
<tr>
<th>Item</th>
<th>None</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Sights—looking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>17. Listening to sounds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>18. Vocal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
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<tr>
<td>19. Banging toys or hands on table, throwing toys, etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>20. Manipulating (exploring with hands)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>21. Body motion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
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<tr>
<td>22. Mouthing or sucking—thumb or fingers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
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<tr>
<td>23. Pacifier</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>24. Toys</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>ENERGY AND COORDINATION FOR AGE (Circle one for each item)</td>
<td>CHECK RELEVANT BEHAVIORS</td>
<td></td>
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<tr>
<td>Note.—Ratings for these items should be estimated in relation to other children of the child's own age.</td>
<td>WRITE CLARIFYING DESCRIPTIVE NOTES</td>
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<tr>
<td>25. Level of energy (range: low to high)</td>
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<tr>
<td>Low</td>
<td>High</td>
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<td></td>
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>26. Coordination of gross muscle movements for age (range: smooth functioning to poor coordination)</td>
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<tr>
<td>Smooth functioning</td>
<td>Poor coordination</td>
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<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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</tr>
<tr>
<td>27. Coordination of fine muscles (hands) for age (range: smooth functioning to poor coordination)</td>
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<tr>
<td>Smooth functioning</td>
<td>Poor coordination</td>
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<td>5</td>
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<td></td>
</tr>
<tr>
<td>JUDGMENT OF TEST</td>
<td></td>
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</tr>
<tr>
<td>28. Judgment of optimal vs. minimal adequacy of the test as an indicator of this child's characteristics (Circle one)</td>
<td>If you circled 1 or 2, give reasons why you think the test was not a fair indication of the child's capacities (e.g., child's sleepiness, hunger, health, emotions; mother's behavior; outside interruptions):</td>
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</tr>
<tr>
<td>Rating</td>
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<tr>
<td>1</td>
<td>Minimal</td>
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<tr>
<td>2</td>
<td>Fairly adequate</td>
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<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Average</td>
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<tr>
<td>4</td>
<td>Very good</td>
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<tr>
<td>5</td>
<td>Excellent</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>UNUSUAL OR DEVIANT BEHAVIOR</td>
<td>If &quot;Yes,&quot; describe: (Note such things as staring spells, temper tantrums, holding breath and turning blue, banging head, head rolling, sudden and fearful awakening at night, tics, autisms.)</td>
<td></td>
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<tr>
<td>29. Was any unusual or deviant behavior observed, or incidentally reported (e.g., by the mother), that has not been recorded above? (Circle one)</td>
<td></td>
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<td></td>
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<tr>
<td>1</td>
<td>Yes</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>No</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GENERAL EVALUATION OF CHILD</td>
<td>If &quot;Exceptional,&quot; specify:</td>
<td></td>
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</tr>
<tr>
<td>30. (Circle one)</td>
<td>Write a brief general evaluative statement about the child, giving (a) the quality of the child's performance at this time; (b) if relevant, any prognosis of subsequent development, with reasons:</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
HOME INVENTORY (Birth to Three)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Raw Score</th>
<th>Percentile Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>I  Emotional and Verbal Responsivity of Mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Avoidance of Restriction and Punishment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III Organization of the Physical and Temporal Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Provision of Appropriate Play Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V Maternal Involvement with the Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI Opportunities for Variety in Daily Stimulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of Items Correct (Subscales)

- **I**: [Scale]
- **II**: [Scale]
- **III**: [Scale]
- **IV**: [Scale]
- **V**: [Scale]
- **VI**: [Scale]

Number of Items Correct (Total Scale)

- **Lower 10%**: [Scale]
- **Lower 25%**: [Scale]
- **Middle 50%**: [Scale]
- **Upper 25%**: [Scale]
- **Upper 10%**: [Scale]
### I. EMOTIONAL AND VERBAL RESPONSIVITY OF MOTHER

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mother spontaneously vocalizes to child at least twice during visit (excluding scolding)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Mother responds to child's vocalizations with a verbal response.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Mother tells child the name of some object during visit or says name of person or object in a &quot;teaching&quot; style.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Mother's speech is distinct, clear, and audible.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Mother initiates verbal interchanges with observer--asks questions, makes spontaneous comments.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Mother expresses ideas freely and easily and uses statements of appropriate length for conversation (e.g., gives more than brief answers).</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Mother permits child occasionally to engage in &quot;messy&quot; types of play.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Mother spontaneously praises child's qualities or behavior twice during visit.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>When speaking of or to child, mother's voice conveys positive feeling.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Mother caresses or kisses child at least once during visit.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Mother shows some positive emotional responses to praise of child offered by visitor.</td>
<td></td>
</tr>
</tbody>
</table>

**SUBSCORE**

### II. AVOIDANCE OF RESTRICTION AND PUNISHMENT

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Mother does not shout at child during visit.</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Mother doesn't express overt annoyance with or hostility toward child.</td>
<td></td>
</tr>
</tbody>
</table>

(* Items from Categories I and II which may require direct questions.)
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>Mother neither slaps nor spanks child during visit.</td>
</tr>
<tr>
<td>*15.</td>
<td>Mother reports that no more than one instance of physical punishment occurred during the past week.</td>
</tr>
<tr>
<td>16.</td>
<td>Mother does not scold or derogate child during visit.</td>
</tr>
<tr>
<td>17.</td>
<td>Mother does not interfere with child's actions or restrict child's movements more than three times during visit.</td>
</tr>
<tr>
<td>18.</td>
<td>At least ten books are present and visible.</td>
</tr>
<tr>
<td>*19.</td>
<td>Family has a pet.</td>
</tr>
</tbody>
</table>

### III. ORGANIZATION OF PHYSICAL AND TEMPORAL ENVIRONMENT

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>20.</td>
<td>When mother is away, care is provided by one of three regular substitutes.</td>
</tr>
<tr>
<td>21.</td>
<td>Someone takes child into grocery store at least once a week.</td>
</tr>
<tr>
<td>22.</td>
<td>Child gets out of house at least four times a week.</td>
</tr>
<tr>
<td>23.</td>
<td>Child is taken regularly to doctor's office or clinic.</td>
</tr>
<tr>
<td>*24.</td>
<td>Child has a special place in which to keep his toys and &quot;treasures.&quot;</td>
</tr>
<tr>
<td>25.</td>
<td>Child's play environment appears safe and free of hazards.</td>
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</table>

### IV. PROVISION OF APPROPRIATE PLAY MATERIALS

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>26.</td>
<td>Child has some muscle activity toys or equipment.</td>
</tr>
<tr>
<td>27.</td>
<td>Child has push or pull toy.</td>
</tr>
<tr>
<td>28.</td>
<td>Child has stroller or walker, kiddie car, scooter, or tricycle.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>29.</td>
<td>Mother provides toys or interesting activities for child during interview.</td>
</tr>
<tr>
<td>30.</td>
<td>Provides learning equipment appropriate to age--cuddly toy or role-playing toys.</td>
</tr>
<tr>
<td>31.</td>
<td>Provides learning equipment appropriate to age--mobile, table and chairs, high chair, play pen.</td>
</tr>
<tr>
<td>32.</td>
<td>Provides eye-hand coordination toys--items to go in and out of receptacle, fit together toys, beads.</td>
</tr>
<tr>
<td>33.</td>
<td>Provides eye-hand coordination toys that permit combinations--stacking or nesting toys, blocks or building toys.</td>
</tr>
<tr>
<td>34.</td>
<td>Provides toys for literature or music.</td>
</tr>
<tr>
<td>35.</td>
<td>Mother tends to keep child within visual range and to look at him often.</td>
</tr>
<tr>
<td>36.</td>
<td>Mother &quot;talks&quot; to child while doing her work.</td>
</tr>
<tr>
<td>37.</td>
<td>Mother consciously encourages developmental advances.</td>
</tr>
<tr>
<td>38.</td>
<td>Mother invests &quot;maturing&quot; toys with value via her attention.</td>
</tr>
<tr>
<td>40.</td>
<td>Mother provides toys that challenge child to develop new skills.</td>
</tr>
<tr>
<td>41.</td>
<td>Father provides some caretaking every day.</td>
</tr>
<tr>
<td>42.</td>
<td>Mother reads stories at least three times weekly.</td>
</tr>
<tr>
<td>43.</td>
<td>Child eats at least one meal per day with mother &amp; father.</td>
</tr>
<tr>
<td>44.</td>
<td>Family visits or receives visits from relatives.</td>
</tr>
<tr>
<td>45.</td>
<td>Child has three or more books of his own.</td>
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</table>

**V. MATERNAL INVOLVEMENT WITH CHILD**

**VI. OPPORTUNITIES FOR VARIETY IN DAILY STIMULATION**
## APPENDIX B SCORING SHEET

<table>
<thead>
<tr>
<th>Name of child</th>
<th>D.o.b.</th>
<th>D.o.t.</th>
<th>Age (completed months)</th>
</tr>
</thead>
</table>

### Relevant information about family:
- Parental occupation
- Family structure
- Languages spoken at home
- Illness, separations or other important events in the child's life

### Play opportunities:
- Home
- Nursery Group

### Behaviour during symbolic play test:

### Play preferences and symbolic play at home:

### Play score in relation to other assessments:
- Non-verbal intelligence
- Receptive language
- Expressive language
- Play score

### Formulation:
<table>
<thead>
<tr>
<th>Sit.</th>
<th>Item No.</th>
<th>Description</th>
<th>Score</th>
<th>Observations</th>
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<tbody>
<tr>
<td>I</td>
<td>1.</td>
<td>Discrimin. doll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>Rel. spoon to cup or saucer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>Feeds/combs/brushes self or other person</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>Feeds/combs/brushes doll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>Places cup on saucer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>6.</td>
<td>Discrimin. doll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.</td>
<td>Rel. doll to bed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.</td>
<td>Rel. blanket/pillow to doll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.</td>
<td>Puts doll to bed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.</td>
<td>Pillow correct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>11.</td>
<td>Rel. knife/fork to plate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.</td>
<td>Rel. fork/knife/plate to table</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.</td>
<td>Rel. tablecloth to other object</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>14.</td>
<td>Places doll on chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.</td>
<td>Rel. fork/knife/plate to doll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.</td>
<td>Rel. chair to table</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>17.</td>
<td>Rel. doll to table</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18.</td>
<td>Places tablecloth on table</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>19.</td>
<td>Moves tractor/trailer along</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>20.</td>
<td>Rel. log(s) to tractor/trailer/man</td>
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<td></td>
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<tr>
<td></td>
<td>21.</td>
<td>Places man in tractor/trailer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22.</td>
<td>Places man in driver's seat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23.</td>
<td>Lines up tractor-trailer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24.</td>
<td>Attaches tractor to trailer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL SCORE</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix P.

Attachment behaviours check-list

A. When E. enters
   looks at M.
   goes to, reaches up to M.
   touches, clings to M.
   buries head in M.'s lap
   cries, frets

B. When M. leaves room
   follows or starts to follow
   frets
   cries

C. While M. is out of room
   frets or cries till return
   calls M.
   searches physically or visually

D. When M. returns
   quiets
   cries till comforted
   approaches or reaches toward
   greets (look, smile, vocalization)

E. While M. is in room
   follows visually
   approaches or follows physically
   vocalizes to
   says "Ma-ma"
   smiles at
   holds, face toward M.
   "back to M. (i.e. leans against)

F. When M. puts baby down
   frets or cries
   reaches up
   holds

Reaction to Experimenter

1. Shows fear
2. Avoids really
3. Avoids coyly (i.e. hides face)
4. Sobers
5. Smiles
6. Approaches
7. Touches or talks
Subject No.  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
Sex          | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  |
Maternal age | 26 | 25 | 25 | 21 | 28 | 26 | 16 | 22 | 21 | 28 | 39 | 41 | 29 | 26 | 28 | 30 | 26 | 33 | 26 |
S-E class    | 4  | 4  | 2  | 4  | 2  | 5  | 4  | 6  | 4  | 5  | 4  | 4  | 1  | 5  | 2  | 2  | 1  | 1  | 2  | 4  |
Maternal nationality | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 1 |
Racial origin | 1 | 3 | 2 | 3 | 4 | 3 | 2 | 3 | 1 | 2 | 1 | 1 | 5 | 5 | 2 | 5 | 2 | 3 | 2 |
Birth order  | 2 | 4 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 3 | 3 |
Hospital     | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 |
PBP          | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 |
Feeding      | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
Sex-satis.   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
MDI          | 107 | 119 | 102 | 133 | 113 | 116 | 122 | 116 | 107 | 110 | 128 | 96 | 102 | 113 | 122 | 116 | 122 | 102 | m.d. |
PDI          | 117 | 117 | 125 | 126 | 134 | 134 | 138 | 142 | 150 | 150 | 150 | 150 | 108 | 117 | 117 | 134 | 142 | 142 | 150 | m.d. |
I.Vocal.     | 4 | 5 | 2 | 3 | 2 | 4 | 5 | 3 | 3 | 5 | 5 | 2 | 3 | 3 | 5 | 5 | 3 | 2 | m.d. |
M.tone       | 6 | 5 | 5 | 5 | 5 | 6 | 4 | 5 | 6 | 6 | 6 | 3 | 5 | 5 | 6 | 5 | 5 | 5 | m.d. |
M.emotion    | 5 | 5 | 5 | 3 | 4 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 2 | 4 | 3 | 5 | 4 | 3 | m.d. |
Easy baby    | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 3 | 1 | m.d. |
attitude to crying | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | m.d. |
attitude t-sucking | 2 | 1 | m.d. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | m.d. |
use of Clinic | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | m.d. |
Banging      | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | m.d. |
Sucking      | 1 | 2 | 1 | 2 | 6 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 9 | m.d. |

Key to variables:
- PBP = Prenatal or birth problems
- Sex-satis. = Mother's satisfaction with baby's sex.
- m.d. = missing data
### Appendix R

#### Sample of data (18 months)

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>1</th>
<th>2</th>
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<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
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<td>HOME 5</td>
<td>4</td>
<td>4</td>
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<td>43</td>
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<td>7</td>
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<tr>
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<tr>
<td>Banging</td>
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<td>2</td>
<td>1</td>
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<tr>
<td>Sucking</td>
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<td>1</td>
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<td>m.d.</td>
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</tbody>
</table>

**Key to variables:**
- T-training = toilet-training
- m.d. = missing data
### Key to coding:

**Sex:**
- Male = 1
- Female = 2

**Social Class:**
- I
- II
- IIIN
- IIIM
- IV
- V
- 1
- 2
- 3
- 4
- 5
- 6

**Nationality of mother:**
- Non-English = 1
- English = 2

**Prenatal or birth difficulties:**
- none = 1
- one or more = 2

**Feeding till 6 wks:**
- breast = 1
- bottle = 2

**Mother's disappointment with infant's sex:**
- disappointed = 1
- happy = 2

**Infant vocalization:**
- 1 - 5

**Mother's tone of voice:**
- 1 - 6  (angry/hostile - very warm/lovey)

**Mother's expressed positive emotion:**
- 1 - 5  (none to very much)

**Mother's perception of baby:**
- easy = 1
- difficult = 2
- neither = 3

**Permissive (indulgent) attitude to crying:**
- yes = 1
- no = 2

**Permissive attitude to thumb-sucking:**
- yes = 1
- no = 2

**Regular use of clinic or G.P.:**
- yes = 1
- no = 2
### Key to coding (cont'd.)

#### Racial origin: (medical classification)
- Caucasian = 1
- Negro = 2
- Asian (Indian or Pakistani) = 3
- Mediterranean = 4
- Mixed = 5

#### Night-waking:
- less than 1/week = 1
- once/week = 2
- more than 1/wk. = 3

#### Toilet-training:
- yes = 1 (any)
- no = 2 (none at all)

#### Own room:
- own room = 1
- cot in parents' room = 2
- parents' bed = 3
- with sibs = 4

#### Smacking:
- yes = 1
- no = 2

#### Temper tantrums:
- yes = 1
- no = 2
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Annex to Ph.D. thesis, Jennifer M. Baudin

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1. The concept of maturation and its usefulness in cross-cultural studies.

In defining maturation it is necessary to distinguish it from its two related concepts, namely development and growth. Although the three terms are often used synonymously, they are not identical, and of the three, development is the most inclusive.

The concept of development refers to the fact that changes in the nature and organization of an organism's structure and behaviour are systematically related to age: 'a characteristic is said to be developmental if it can be related to age in an orderly and lawful way', (Kessen, 1960).

Growth and maturation are both components of development. Although growth refers simply to incremental increases in amount of a characteristic, some psychologists have included in the term other features of the developmental process, such as changes in organization and the emergence of new behaviours. In this sense the term becomes synonymous with development.

The term maturation refers to the processes leading to a state of maturity. The word has usually been used with an emphasis on "unfolding", with little or no regard being paid to the environmental contribution. Gesell, who is immediately associated with the concept, defined it in 1928 in terms of those phases and products of development which are wholly or chiefly due to innate and endogenous factors. He argued that development proceeded as orderly and predictable unfolding of abilities, which was largely unaffected by environmental events.

In a move away from the extreme nativist position, several writers have tried to broaden the term. Hebb (1966) for example, included, besides innate factors, the influence of those environmental conditions which are the essential pre-requisites for the realization of genetic potentiality.

Others adopted an operational approach: Ausubel, for example, who defined maturation as 'development that takes place in the demonstrable absence of specific practice experience' (1958). The absence of experience, however, can rarely, if ever, be demonstrated. Maturational change is due to both innate and environmental factors, and neither are sufficient in themselves.

The persistence of the narrower definitions of maturation have led to Connolly and Prechtl's recent observation (1981) that: "we have been left with the legacy of maturation as a substitute notion for the genetical control of development in general." They feel that if maturation is only used in a general sense, as for example in 'mental maturation', the word is simply a synonym for development. They argue that it should only be used to refer to specific functions, as for instance in sexual maturation.
A useful distinction can be made between behavioural and physiological maturation. Behaviour occurs 'between' an organism and its environment, and the genetic influence upon behaviour is mediated by physiological structure and functioning. Behavioural maturation can therefore be defined as behavioural development in so far as it is determined by physiological maturation.

Physiological growth itself is dependent upon an adequate physical environment. What constitutes an "adequate" environment is a point of controversy, while variations in environment have been shown to affect the timing of the process and the ultimate level reached in growth. (Tanner, 1962). As far as behavioural maturation is concerned, evidence here is hard to obtain, since it can so rarely be separated from environmental effects.

The role of maturation of the CNS in behavioural development can be assessed by comparing full-term infants (those born at 41 weeks' gestation) with premature babies. Not until a gestational age of approximately 41 weeks do premature babies, even if they were born at 28 weeks, respond to lights with following of the eyes, or to the sound of a human voice. During the 3 months since their birth the environment seems to have very little effect upon premature babies, whereas full-term infants take only a few days to develop these responses, and to follow moving objects with their eyes. According to Marshall (1968): "it appears that the receptor organs and their complex connections within the brain, do not reach a state of maturity in the premature which allows him to gain from experience of the outside world".

More recent studies by Siqueland (1981) of visual recognition memory in premature infants, imply a similar conclusion. Siqueland found that comparable durations of postnatal visual experience did not result in pre-term babies performing at the same level as full-term babies. Siqueland stresses that this finding does not mean that visual experience is unimportant for the development of higher-order form abilities, but it does suggest that a certain level of neural maturation is necessary for the assimilation of visual experiences.

Certain levels of physiological development are necessary for the appearance of certain classes of behaviour, and when these behaviours appear for the first time they may already be structured and patterned in a species-specific manner. This is most evident in the early stages of human development. The first appearance of reflex responses is contingent upon neural maturation, as is the pattern of these reflexes (Coghill, 1929; Carmichael 1954).

Although infantile reflexes typically disappear within the first year of life, it has been shown that two of these reflexes, namely the "stepping" and "reaching" reflex, may be prolonged as a result of regular exercise (Bower 1976; Super 1976; Zelazo 1976). While their appearance therefore, is under genetic control, their decline may be influenced by environmental factors.
The maturation of the sexual function is necessary for sexual reproduction, and in lower species, whose behaviour is relatively stereotyped, maturation also determines the form of the behaviour. The higher the species however, the less that the form the behaviour takes is maturationally determined. Although puberty is a necessary condition of human sexual reproduction, the patterning of sexual behaviour is much more determined by social factors than by maturation. Furthermore, there is considerable individual variation in the age at which puberty occurs, both in homogeneous populations of children of the same chronological age, and across sexes, social classes and relatively isolated mating populations (Tanner, 1970; Eveleth & Tanner, 1976).

With the exception of the "adolescent spurt" at puberty, growth is fastest in the beginning and gradually slows up. Consequently psychologists have tended to concentrate on the earliest stages of development, when the effects of physiological maturation are most visible. (There is evidence however, that genetic influences affect development throughout the life cycle).

The gradual coordination of the senses which is a feature of infant cognitive development is evidence of the differential rate of maturation. Colour discrimination, for instance, develops gradually from the third or fourth week of life, and not until the third year is colour vision sufficiently well-established for defects to be recognized or ruled out by clinical tests. The development of colour perception is dependent partly on the maturation of receptor organs in the retina. But the fact that differential colour responding begins in the first weeks of life implies also the existence of a discriminating mechanism in the brain. More refined colour discrimination however, is probably due to the maturation of the cerebral cortex.

The ability to relate different kinds of sensation to each other seems to increase even more gradually throughout childhood. Experiments such as those of Birch & Lefford (cf. Marshall) report steady improvement up to approximately 11 years. Although the effects of learning cannot be controlled in such experiments, the evidence suggests that this ability is dependent on a brain mechanism which does not reach maturity until about the age of 11.

The fact that behavioural development is sequentially ordered supports the notion of maturation. The sequential patterning of motor behaviour first demonstrated by Gesell (1928) has been found to remain constant despite widely varying environments. Early observations from other cultures, such as those of Dennis (1940b), which showed no differences in onset of walking between babies who had spent the first months of life tightly strapped to a cradle-board, and those who had been allowed freedom, supported the assumption of a "timetable" of human development which appeared to be common both across and within cultures.
Cross-cultural studies have since been used by researchers of different persuasions to demonstrate both developmental commonalities and variations. The relative importance attached to the maturational and environmental components varied according to the theoretical orientation of the authors concerned.

Göber (1956) for instance, reported finding racial differences in behavioural maturity at birth (Göber, 1956; Göber & Dean 1957, 1961). They claimed that African babies from Ghana were motorically more mature at birth than were European comparison groups, and that this motor advantage persisted until the end of the second year. Although initial reports of "African precocity" are now considered to be methodologically unsound (Warren, 1972), more recent studies, such as Leiderman et al. (1973) and Kilbride et al. (1976) are experimentally rigorous enough to provide convincing evidence of group differences in motor development.

The reasons for these differences, however, are unclear: explanations offered include genetics (Göber, 1956; Göber & Dean 1957; Jensen, 1969; Brackbill & Thompson, 1967), and environmental factors as diverse as maternal nutrition and levels of physical contact or handling (Super, 1976). A clear demonstration of genetic inheritance is rarely possible, and even those studies based on supposed differences at birth, or shortly after, are not free of environmental effects. The differential rate of maturation has already been mentioned, and this contradicts the assumption that all genetically controlled differences will be present at birth.

Only an interactionist position can account for the variations (and commonalities) found in cross-cultural studies. Göber & Dean themselves acknowledged the contributory effect of high levels of physical contact in the maintenance of infant precocity in Ganda babies (1957), and this position is supported by others, e.g. Ainsworth 1967; Kilbride & Kilbride 1975.

Similar environmentalist explanations are felt to account for the apparent decline of this precocity. (Certain workers, e.g. Grantham McGregor & Hawke (1971), Super (1976) dispute whether there is an actual decline in ability, or whether it is simply test scores which drop.

More recent studies, such as those of Leiderman (Leiderman et al. 1973; Leiderman & Leiderman, 1957) support the interactionist position. The Leidermans and their colleagues found evidence of socio-economic related early differences in performance which they felt to be determined by either genetic and/or prenatal factors such as maternal nutrition. But countering this biologically based finding was the inverse correlation between rate of development and economic level, suggesting that environmental influences occurring after birth tend to bring the scores of infants from different economic levels closer together over
time. An additional finding in favour of the environmentalist argument was that infants who had more than one regular caretaker scored significantly higher on the Bayley Mental Scale than those in monomatric care (Leiderman & Leiderman, 1977).

Because of the environmental variation found in different cultures, cross-cultural comparisons are often used to chart the development of social behaviour. The demonstration of differential smiling to mother by 2 - 3 months in English babies (Ambrose 1961) and in American babies (Yarrow 1967) compares with similar findings by Ainsworth (1963) for 10-week old Ugandan babies.

Separation distress, the most frequently used indicator of an infant's social development, appears to be a universal phenomenon which is dependent upon the specific cognitive maturity necessary to support this process (Schaffer, 1979; Kagan, 1976). There is considerable individual variation however, in the age when separation distress begins to appear, and in its decline, and both environmental and maturational explanations have been put forward. Apparently environmentally related differences, such as those connected with institutional rearing, are more probably due to the cognitive delay so often associated with the poorer institutions.

Kagan attributed the relatively late appearance of stranger anxiety (which he feels to be a related phenomenon) in his remote Mayan Indian sample to the fact that cognitive abilities develop faster in more stimulating environments.

Although findings that the developmental course of separation distress and stranger protest are not necessarily related (Emde, Gaensbauer & Harmon, 1976) suggest that different developmental processes might be involved, there is considerable evidence for the importance of maturation in the development of fearlessness to strangers. Evidence of cross-cultural similarities in the emergence of the phenomenon is supported by evidence from twins-studies (Freedman, 1965, 1971) and by research showing changes in physiological response to new situations between 5 and 9 months (Schwartz, Campos & Baisel, 1973). Alternatively, such similarities may well be due to uniformity in these environments.

Possible environmental influences on the intensity of stranger protest are suggested by studies of infant attention (e.g. Kagan & Lewis, 1965). Although the maturation of a cognitive competence controls the basic growth function for attention, differences in the relative power of the "scrambled" face, as reported in Kagan's studies in Mexico and Guatemala (Finley, Kagan & Layne, 1972; Sellera, Klein, Kagan & Minton, 1972), suggest that specific experiences may influence the level of attention within any particular stage of development.
Such an "experience effect" was demonstrated in a recent study by Feinman (1980). Here Caucasian infants in a remote rural setting of the U.S. were exposed to both black and white strangers. Infants who were in the sensitive stage for stranger anxiety were reported to be less likely to make approaching movements to black strangers.

Cross-cultural comparisons have also been used to establish whether temperament is genetically determined or not (Freedman, 1974; Bronson, 1972). Although certain group differences in "state" measures, such as "changeability" and "consolability" have been reported within a few days of birth, these differences may have been influenced by perinatal environmental factors, maternal nutrition, etc., so that it is not clear to what extent they are genetically determined. Reports such as those of Caudill & Frost (1973), which found that American mothers of recent Japanese descent and their infants behaved in general more like an Anglo-American group than a Japanese sample, suggest a conditioning interpretation of these temperamental differences.

Kagan's study of American-born Caucasian and Chinese families did show one consistent ethnic difference, namely that the Chinese infants had less variable heart-rates at every age (from 5 - 29 months). Nevertheless, Kagan's observations that babbling and smiling were less consistently rewarded suggest that familial experiences contribute to the behavioural differences between ethnic groups.

It is clear that any discussion of "innate behaviour" without reference to the social environment is inappropriate. It is within an interactional context that all developmental change takes place, and it seems likely that the maturational level of the child, by influencing its caretakers, creates environmental changes which lead to further development.

To what extent then, were "group differences" found in the present study, and to what extent were these environmentally influenced?

As far as test scores were concerned, neither MDI nor PDI was related to ethnic group: both "high" and "low" scorers were represented in all groups. There were no significant differences in motor development between Caucasian and non-Caucasian babies, and a similar pattern of motor development was characteristic of the sample. This typical pattern of exceptionally high 3-month scores, followed by a rapid decline, rather than representing an actual drop in abilities, may well have been reflecting the effects of negativism on all but the earliest assessments.

The clearest group difference to emerge was that the Asian babies showed more evident signs of stranger protest. Whereas babies of immigrant mothers as a group showed more intense attachments to their mothers than did English babies, only the Asian (and the Israeli) babies showed the higher levels of stranger protest. The comparative lack of stranger protest (despite evidence of strong attachment) in the
West Indian and African babies suggests that discrepancy was not the explanation. A more probable explanation was felt to be the extent to which the families mixed with others outside their own ethnic group. (Refer to "Family Profiles", pp.345-372.)

The pattern of development of two subjects who, until 6 months appeared to be exceptionally passive babies, is a useful illustration of the interaction between maturational level and environmental factors, in this case parental expectation. Although one of the mothers concerned was English and the other West Indian, their different styles of mothering are just as likely to be present in mothers of the same ethnic group.

Caroline D. (S.12) and Nkeruka O. (S.18) were noticeable at both 3 and 16 months for their exceptionally passive behaviour. Smiling, vocalization and self-initiated movement were all noted as minimal, and smiling could not be elicited in either baby at 3 months. Caroline's MDI was then below the norm: 96; Nkeruka's was slightly higher at 102.

Differences in the two mothers' styles of interacting with their babies was already evident, Mrs. O. being far more vigorous with Nkeruka, which reflected her own high energy level. Her remarks on Nkeruka's behaviour were that she was "too good". In contrast, Mrs. D. moved and talked slowly, and her report that "I don't really expect them to do much at this age" suggested she accepted Caroline's passivity.

At 6 months Nkeruka was still noted as "passive", but "more outgoing and smiley". At 12 months when she was tested for the last time, she was noted as "a very friendly, alert child", her MDI was 126, and she responded to a variety of commands.

Caroline, on the other hand, was still "excessively passive" at 9 months, when her Social Orientation to both Experimenter and Mother was noted as "accepting". Her MDI was then 99, and after testing, her father commented: "We believe in letting children develop at their own rate". By 12 months, however, Caroline had begun to lose her passivity; her vocalization was noted as "advanced", and her MDI had increased to 117. Although Nkeruka's mental development had accelerated more rapidly, Caroline's was approaching the same level (at 15 and 18 months her MDI was as high as 132).

As far as motor development was concerned, however, the two subjects presented a different picture: whereas Nkeruka's PDI dropped from 150 at 3 months to 122 at 12 months, Caroline's was 108 at 3 months (the lowest 3-month PDI), dropped as low as 70 at 12 months, and had risen to only 78 by 18 months.

Genetic factors may have been playing a role in the two babies' motor development, so that Nkeruka's advanced development and high energy (after 6 months) was influenced by her mother's physical profile. Caroline, on the other hand, although
not walking until 15 months plus, might then follow a "normal" course of physical
development, but would never be a "high-energy" child. Parental encouragement in
both cases would further influence the outcome.

The possibility that it may be environmental uniformity which is responsible
for cross-cultural similarities has already been mentioned in connection with
stranger protest. In the same way the commonalities found both in this study and
univerally, may be the result of environmental uniformity, rather than endogenous
factors.

2. The concept of attachment.

It was Freud who first called attention to the infant-mother tie. According
to Freud's theory (1915, 1926) attachment develops as the mother establishes herself
as a source of satisfaction for the infant's primary needs. Freud emphasized the
importance of the feeding-situation as the "well-spring of attachment".

The drive-reduction learning theory of attachment (e.g. Sears, Maccoby and
Levin, 1957) resembles Freud's in many ways, and is, in fact, an interpretation
into the terminology of learning theory of Freud's observations. Like the Freudian
theory it emphasizes the importance of the feeding-situation for attachment. By
ministering to the child's needs, and thus dispensing primary reinforcers, the
caretaker assumes secondary reinforcing properties.

Psychoanalytic and learning theories of attachment predominated until the late
fifties, but both are now recognised as unsound, Freud having based his theory
mainly on clinical impressions, while learning theorists extended their observations
of non-human species to the behaviour of the human infant. Furthermore, the infant
is now known to be an active seeker of stimulation (Rheingold & Eckerman, 1970), who
may become attached to people who do not perform caretaking activities (e.g. Schaffer
& Emerson, 1964).

A major theory of attachment which continues to generate new research is etho-
logical theory (Bowlby, 1958, 1969), and Ainsworth (1969, 1972). Like learning
theory this was influenced by analogies between animal and human behaviour (e.g.
Gray, 1958), but it contrasts with learning theory in the emphasis it places on
the genetic determinants of attachment behaviour, rather than on the environmental
determinants.

Both Bowlby and Ainsworth contend that infants are born with a biological predis-
position to seek proximity to and contact with conspecifics. This biological pre-
disposition, according to Bowlby, manifests itself in the infant's signalling
behaviour, i.e. crying, babbling and smiling, which causes adults to approach the
infant and remain nearby (Frodi, Lamb, Leavitt & Donovan, 1978). Bowlby regards these signalling mechanisms as the functional equivalent of the clinging behaviours which predominate in other primate species, and contends that they have the same adaptive value in promoting protection against predation and exposure.

Bowlby and Ainsworth argue that adults too are biologically predisposed to assure proximity and protection to the infant. Their behaviour may be a response to the infant's signals, or it may be the initiator. However, both adult and infant behaviour is predisposed to increase the amount of interaction between the two. This is important because, according to this theory, it is the amount of interaction between an infant and a specific adult that determines whether an attachment will form (Ainsworth, 1973, pp.54-55).

Implicit to Bowlby's theory is the principle of monotropy, i.e. attachment to one person. Although the infant's proximity-promoting responses are initially released by any person, they gradually become focussed on the mother (or mother-figure) as a result of the amount of interaction between her and her infant.

Another ethologically-oriented theorist, Lamb (1976, 1978) disputes that the amount of interaction is all important in attachment. He argues that there is "an evolutionarily determined set of adult pre-potent responses presumed to parallel and complement the infant's behavioral repertoire", and contends that it is the appropriateness and sensitivity of the responses to the infant's behaviour which are important for the formation of attachment - any simple contingent response is insufficient. Lamb's theory (1976, 1978) is derived from his observations that infants regularly become attached to their fathers (and other salient family members) even when the amount of their interaction with the infant is minimal.

Ainsworth (1973; Ainsworth, Bell & Stayton, 1974) has also emphasized the importance of the appropriateness of the adult's response, but differs from Lamb in her assertion that the quality of response affects not whether an attachment will form, but rather that it will influence the security of the resulting relationship. Ainsworth has incorporated a sensitivity-insensitivity dimension of maternal behaviour into her theory of attachment (Ainsworth et al. 1974), which has generated a wealth of subsequent studies into the reciprocal nature of the mother-infant bond.

Although attachment theory as propounded by Bowlby and Ainsworth is still widely influential, both the conceptual and theoretical issues are the source of much controversy. Attachment is often confused with attachment behaviour, and the presence of attachment (or a bond) is inferred from the observation of so-called attachment behaviours. What constitutes attachment behaviour (behaviour which promotes and maintains proximity) is, itself, disputed. Bowlby defined as attachment behaviours five primary instinctive responses: crying, sucking, smiling, clinging and following.
Whether or not these responses should be considered indicators of attachment is related to the question of selective responding, i.e. do these behaviours come to be directed selectively to the mother-figure, as Bowlby claimed.

As far as sucking is concerned, this is clearly not selective, and is an instinctive response which has its origins in the rooting reflex.

Smiling, although initially unselective, gradually becomes more discriminative, and by 6 months, the infant smiles more to the mother than to others (Spitz & Wolf, 1946; Schaffer, 1966). The infant's smiles may also control the mother's behaviour (Gewirtz, 1965). Some writers have suggested that the human infant's smile is the most important response in the formation of attachment, analogous to the following response that binds an imprinted duckling to its mother (e.g. Gray, 1958). But this suggestion is debatable, since most mothers respond to their babies as much when they are crying as when they are smiling, if not more.

Crying has also been shown to be directed selectively to the mother, and its value as a signal behaviour (as propounded by Bowlby) is supported by evidence from Bell & Ainsworth (1972), and an earlier study by Moss & Robson (1969). Opposed to the idea of crying as a signal behaviour however, is Richards (1974). (See p.235 of Thesis for further discussion). The infant's crying has been demonstrated as selective in situations where mother leaves her infant. "Separation protest", as this crying has been labelled, forms the basis of much of the experimental investigation of attachment theory. These investigations also involve another of Bowlby's attachment behaviours, the following response.

The extent to which the infant's separation protest" is selective, and the course of its development, are the points of contention in these investigations (e.g. Schaffer & Emerson, 1964; Fleener & Cairns, 1970; Corter, 1973).

What is clear is that protest at mother's (or mother figure's) departure, beginning at an approximate age of 8 months, is a universal phenomenon in all but a few severely deprived infant groups (Kagan, 1976). (See Thesis pp. 29-30).

Kagan's interpretation of this universality however, differs from attachment theorists' interpretation of it as a reflection of biologically influenced emotional dynamics. He argues that separation protest, and its related phenomenon stranger anxiety, can be explained by the cognitive advances which take place towards the end of the first year, which, he believes are "the direct consequence of maturational changes in the CNS".

Kagan sees the distress experienced at mother's departure as essentially no different from related fears and distress to unfamiliar people, objects and situations: it is because the infant can now appreciate discrepant situations and activate hypotheses about their cause and consequences that distress and inhibitions emerge so rapidly in the last quarter of the first year.

Bowlby (1969) stated that the conditions sufficient to evoke attachment behaviour are separation and threat. Ainsworth’s subsequent realisation that otherwise "clearly attached" infants did not protest consistently when their mothers left the room led her to formulate a catalogue of behaviours (1973) which, especially in combination, might serve as criteria of attachment. In addition to crying when mother left the room, these included following, and a variety of behaviours relevant to physical contact. Ainsworth added the proviso that these behaviours could only be regarded as attachment behaviours if used differentially to the attachment figure.

It is doubtful, however, whether these behaviours are interrelated, and low or negative correlations have been reported between these behaviours (Lewis & Ban, 1971). Furthermore, clear-cut demonstrations of selective responding have been few (Cohen, 1974). Despite the ambiguous nature of attachment theory, it is frequently used to assess the effects of "alternative" methods of child-rearing: in institutions for instance, or in cross-cultural studies where nuclear families are atypical.

Implicit in Bowlby’s theory was his belief that the infant became attached to the mother or mother-figure as a result of the amount of interaction between them. If an infant failed to form an attachment (either because of lack of an attachment figure, or because the bond was broken), according to Bowlby, later personality disturbance would result.

This assertion appeared to be supported by early institutional studies (e.g. Spitz, 1946; Bowlby, 1951). More recent studies however, have shown that where adequate levels of environmental stimulation are maintained, frequent changes in caretaker, as is the norm in most institutions, do not result in grossly disturbed social behaviour (Tizard, 1974).

As far as the exclusiveness of attachment is concerned, Schaffer and Emerson (1964) found that 29% of their sample formed several attachments simultaneously, which led them to conclude that there is no indication of any biological need for an exclusive primary bond. Where infant care is shared among several family members it might be expected that one person no longer becomes the focus for attachment behaviours, thus attenuating the intensity of the primary attachment.

Ainsworth’s Ugandan data indicate that the strength of attachment to the mother is negatively correlated with the number of persons in the household (Munroe, Munroe & LeVine, 1972). The Leidermans, however, report that despite regular caretaking by other family members the mother remains "preferred by the infant, especially in times of stress", (1977, p.432).
A common analogy when comparing polymatric and monomatric cultures is with the studies of pigtail and bonnet macaque infants (Rosenblum & Kaufman, 1967; Rosenblum, 1971). Here the polymatrically reared bonnet infants cope far more adaptively with mother's absence than do the monomatrically reared pigtails.

The hypothesis that polymatric rearing ameliorates separation distress is untestable in cross-cultural studies where a high level of stranger anxiety may be expected as a result of the Experimenter's extreme "strangeness". Stevens' (1971) study of Athens orphanage infants, however, upheld this hypothesis, and more recent studies into the effects of day-care show no greater incidence of separation protest by infants who had been in day-care for all or part of their first year (Hock, 1976).

In the present study, those subjects who were in some form of day-care did not show a higher incidence of separation protest or "stranger" protest and were among the most sociable of the group. (See Thesis p.311).

The levels of separation protest observed in this study were, in general, minimal. (See p.303 for discussion). Of the two subjects showing the greatest amounts of separation protest one, Benjamin (S.5) was cared for exclusively by his mother, while Ashni (S.9) was cared for primarily but not exclusively by his grandmother from 4 months onwards.

Although the extent of secondary attachments could only be inferred from mothers' reports (and occasional observation) (see p.313), in one subject's case (Caroline, S.12), the close attachment between father and infant appeared to have ameliorated the effects of a week's separation from the mother. This occurred when Mrs. D. was hospitalized suddenly when Caroline was 8½ months. Throughout the study Mrs. D. reported her husband as being a highly participative father who regularly shared Caroline's caretaking. She attributed Caroline's lack of upset at the separation (despite the consequent abrupt termination of breast-feeding) to her husband's good relationship with Caroline, and his familiarity as her caretaker.

In the present study babies of "immigrant" mothers as a group showed more intense attachments to their mothers than did babies of indigenous mothers (p <.05). (See p.299). Both extended and nuclear families were represented among the "immigrant" group, but no clear relationship emerged between multiple caretaking and attachment.

A factor common to these families which may have contributed to the intensity of attachment was the higher levels of physical contact between infants and their mothers (and other family members). This was evident from incidental observation, and from observation of, and reports of "picking up" as a response to crying and undesirable behaviour, (the latter did not differ significantly from that of the
indigenous mothers). Furthermore, immigrant mothers as a group more often reported their infants as sharing their bed or their room (or that of other family members).

Two of this group were assessed as "mal-attached" (Benjamin, S.5 and Ashni, S.19), as evidenced by excessive stranger protest, wariness and clinging (S.19). Both these infants' families had made extended trips abroad during the first year, Benjamin's family from 5 - 7 months, and Ashni's at 2 - 4 months. On Ashni's return home his mother started working full-time, after which his grandmother became his primary caretaker. Although Ashni was too young to have been affected by the strangeness of the situation involved in the trip abroad, the break in routine, followed by the disruption of his exclusive bond with his mother, may have triggered off the pattern of extreme distress and wariness shown by Ashni at all ages.

Benjamin's first trip abroad took place at an age when awareness of discrepancy was more probable. This was followed by two further journeys abroad at 9 - 10 months and again at 14 months. These changes in surroundings when Benjamin was at an age when heightened awareness of discrepant events and situations might be expected, may well have contributed to the fearfulness upon when the assessment of "mal-attached" was based.

3. "Ethnic groups", cultural assimilation and "immigrants".

Although the standard anthropological position on ethnic groups and their boundaries, as influenced by Malinowski's view of cultures as bounded systems (1941), has now been challenged (LeVine & Campbell, 1972), the idea of homogeneity of culture is still regarded as an indicator of ethnic group membership.

Ethnicity, according to Berry (1979) refers to a descent from common ancestry, both biologically and culturally, so that individuals in a particular ethnic group exhibit distinctive and common characteristics, e.g. physical appearance, language, life-style and religion.

Although ethnic groups tend to intermarry they are in no sense a genetic group. When a population is defined socially as a "race", it is because the characteristics they have in common are believed to be genetically determined, whereas in the case of an ethnic group, it is recognized that the characteristics may have been acquired as part of a cultural heritage (Richmond, 1972).

The terms "ethnic group" and "ethnic minority" are those currently used when referring to groups having both a biological and a cultural homogeneity. It is clear that the categories used to describe such groups, for example Asian, West Indian or West African, do not reflect the diversity of our population, anymore than does the distinction between black and white immigrants, or Old and New Commonwealth immigrants.
Dictionary definitions of "immigrant" as "a person who comes into a foreign country (or region) to live" imply only that immigrants "settle" as opposed to merely visiting a country. Many immigrants both to this country and others came with the original intention of eventually returning to their own country, but are prevented from doing so, usually for economic or political reasons. (See Saifullah Khan, 1979, for discussion of this point as applied to Mirpuri immigrants in Bradford).

The term "immigrant" has been extended to cover second-generation immigrants, i.e. children born to immigrants to this country, even though they may never have seen their parents' country of origin, and may not identify with their ethnic origins.

In the present study "immigrant" mothers consisted of three second-generation immigrants (S.7: parents from St. Lucia; Ss. 4 and 8: parents from the Punjab). Length of residence in this country of the eight first-generation immigrants ranged from 3 - 20 years. (The American mother (S.13) was not classed as an "immigrant" mother because it was felt she was not faced with the same problems as the other immigrant mothers, i.e. language, discrimination). During the course of the study two mothers returned to their own country with the intention of settling there, and one moved to her husband's country. (See "Family Profiles", p.345 for further detail).

The group was characterised by a wide socioeconomic range which reflected the diversity of this country's immigrant population. In general the different families were typical of their particular immigrant group: the African mothers had all had professional training, as had their husbands, (see Goody & Muir Groothues, 1979, on West African couples in London), while the Asian mothers born in their own country had received the least years of education. Despite their heterogeneity, including extremes of the socioeconomic scale, all these mothers were in the same situation, that of giving birth and caring for a child in an alien culture.

The question arises whether or not the ethnic "groups" covered in this study constituted separate ethnic groups. Only in the instances where Asian mothers are discussed as such, e.g. p.257, p.298, are different nationalities grouped together. "Asian mothers" were three Punjabi Indians, two Pakistanis, and one Bangladeshi. There were differences of language and religion which were to be expected from such distinctive groups, but a number of similarities of life-style and culture (in particular the extended family) which made them comparable as a group.

The two second-generation Asian immigrants were of particular interest in that despite their Western education, they retained their cultural distinctiveness, i.e. religion, language and dress. An indication of their Westernization however, was their regular use of health services (Clinic, G.P. and nursery) and the supplementing of their own diet with Western foods.
The expectation that immigrants should adjust to the cultural patterns of the host country, or "cultural assimilation", is not necessarily a reasonable one, and as R. Ballard (1979) points out, is an unrealistic basis for public policy which fails to recognise both the existence and the legitimacy of ethnic interests.

Although immigrants may aspire to certain aspects of the host country's culture, such as economic and educational advancement, racial discrimination proves a barrier, thus checking the drift towards Westernization and assimilation, and reinforcing a group's feelings of solidarity.

Cultural change is often no more than an individual's response to the particular circumstances in which he finds himself. An example here is Mr. K., father of Clifford (S.4). Mr. K., a second-generation immigrant from the Punjab, did not conform to one of the principal tenets of his religion (Sikhism) never to cut his hair. This, he explained, was because he had suffered from eczema as a child, and his mother had been advised to have his hair cut. Despite adhering to other aspects of his religion, Mr. K. did not intend observing this commandment as far as Clifford was concerned, reasoning "I don't wear a turban, so why should he".

These parents had chosen English names for both their children, whereas the other second-generation Punjabi mother and her husband (parents of Harjit, S.8) had given their children traditional names. The comparative "Westernization" of these families may be related to the fact that Harjit's father had not come to this country until age 10, whereas Clifford's father was born here, and their different socioeconomic status. Clifford's father was an installation engineer employed by the local Borough Council, while Harjit's father was a toolmaker.

The extent of assimilation and Westernization differed throughout the group. (The two were not necessarily related to length of stay in this country). The "African" mothers who were all from former British dependencies, had been educated in the English language and were practising Christians. The "Asian" mothers, including those born here all adhered to the religion of their own group, and exhibited more overt signs of their faith (i.e. wall decorations), and reported more active religious involvement than did the Christian mothers.

The Israeli family regularly observed the Jewish Sabbath, and reportedly ate Kosher food at home. As far as child-rearing was concerned this mother (Mrs.C., S.5) followed her traditional patterns in certain respects, i.e. permissiveness towards crying and undesirable behaviour, and having Benjamin circumcised by a rabbi at the age of 8 days, but deviated from tradition by putting him in his own room from the first week.
Further indicators of "cultural assimilation" were a greater provision of toys by second-generation immigrant mothers, and a greater awareness of the importance of fostering an infant's mental development. This was particularly noticeable in the two Punjabi mothers born in this country. Economic factors obviously played a role here (several mothers mentioned the high cost of toys), but in the case of Ibrahim (S.2's) family, although comparatively few toys were provided, the home boasted elaborate video equipment. Similarly, despite two school-age sisters and a 3-year old brother, no children's books were provided, but the family displayed a cabinet of religious books.

Mrs. C., a first-generation immigrant who had no financial problems (her husband owned a large clothing manufacturers) was an exception in the number of toys of all kinds provided for her two daughters, which were available for Benjamin's use.

Wachs (1979) was particularly concerned with the specificity or generality of the physical environment, and made no attempt to assess the quality of the mother-infant relationship. In contrast, Clarke-Stewart (1973) concentrated on the mother-infant relationship, and found evidence of the mother's importance as mediator of the environment.

Caldwell and her colleagues however, in a series of successful studies, have considered both maternal behaviours and environmental variables over different periods of time, and have used their measures both to establish primary direction of effect, and as indicators of later cognitive advances.

Whereas earlier studies were controlled for social-class, birth-order and race, Wachs, Clarke-Stewart, Caldwell et al. did not control for these variables, and purposely selected their samples from widely differing home backgrounds. Rather than looking for inter- or intra-group differences, they attempted to isolate specific environmental variables which were not directly related to social-class or race. These workers have found a number of significant associations between cognitive development and the quality of stimulation available in the early home environment. (The use of a heterogeneous sample in the present smaller study may have increased the possibility of significant correlations).

The HOME Inventory (Caldwell et al. 1966) is a screening instrument which assesses different aspects of maternal behaviour and environmental stimulation. These environmental measures are found to have a high level of consistency which exceeds that of test scores over similar periods, and are reported by Caldwell and her colleagues to be more strongly related to infants' mental test scores than are gross indices of socioeconomic class.
Summary

Accepting the importance of early experience for infant development, psychologists have turned to the question of which aspects of the early environment are most relevant for subsequent cognitive intellectual development.

Whereas some workers have been concerned with the effect of the mother-child relationship on future development (e.g. Stern, Caldwell, Hersher, Lipton & Richmond, 1969), others have concentrated on parameters of the physical environment such as variety of stimulus material (e.g. Yarrow et al. 1975). Much of this work was limited by the use of only single measures of development, or by their restriction to only one age. More recent studies however, such as those of Caldwell, Elardo & Elardo (1972), Clarke-Stewart (1973) and Wachs (1979) have been longitudinal. They used multiple measures of both environment and development, thus indicating the changing nature of the environment and development.

Wachs (1979) was particularly concerned with the specificity or generality of the physical environment, and made no attempt to assess the quality of the mother-infant relationship. In contrast Clarke-Stewart (1973) concentrated on the mother-infant relationship, and found evidence of the mother's importance as mediator of the environment.

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The HOME Inventory was standardized on a mixed U.S. population covering a wide socioeconomic range. As it was not used verbatim it was considered to be applicable for use in the U.K. (A methodological critique of the HOME is given in pp. 64-65.)

The main measure of infant development in the present study, i.e. the Bayley Scales, is that used by Caldwell et al. (at 6, 12 and 24 months), so that the two sets of findings are directly comparable. It is within the context of these assessments that the results of this study are discussed.

Relationship between the environment (as measured by the HOME Inventory) and infant development (as measured by the Bayley Scales).

The relationship between the environment and mental development became stronger across the course of the study. Examination of the synchronous correlations for mental scores (MDI) and HOME scores (see Table 27, p.147) shows an increasing number of significant correlations with age, and that all but two are positive. This suggests that the variables are having a mutually facilitative effect on each other, and is in line with the general body of developmental theory (Bradley et al. 1979).

The two measures of maternal behaviour: Emotional and Verbal Responsivity of Mother (Scale I), and Maternal Involvement with Child (Scale V), were more strongly related to MDI than were the measures of the physical environment. Maternal Involvement was significantly related to MDI at both 9 months (p < .02) and 18 months (p < .03). The correlations between Maternal Responsivity and MDI are also quite high at these ages, but fail to reach the conventional level of significance (at 9 months: p < .07; at 18 months: p < .08). At 12 months however, Maternal Responsivity is significantly related to MDI at p < .02.

The importance of maternal responsivity for the child's later intellectual and social level was shown by Clarke-Stewart (1973): in her study maternal responsiveness to the child's social signals was found to accelerate the child's later intellectual and social performance, as measured by the Bayley Scales. Mental scores were also related to appropriateness of mother's stimulation for age. (Age-appropriate Stimulation is assessed by Scale V of the HOME Inventory: Maternal Involvement with Child).

Clarke-Stewart also found that mother's verbal stimulation directed towards child was significantly related to child's later language ability. Maternal Responsivity was similarly related to language development, as reflected in Vocalization scores in the present study. (The correlations between Maternal Responsivity (Scale I) and Vocalization scores were significant at 6 months and highly significant at 12 and 18 months).
These types of maternal behaviour were also reported by Bradley & Caldwell (1976a) to show the most substantial association with mental test performance at 54 months.

As far as the measures of the physical environment were concerned, synchronous correlations revealed only two significant associations with MDI: at 9 months, Scale III (Organization of the Physical and Temporal Environment) with MDI: $p < .02$; and at 18 months, Scale II (Avoidance of Restriction and Punishment): $p < .04$.

Contrary to expectation, Provision of Appropriate Play Materials (Scale IV) showed no significant association with MDI. (This was the environmental variable Bradley & Caldwell (1976a) found to be most strongly associated with mental test performance). But the progressive increase in synchronous correlations from 6 months (-.31) to .408 ($p < .09$) at 18 months indicates that the association between this type of stimulation and mental development increases during the second year.

**Direction of effect.**

Although research has indicated that more alert, active babies tend to elicit greater responsiveness from parents in the first year of life (Rheingold & Eckerman, 1975), and it has been suggested that primary direction of effect is from child to mother (e.g. Clarke-Stewart, 1973; Bradley, Caldwell et al., 1979), clearly there are individual differences in maternal style, and there is evidence to support this (e.g. Ainsworth, Bell & Stayton, 1971; White & Watts, 1973; Dunn, 1975). The use of cross-lagged panel analysis in the present study allowed the primary direction of effect to be established between maternal behaviours, measures of the physical environment and both mental and motor development.

This analysis revealed two areas in which the child's subsequent mental development appeared to be positively influenced by specific maternal behaviours, namely emotional and verbal responsivity, and maternal involvement. Although neither variable was significantly related to MDI at 6 months; at 12 months Scale I (Emotional and Verbal Responsivity) was related at $p < .01$, and Scale V (Maternal Responsivity) was related at $p < .07$, which indicates the significant impact of these variables on the infant's mental development at the later age.

Not until 18 months did the child's level of cognitive ability significantly affect these maternal behaviours: the effect of MDI at 12 months on Maternal Involvement at 18 months is greater than that in the opposite direction. The effect of MDI at 12 months on Maternal Responsivity at 18 months, however, is essentially equal to that in the opposite direction, so that neither variable can be said to be having a significant causal impact on the other between 12 and 18 months. This suggests that a mutually reinforcing "steady-state" relationship has developed.
The accelerative effect of two types of physical stimulation on subsequent mental development was indicated. In the first year Organization of the Physical and Temporal Environment (Scale III) at 6 months is associated with higher MDI at 12 months. (Between 6 and 12 months the infant's level of development appears to have no effect in eliciting this type of stimulation: \( r = .04 \)). In the second year we find Provision of Appropriate Play Materials (Scale IV) at 12 months affecting 18-month MDI (\( p < .05 \)). (The analysis indicates only a weak association between this type of stimulation and mental development during the first year: correlations do not exceed \( r = .18 \)), but by the second year the higher correlation of \( r = .33 \) between 12-month MDI and subsequent Provision of Appropriate Play Materials suggests that the infant's level of mental development is now beginning to affect provision of this type of stimulation. However, the higher significant correlation in the opposite direction indicates that the greater effect is still from the environment to the child.

The pattern of correlation between mental development and Maternal Involvement shows a change during the second year, when the child begins to play a greater role in eliciting this type of behaviour. A similar change in direction of effect is seen between MDI and Organization of the Environment (Scale III). Until 12 months direction of effect is from the environment to the child, but between 12 and 18 months, we find that children with the higher MDI's are now eliciting the type of stimulation measured by this variable. This change in direction of effect in the second year reflects the increased impact of the child on both his physical and social environment.

These findings of primary direction of effect from environment to child in the first year contrast with those of Bradley et al. (1979), whose results suggested that the child's influence on maternal behaviour and on the environment was greatest in the first year. Clarke-Stewart also found that direction of effect was from child to mother, but from 9 - 18 months, so that her findings are more in line with the present study, where the child's effect becomes more pronounced in the second year.

Relationship between Avoidance of Restriction and Punishment (Scale II) and motor and mental development.

That the more active children in the present study were significantly affecting their environment, but not until the second year, was shown by the pattern of correlation between Avoidance of Restriction and Punishment (Scale II) and both motor and mental development. High motor scores (PDI) were related to low scores on Avoidance of Restriction and Punishment in both the first and second year, suggesting that the more motorically advanced infants were receiving a greater amount of restrictive and punitive behaviour. But whereas the effect in the first year was essentially equal in both directions, after 12 months the effect of the child in eliciting this type of behaviour is considerably greater than that in the opposite direction (\( r = -.35 \); \( r = -.09 \)).
The relationship between mental development and Avoidance of Restriction and Punishment was more complex. Although MDI was negatively related to subsequent scores on this Scale (at both 12 and 18 months), indicating that it was the more mentally advanced children who were receiving the greater amount of restrictive and punitive behaviour, both correlations were low, and were exceeded by the low but positive correlations between the environmental variable and subsequent MDI. This suggests that use of restriction and punishment is positively affecting mental development by 12 months, and significantly affecting it by 18 months (synchronous correlation between 18-month MDI and Avoidance of Restriction and Punishment: \( p < .04 \)).

This pattern of correlation again suggests a mutually reinforcing steady-state relationship between the infant's level of mental development and environmental stimulation, in this case Avoidance of Restriction and Punishment. Comparison of this pattern of correlation with that between motor development and this type of behaviour however, indicates a more pronounced effect of the child on the environment, and that it is the more motorically advanced children who are eliciting higher levels of restrictive and punitive behaviour.

These findings are compatible with those of White and Watts (1973) who reported that mothers of 'A' children (the more competent) were more likely to use restrictive behaviour up to 2 years than were mothers of the 'C' children, but after 2 years they decreased their restrictive behaviour, whereas the mothers of 'C' children increased its use.

The findings of direction of effect should nevertheless be regarded with caution. As Bradley et al. point out, cross-lagged panel analysis only allows for weak causal inferences, and in both Bradley's study and the present one, not all correlations reached conventional levels of significance. Discussion of individual cases would allow for a finer analysis, but would not be generalizable. One may emphasize either the child's importance in influencing the mother's behaviour, or alternatively the way in which the mother 'leads on' and encourages the child's development by tuning her behaviour in a way that always provides an appropriate challenge for his particular stage of development (Schaffer, 1978). As Dunn (1981) has recently pointed out, studies devoted entirely to establishing causal links between infant and environment are so time-consuming that they are inevitably based on very few cases, and their generalizability is consequently limited. The present findings of the child's more pronounced effect on the environment in the second year, however, suggest that this may be set in motion by the developmental advances which occur towards the end of the first year and enable the child to take a greater part in reciprocal interaction.
The reliability of the findings concerning environmental stimulation, both as far as the nature of this stimulation is concerned, and the points in development at which it plays a significant role, are limited firstly by the fact that the same stimuli cannot be expected to have an equal effect on all similar age infants, anymore than all infants may be expected to have a uniform effect on the environment; and secondly, by the fact that these data were not analysed according to sex. (Wachs, 1979, indicated some important sex differences in the relationship between cognitive development and the physical environment, while Bradley & Caldwell (1980) reported sex differences in the relationship between Maternal Responsivity (as measured by HOME) and 3-year IQ.)

A number of sex differences were apparent in the present study which suggested important performance differences in males and females in this sample. Differences in the families of male and female subjects were suggested as possible contributory factors. (All female subjects were from one or two-child families, whereas four male subjects (33%) were from "large" families (i.e. three, or in one case four children). Wachs' findings concerning males' increased reactivity to overcrowding and noise confusion in the home (Wachs, 1979) are considered particularly relevant here.

Attachment.

Differences in patterns of attachment behaviour are likely to emerge in any sample of mother-infant pairs, and such variation was expected to be greater in the present study in which both family composition and exclusivity of caretaking varied considerably.

Separation protest and "stranger" anxiety at 9 and 12 months were used as measures of attachment. (The reliability of these measures, and their use as indicators of attachment has been discussed; see pp. 301-303 of Thesis and Annex p.12.)

Neither birth-order, day-care nor multiple-caretaking was found to be related to separation protest nor to "stranger" anxiety.

A clear difference which did emerge from the two assessments was that babies of "immigrant" mothers as a group showed more intense attachments to their mothers than did babies of English mothers (p<.05). This was particularly the case as far as Asian babies were concerned, who also showed the most evident signs of "stranger" protest.
Variation in the extent to which families mixed with others outside their own ethnic group was suggested as a possible explanation, while the intensity of attachments found in all "immigrant" families may have been related to their higher levels of physical contact, and more frequent "picking-up" as a response to crying and undesirable behaviour than was observed in or reported by English mothers.

(A complete Summary of Findings, and Conclusions, are given in Thesis pp.320-334).
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