ADAPTATION OF HOME INVENTORY (INFANT VERSION) FOR PAKISTANI CHILDREN

By

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Dedicated To

MY DEAR PARENTS

Whose prayers have always been a source of

great inspiration to me

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ABSTRACT

The purpose of the research was to adapt the HOME Inventory (Infant Version) for Pakistani children so as to see its applicability/generalizability in this country. Also to see if there were gender and socioeconomic status (SES) differences on the Inventory. For the tryout of this inventory, a sample of 10 infants (5 boys and 5 girls) from 10 families were taken. For the main study data were collected from 50 families (25 boys and 25 girls) from upper middle and lower middle (SES) on the basis of grades or then equivalent to these grades the family monthly income. The instrument used was HOME Inventory which is an observation-cum-interview technique. For the analysis of the data correlation coefficient, t-test and ANOVA techniques were used. The findings of this study indicate that there was a highly significant difference for the two SES groups on HOME Inventory (total and subscales) at p <.001, whereas there were no significant difference in gender on the HOME. For KR-20 the correlations were significant on the total and two subscales Play materials and Involvement of the HOME. Anova findings showed that there were significant differences (p <.05) on the total and subscales of HOME Inventory with fathers' and mothers' education, fathers' and mothers' occupation and birth order of the child.

CHAPTER I

INTRODUCTION

The home environment is recognized as a powerful socializing force in children's lives. Encompassing an amalgamte of ways in which families influence their offspring's development, the home environment is of central concern in human development research. Bloom (1964) was among the pioneers who brought a significant change in the style of measuring home environment in which emphasis was given to the individual family environment. Not surprisingly, a great variety of measures of home environment has been used in previous research. Among them are family status and demographics, parental attitudes and beliefs, parental expectations, and parental behaviors toward and interactions with their children. Understandably, investigators are rarely, if ever, able to measure all relevant characteristics. Instead, they often study the effects of one or two indicators. For example socioeconomic status (SES) is one of the popular indicator for studying parental influence and home environment. As, an indicator of home environment, SES may be more appropriately viewed as part of a host of material, psychological and behavioral resources that parents provide to the child (cited in Reynolds & Lee, 1991).

The Concept of Social Class

The most commonly used means of assessing the quality of a child's environment has been social class designations. These designations have been of immense historical and some practical importance in understanding

human development. Economic and social theorists have proposed different definitions of the concept of social class. Marx (1909) considered it as a man's relationship to the means of production in society, while Veblen (1918) contended that consumption patterns were the factors which best reflect one's social position. Davis (1944) explained the pivotal meaning of social class to students of human development is that it defines and systematize different environments for children of different classes. Davis and Havighurst (1946) believed that the social class of the child's family determines not only the neighbourhood in which he or she will live, but also the basic cultural goals toward which training will be directed.

A major stimulus to modern research in the area of social class differences was Warner, Meeker, and Eells (1949) development of an objective scale, called the **Index of Social Characteristics** (*ISC*), to measure a family's socioeconomic status. In its revised form, it is based on weighted ratings of four characteristics: occupation, source of income, house type, and dwelling area. Ratings range from 1 (high) to 7 (very low) with occupations carrying the most weight. Interestingly, Warner later discovered that the occupational rating alone resulted in about the same SES rating as did all four characteristics. Warner and his associates were of the opinion that the ISC ratings were virtually the same as a social class designation. The ISC was later modified by Hollingshead and Redlich (1958) and called "Index of Social Position." This index, subsequently used in many studies, was comprised of a number of weighted criteria: occupation of family head (weighted 9), residence

(weighted 6) and education of family head (weighted 5).

Brown (1965) described four conditions which must be present before the existence of social classes can be affirmed: (1) the population must be aware of classes and agree on their number; (2) life-styles must be uniform within these classes and unique between them; (3) social interaction must be sharply patterned on class; and (4) data on each of these factors must indicate the same boundaries between classes. Many social scientists have chosen to employ the term "socioeconomic status" or "SES" instead of "social class," for several reasons. First, the notion SES implies a continuous ranking from high to low. Second, SES does not require assumptions about class consciousness, lifestyles, and social interaction (cited in Bradley & Caldwell, 1984).

Definition

The term "infancy" comes from the Latin word infans, which means "not speaking" --and no matter how much he vocalizes, or how much his vocalizations change during this period, his babblings stop short of time speech. By the time he is a year old, however, he can understand a great many words and phrases, listens attentively to those he does not understand, and may (there are great individual differences) use a few words of his own. The limited emotional repertory with which he began life differentiate into half a dozen recognizable kinds of feelings states: pain-distress, aversion, anger, fear, affection, elation, and perhaps others (cited in Stone & Church, 1968 pp. 56-57).

Infant is used to refer to children from one month to the time (usually about twelve months) they begin walking. Many children begin walking by the age of twelve months, and the majority by eighteen months. The tremendous variations in the age at which human begin to walk can be attributed to such factors as dependency on the parent, opportunity for practice and encouragement, physical strength and build, and nutrition. Walking with or without help marks the end of the infant state and the beginning of the toddler classification.

The term "toddler" derives from the lunging, tottering,, precariously balanced movement of the child as he learns to walk. This toddler stage represents a period of both physical and social independence on the part of the child and places many strains on the parent-child relationship. It is also one of the most critical parenting stages, since this is when children need help and support in becoming independent (cited in Kantor & Smith, 1975).

Effect of home and family background on infants' growth and development

In the home, the fundamental social unit is the family. The family provides the most important part of the child's environment from his earliest years and it plays a fundamental role in the moulding of his personality and character. A broad concept of the family refers to a basis of close relations by birth or marriage (or adoption); provision of a biological, social and cultural heritage, and as emotional, intellective and physical climate; a nature which includes growth and development of each of its members and also as a unit; and processes

which involve orderly change. This listing of important dimensions of a family suggests why its conceptualization is elusive (Broderick, 1967; Hill, 1966; Kirkpatrick, 1967; Parsons & Bales, 1955; Rodgers, 1964).

Some definitions of the family give emphasis to family structure, membership, and organization. Others stress the functions of the family as a group. Still others emphasize the roles of family members and the relational qualities among members as the basis of definition. Burgess and Locke's (1926) widely accepted definition of the family includes some elements of all these different emphases:

> (The family is) "a group of persons united by ties of marriage, blood, or adoption; constituting a single household; interacting and communicating with each other in their respective roles of husband and wife, mother and father, son and daughter, brother and sister; and creating and maintaining a common culture." (p.8)

This definition conveys well, the general, abstract meaning of the concept "family," but there is also a private, personal meaning for this term, which is a unique experience for every individual; that is, the functional, operating definition of the family which each of us carries with us, based on our own special experiences and reactions to family life as we have participated in it. From this point of view, it may never be possible to provide one definition of the family acceptable to all

persons, for, just as every individual is different from every other, every family, too, has its own unique qualities. As Burgess and Locke (19) express it, each family develops and maintains a kind of culture of its own. This culture contributes, among other things, an operating definition of "family" for its members---especially for its children.

Clausen (1966) says that the family "at any given time, however it has a definable composition and a reasonably stable organization of joint activities, role relationships and dominant values or goals."

Types of Families

The families fall into the following types:

(i) Nuclear Families, and
(ii) Extended Families

(i) Nuclear Families

The nuclear family is understood to be a family with a single married couple along with their children. This is in contrast to the extended family which may include a larger kinship group within the single household.

(ii) Extended Families

It is defined as one in which three generations (grandparents,

parents, and children) lives within the same household. An extended family, therefore consists of parents, grandparents, aunts, uncles, brothers, sisters and sometimes cousins, living together as a unit or sharing feelings of kinship through close geographical proximity and shared concern and responsibility for family matters.

The Role of Family during Infancy and Childhood

In their attempts to evaluate the influence of the family on the child, psychologists have selected a few child qualities from the large array of potential characteristics. These include: intellectual skills, as indexed by IQ scores; school grades, and verbal ability; a secure attachment to parents; sociability with peers; reasonable conformity to authority; and autonomy in making decisions. The selection of family qualities is based on the complex assumption that physical affection, interactive play, and a proper balance between restriction and permissiveness have the most significant influence on the establishment of the desirable child qualities.

In order to take advantage of the existing evidence Kagen (1984) have chosen to organize the discussion around some of these ideas. The best evidence evaluates the influence of the mother. There is insufficient information regarding the role of the father or of siblings, and therefore he have said little about their influence, even though he believe it to be great (see Dunn, 1983).

Most observers have been interested in two processes during infancy: intellectual development, especially language; and the infant's emotional attachments to the parents. The infant's cognitive competencies include sensory-motor coordinations, schemata, and improvements in memory. The expectation that each of these processes grows optimally when the infant is exposed to comprehensible variety is verified by the fact that infants raised in institutions that fail to provide much variety are usually slower in their attainment of these qualities than are children from homes where mothers play and talk with them often (Clarke-Stewart, Vander Stoep, & Killian 1979; Ramey, Farran, and Campbell 1979; Bradley, Caldwell, & Elardo, 1979). Although the relation between variety and cognitive growth is not always robust, and occasionally fails to be realized, rarely is the direction of the relation reversed. The conclusion that variety of experience facilitates cognitive development may be the least impeachable principle in developmental psychology.

The opportunity to use and to practice emerging competencies affects the speed with which sensory-motor coordinations grow. The infant who is restricted to a crib or tightly swaddled takes longer to reach, stand, and walk than the one who is allowed to play with objects and to explore the environment freely. But even though opportunities for play and exploration facilitate motor development, these experiences may not be absolutely necessary Infants who have little or no opportunity for motor activity or exploration, because they are swaddled during the first

year of their lives, will--then given freedom to locomote and to explore after their first birthday--walk, run, and manipulate objects as skilfully as infants who have never been restrained.

Although the vast majority of children in the world are raised by moderately predicable and reasonably nurturant adults, there is extraordinary variation in the duration, continuity, and affective quality of the interaction between parents and infants. Imagine an environment in which an infant is nurtured gently and reliably. The child is fed before he becomes too hungry, diapered before he experiences excessive discomfort, protected from injury and unpredictable events he cannot understand. However, this infant rarely experiences the excited emotional states that accompany reciprocal interaction with an adult. Compare this infant with one who, in addition to receiving nurturant care, experiences frequent, pleasant, playful interaction with caregivers. These children should become emotionally excitable babies who vocalize and smile with the caregiver.

If a society values emotional spontaneity and worries about children who are subdued, the latter child will be at risk in adolescence and adulthood. Such a child might be ignored or rejected by peers and, as a consequence, become vulnerable to anxiety. However, in a culture that does not celebrate emotional spontaneity absence of playful interaction during infancy may not be harmful.

A second component of a secure attachment rests with the

availability of the caregiver when the child is in distress. All infants experience pain and unpleasantness, and the persons who come to soothe a child will become associated with the pleasant feelings that accompany relief of distress. The child learns to expect that these adults will reduce her distress in the future and will seek them when she is hungry, tired, in pain, or frightened. But imagine a child in a group where the caregivers come irregularly and with long delays. This child will be forced to develop other behaviour when distress arises. She may twist her hair, bury her head in a blanket, or go to sleep. She will not learn to anticipate the care of adults or to approach adults when uncertain. Such a child is insecurely attached. This quality has a singularly significant consequence.

Restraint of aggression and destruction, as well as acquisition of the standards that define mature behaviour in a culture, are major goals of development. An attachment to a caregiver creates in the child a special receptivity to being socialized by that caregiver. Because the child resists adopting some socially desired behaviour, as well as the standards underlying it, one must have a psychologically compelling reason to inhibit lying, destruction of property, stealing, and disobedience, and be motivated to attain other qualities promoted by the society. The child who is securely attached to caregivers is prepared to curb asocial behaviour because he or she does not want to threaten that relation. As a result, the child accepts the family's standards and is likely to establish harmonious relations with other people.

The insecurely attached child grows with more serious risk because he is less receptive to adopting the standards that his parents are promoting. Because he is likely to develop a deviant behavioral profile, he will be rejected by others and, as a consequence, will become vulnerable to uncertainty. The prediction that an insecurely attached infant will become an anxious adolescent is probably correct. What is controversial, however, is whether the adolescent anxiety is due primarily to irregular nurturance during infancy which has produced a permanent change in the infant's affective mood; or to the poor fit between the personal characteristics of a child who has not accommodated to socialization pressures, and peers and adults who expect everyone to display the normative behaviour of the society.

The belief that the emotions experienced repeatedly during infancy are preserved is attractive to parents and social scientists. But this outcome is not inevitable. Older children who have experienced a great deal of uncertainty during the opening two or three years of life do not always become distressed adolescents, especially if their environments become benevolent after the period of infancy. A twenty-seven-year-old woman who had been abused continually as an infant, and had lived in three foster homes before she was three years old, managed to convince herself during adolescence that she was not inherently bad. She became a loving, satisfied mother who was deeply identified with her only son.

The above mentiond examples are not suggesting that it is irrelevant how adults care for infants. It does matter! But an insecure

attachment during the first year need not always lead to adult pathology, and a secure attachment is no guarantee of future invulnerability to distress. If a secure attachment motivates the child to adopt characteristics that are maladaptive in the larger society, as can happen during periods of transition when old values are changing, the attachment might not be beneficial for the child. Infants need variety of experience and opportunities to explore and to manipulate their environment in order for cognitive development to proceed optimally. To develop a secure attachment, they need a consistently nurturant adult who regularly relieves distress. The consequences of these benevolent experiences, however, will depend on the demands that the social environment will make upon the child in the future. There is no way to inoculate the infant against adult misery, even though parents might be able to make that mood a little less probable (cited in Kagen, 1984).

Theories of Infants

Of all the causes thoughtful observers might have invented to explain the dramatic differences in adult talent, wealth, happiness, status, and morality, most Western theorists assumed that the experiences of infancy (either quality of physical care or specific encounters with objects and people) were the most relevant. The moods, values, skills, and habits created during the first few years were supposed to persist indefinitely and to form the adult's character, competence, and capacity for joy.

The properties of the infant are so distinct from those of the older child that it is not surprising that all societies regard the first two years of life as a special period of development. Infants are often defined not by what they can do but by absence of the qualities adults possess, especially language, intention, appreciation of right and wrong, symbolism, playfulness, guilt, empathy, and self-consciousness. James's description of the baby's world as a "blooming, buzzing confusion" was rendered credible by the popular notion of the infant as an inherently helpless creature with little power to resist environmental intrusion.

The behaviour of the infant is so ambiguous it is easy for the culture's beliefs about human nature to influence observers' interpretations of what they think they see. These influences are nicely illustrated in the different descriptions of the infant by Sigmund Freud, Erik Erikson, and Jean Piaget. Each of these influential theorists highlighted a special aspect of the child's first year because of suppositions originating in the larger cultural context in which each scholar lived.

At the turn of the century, when Freud was forming his theoretical ideas, Darwinian evolutionary theory was a source of metaphors for human behaviour. Darwinian theory held that the human infant was the link between animals and human adults. Ernst Haeckel's famous declaration that ontogeny recapitulated phylogeny suggested one form that link might take; the human infant should be governed by the same forces that control primitive animal forms for whom a single orifice served both ingestion of

food and sexuality. This imaginative idea-combined with the new doctrine that nerves have specific energies that are linked to different qualities of experience, and the older principle of the conservation of physical energy-probably led Freud to suggest that each child was born with a fixed amount of libidinal energy, with the mouth, tongue, lips, and their usual functions serving as the initial reservoir for this force. Although the bold hypothesis of the oral stage sound strange today, it was more credible during the early decades of the century- in part, because it bore a close resemblance to major principles in the respected disciplines of zoology, physiology, and physics and satisfied the desire held by many scholars to bring humans and animals conceptually closer.

When Erikson was developing the eight stages of man, politically liberal scholars wanted to increase the psychological distance between animals and humans and to make social experience, rather than inherited instincts, the source of the obvious variation in human talent and character. One reason for this theoretical preference was a desire to quiet a small but vocal group of eminent biologists and psychologists who claimed that the economic and social failure of European immigrant groups was partially biological in origin. Because a growing audience of intellectuals was receptive to the view that social experience, not biology, was formative, it was reasonable for a theorist, during the years between the two world wars, to see the actively nursing infant as a passively fed child and to transform a solitary, instinctive behavior into a social event. Two important qualities in this dyadic relation are the caregiver's affective involvement and her reliability. If she does

not feed the crying baby within a reasonable period of time, the infant becomes extremely distressed. Erikson's labelling the first era of development as a time of thrust had the same ring of truth in the 1950s that Freud's oral stage had had half a century earlier.

Piaget's conception of infancy, like Freud's, was influenced by debates on the mechanisms of evolutionary change. Piaget sided with those who wanted to award most of the power for change to the organism's commerce with the environment rather than to genetic mutation. Piaget likened the development of cognitive functions to the evolution of organs and bodily processes because, in his conception, the infant's cognitive abilities derive from active interaction with objects in the world and from successive accommodations to new challenges. When Piaget looked at the infant, he saw a baby playing with the mother's face and fingers. Nursing, being nurtured, and exploring the caregiver's fingers are all characteristic of infancy. It is not obvious that one of these functions is most central; theory awards one of them greater status than the others.

The ease with which scholars attribute special meaning to an aspect of infancy reflects a general tendency to ascribe to the young child properties that are opposite to or undeveloped beginnings of the characteristics adults prize. Americans, who value independence and individuality, see the baby as dependent, undifferentiated, and not yet aware of being separate from others --- undesirable contrasts to the qualities the Western adult is supposed to attain. But dependence on

others and an undifferentiated self are not ascribed universally to young children. The Japanese, who prize close interdependence between child and adult, regard the infant as having a small component of autonomy that is part of the baby's unique nature. Japanese mothers, who believe they must tempt the infant into a dependent role, rush to soothe a crying infant, respond quietly to the baby's excited babbling, and sleep with the young child at night in order to encourage the mutual bonding necessary for adult life.

Historical shifts in the traits theorists ascribe to infants can reveal secular changes in the qualities that are admired. During the 1930s, when control of childhood aggression was regarded as both highly desirable and attainable, the British psychoanalyst Klein awarded to the infant unrestrained aggressive impulses and explained the nursing infant's biting of the mother's nipple as an expression of that primitive instinct. Since the Second World War, childhood aggression has become more acceptable and, accordingly, Klein's description has become obsolete.

When strict conformity to parents and benevolent authority was the ideal, nineteenth-century American children were described as willful. The goal of socialization was to teach them the mature posture of obedience to elders. As historical events began to taint the moral imperatives laid down by authority, theorists felt it necessary to promote a private conscience. Hence, children who regularly conformed to the commands of adults out of fear of punishment were reclassified as

immature, because anxiety over the disapproval of others is not as desirable a foundation for morality as is an inhibition that rests on an internal commitment to be good.

Attitudes toward the restraint of strong desire have also changed profoundly during the last two centuries. The inhibition of behaviour motivated by anger, the promise of sensory delight, or enhanced power---called self control- was the central criterion for morality in the early nineteenth century. But by the first decade of this century, adjustment to social demands began to replace self control as the ideal each child was supposed to attain. Successful adjustment required yielding to desires for pleasure, friends, status, and wealth; hence, excessive self-control was undesirable, and the profile valued in 1800 had been reclassified as potentially detrimental to happiness.

Contemporary psychologists have chosen to celebrate two other characteristics of the infant. One groups, partly derivative of the Eriksonian view, regards affectionate and playful interaction between mother and infant as critical for the attachment of baby to caregiver---a distinguishing feature of this era. A second group has selected for study qualities that comprise the central interests of modern cognitive science: perception, memory, and categorical functioning. If the renewed concern with morality continues to grow, it is possible that, by the end of this century, many observers, like those who wrote at the end of the last century, will award centrality to the behavioral previews of will, intention, and choice because they are the essential elements of

conscience.

In the end to summarize a conception of infancy that is informed by three ideas. The first awards primary to maturing cognitive talents: in part, because these qualities were ignored in past descriptions; and, in part, because he believed that developmental changes in emotions and social behaviour are best understood by relating them to the growth of cognitive processes*. I shall argue that the most essential catalyst for change is the relation between the events that enter the child's perceptual field and his knowledge at that moment, and that the child's corpus of knowledge is monitored by inherent biases in the way experience is segmented and by a growing ability to remember the past and to compare it with the present (cited in Kagen, 1984).

The infant's attachment to those who provide care is a second initial process in the first year. The actualization of this process also involves a relation between the child and the world outside, but the attachment relation unites the infant's inborn repertoire of actions with the responsiveness of those persons who care for and play with the infant. Acquiring knowledge and forming attachments are universal, but there is extraordinary variation among children in the rate and form of these acquisitions. Although differences in rearing environments make a substantial contribution to this variation, an infant begins life with a particular temperamental style, which profoundly influences the way

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*Some modern essays on conditioning are also cognitive in perspective, regarding conditioning as a process by which representations of events become related (Mackintosh, 1983).

others treat the child and how he or she reacts to the unexpected (cited in Kagen, 1984).

HOME (Home Observation for Measurement of the Environment) INVENTORY

Rationale and Development

Unlike the large array of instruments available for measuring individual differences, there were until recently few techniques for the precise measurement of a child's early developmental environment. Prior to 1965 social class or socioeconomic status (SES) designations were employed almost exclusively as an index of how adequate a child's environment was. As researchers in human development have lacked sensitive measures of environmental quality, progress in the understanding of environmental influences upon infant behaviour has been slow. What was needed were reliable and valid instruments that could assess the stimulation potential of the early developmental environment. It is only with such information that Bradley & Caldwell specify the mechanisms through which the environment facilitates human development. Here we will describe the rationale and the development of one such instrument.

In the early 1960s, several ideas emerged in the field of child development which gave impetus to the development of the HOME Inventory. First, due to the seminal writings of Bloom (1964) and Hunt (1961), there was greater recognition of the importance of the early environment in children's cognitive development. With that recognition came the observation that more research was needed in order to more accurately map the relationship between environmental factors and aspects of children's

development. Second, as scientists began the process of designing studies of environment-development relationships, a consensus developed with respect to the inadequacy of the environmental measures then available. Social class (or socioeconomic status - SES) measures were most frequently used. Moreover, even when an attempt was made to catalog precise transactions, attitudes, and so on, interview or questionnaire techniques were used most often, rather than direct observation of behaviors. The reliability and precision of these techniques were often questionable. Third, as early intervention programs were initiated, there was a growing awareness of the value of having a precise portrait of the child's home environment in planning appropriate interventions. Thus, a valid, yet easy-to-use measure of a child's environment was needed. For these and related reasons, Caldwell and her colleagues at the Syracuse Early Learning Project designed the first version of HOME Inventory (the inventory was initially called the Inventory of Home Stimulation, STIM). Over 200 items were field tested as part of the first version of HOME in Syracuse. Based on the field tests, the inventory was reduced to the 72-item scale described by Caldwell, Heider, and Kaplan (1966). The 72-item version was administered to 113 families, also in Syracuse. A factor analysis and a variety of item analyses were done on the 72 items. It was then reduced to the 45 items in the current Infant version scale (cited in Bradley & Caldwell, 1984).

Out of the relatively large volume of research on environment/development relationships a certain number of processes have been identified that appear to show a relatively consistent relation to

development. Caldwell (1968) in her review of favourable development during the early years of life assembled a list of environmental characteristics which were likely to foster early development. Given below is the list of these characteristics of developmentally stimulating environments as:

1. Environment ensuring gratification of all basic physical needs and careful provisions for health and safety.

2. Relatively high frequency of adult contact involving a relatively small number of adults.

3. Positive emotional climate in which the child learns to trust others and himself.

4. Optimal level of need-gratification.

5. Provision of varied and patterned sensory input in an intensity range that does not overload the child's capacity to receive, classify and respond.

6. People who respond physically, verbally, and emotionally with sufficient consistency and clarity to provide uses as to appropriate and valued behaviors and to reinforce such behaviors when they occur.

7. Environment containing a minimum of social restriction on exploratory and motor behaviour.

8. Careful organization of the physical and temporal environment which permits expectancies of objects and events to be confirmed or revised.

9. Provision of rich and varied cultural experiences rendered interpretable by consistent persons with whom the experiences are shared.

10. Availability of play materials which facilitate the coordination of sensory-motor processes and a play environment permitting their utilization.

11. Contact with adults who value achievement and who attempt to generate in the child secondary motivational systems related to achievement.

12. Cumulative programming of experiences that provide an appropriate match for the child's current level of cognitive, social, and emotional organization.

With the above as a guide, the current HOME Inventory was composed. Items were composed to represent these areas: Frequency and stability of adult contact, amount of developmental and vocal stimulation, need

gratification, emotional climate, avoidance of restriction on motor and exploratory behaviour, available play materials, and home characteristics indicative of parental concern with achievement.

Literature/Review

(i) Of the studies about the concept being used in the thesis

(ii) Studies about the HOME Inventory

Given below are the studies about the different concepts being used in the HOME Inventory (Bradley & Caldwell, 1984) as: (i) Emotional and Verbal Responsivity of Mothers; (ii) Acceptance of the Child previously entitled Avoidance of Restriction and Punishment; (iii) Organization of Physical and Temporal Environment; (iv) Provision of Appropriate Play Materials; (v) Maternal Involvement with Child; and (vi) Opportunities for Variety in Daily Stimulation. Because the HOME Inventory defines aspects of parenting that have been represented in most subsequent studies of home environments (see Gottfried, 1984), items from this inventory were the source of variables indicating aspects of the home environment that set the occasion and influence the likelihood that a parent and child will engage in talk.

In the HOME Inventory the concept used Maternal Involvement with Child was the extent to which the parent tends to keep the child in visual range. As a basis for talking about the child's activity, the parent needs to be able to see what the child is doing. Also, the

tendency of parent and child to stay in proximity can be indicative of the child's activity level (Gandour, 1989; i.e., need for monitoring), attachment (Bretherton & Waters, 1985) and sociability (Breitmayer & Ramey, 1986), all of which influence the kinds of interactions that occur.

Also chosen from Maternal Involvement with Child was the extent to which the parent talks to the child while doing other work. When a busy parent pauses momentarily to interact with the child, the parent conveys both positive attention and receptivity to talk on the part of the child. The parent may comment on what the child is doing in a brief talk up (O'Brien, Porterfield, Herbert-Jackson, & Risley, 1979) or communicate with the child merely by giving a toy or wiping the child's nose.

From the concept Emotional and Verbal Responsivity was the extent to which the parent responds to the child's vocalizations. The parent's verbal response when the child tries to communicate ---- like the initiation of a passing comment on the child's play-conveys positive attention, receptivity, and interest in interacting about what the child is doing. After that, a parent's response to a child-initiated topic can become an occasion for incidental teaching, from which children have been shown to benefit cognitively (White, 1985) and in terms of language use (Hart & Risley, 1980).

Bornstein, Tamis_LeMonda, (1982) in their study examined and compared prominent characteristics of maternal responsiveness to infant

activity during home-based naturalistic interactions of mother-infant dyads in New York City (U.S), Paris (France), and Tokyo (Japan). Both culture-general and culture-specific patterns of responsiveness emerged. For example, in all three locales infants' behaved similarly, mothers also behaved similarly with respect to a hierarchy of response types, and mothers and infants' manifest both specificity and mutual appropriateness in their interactions: Mothers responded to infants' exploration of the environment with encouragement to the environment, to infants vocalizing non-distress with imitation, and to infants vocalizing distress with nurturance. Differences in maternal responsiveness among cultures occurred to infant looking rather than to infant vocalizing and in mothers' emphasizing dyadic versus extradyadic loci of interaction. Universals of maternal responsiveness, potential sources of cultural variation, and implications of similarities and differences in responsiveness for child development in different cultural contexts was also studied.

Richman, Miller & LeVine (1992) in two separate studies examined the following hypotheses: (a) that maternal responsiveness is affected by cross-cultural differences in conventions of conversational interaction, and (b) that maternal responsiveness is affected by intracultural differences in mothers' levels of formal education. The first study compared mother-infant interactions among the Gusii of Kenya with those in suburban Boston, Massachusetts. The second study, carried out in the Mexican city of Cuernavaca, examined variations in mother-infant interactions by maternal schooling within a local sample of low-income

mothers of similar cultural backgrounds who had attended school from 1 to 9 years. The two studies together indicate that maternal responsiveness during infancy, particularly in the verbal mode, is influenced by the mother's cultural background and school attendance, that is, by factors that reflect her history of participation in institutionalized systems of communication and education.

The parent's presence, interest, responsiveness, and restrictiveness influence how the parent talks to the child and thus influence the forms of language the child is exposed to (Durkin, 1987). Language used in the service of socializing the child- whether to behavioral, moral, or academic norms-is likely to be characterized by parental adaptations to ensure the effectiveness of communication and thus the probability that an immature speaker will understand and respond. These are the adaptations described in the language interaction literature as "motherese" (Rice, 1989).

The research on parent-child interactions contains numerous descriptions of language features ("motherese," semantic matching, and recasts; e.g. Rice, 1989; Snow, 1986) and contexts (book reading and games; e.g. Murphy, 1978; Ratner & Bruner, 1978) associated with optimal language development. The actual content of parent's speech to childen, however, has hardly been examined (Gleason, 1988). Although the contribution of parental input to language acquisition remains to be ascertained (Shatz, 1982), there is increasing evidence that the amount of parent speech is related to children's vocabulary growth

(Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). The amount that individual parents talk to their children appears to remain fairly stable both before and during the time their children are learning to use words (Cohen & Beckwith, 1976; Nelson & Bonvillian, 1973). Amount of parental talk also tends to be associated with demographic and cultural characteristics. Relatively uneducated and economically disadvantaged parents tend to talk to their children less than do high socioeconomic status parents (Gottfried, 1984; Heath, 1989); cultural norms influence what kind of and how much talking with children is socially acceptable (Fajardo & Freedman, 1981; Schieffelin & Ochs, 1983).

Child outcomes in terms of language and IQ scores are a product of the cumulative interactions between individual differences in ability and the kinds of learning opportunities different environments provide (Horowitz & O'Brien, 1989). The kinds of learning opportunities a family provides to a child depend on the sociocultural organization of the home and what parents are trying to accomplish through interaction with the child (Durkin, 1987; Heath, 1989). Efforts to understand the relationships between child outcomes and differences in learning environments have focused on two aspects in particular (Wells, 1986): (a) the relationship between the quality of parent-child interactions and children language development; and (b) the relationship between home environment and cognitive development. Linking these two areas is research on child-rearing practices (McNally, Eisenberg & Harris, 1991), which influence both the environments parents arrange for their children and how they respond as their children interact with those environments.

Parent-child interactions, the organization of the home environment, and child-rearing practices come together in the construct, parenting.

Responsiveness has attracted the attention of developmental researchers for two main reasons. First, it reflects faithfully a recurring and significant three-term event sequence in everyday exchanges between child and parent that involves child act, parent reaction, and effect on child (e.g., Ainsworth, Bell & Stayton, 1974; Bornstein, 1989a; Lewis & Goldberg, 1969; Watson, 1985). Second, parental responsiveness has been found to possess meaningful predictive validity over diverse domains of children's development (e.g. Ainsworth et. al., 1974; Beckwith & Cohen, 1989; Bornstein & Tamis LeMonda, 1989 Bradley, 1989; Coates & Lewis, 1984; Crockenberg, 1981, 1983; Goldberg, Lojkasek, Gartner, & Corter, 1989; Lewis & Goldberg, 1969; Rabain-Jamin, (in press 1990); and Sigman et al., 1988; Yarrow, Rubenstein, & Pederson, 1975.

Effects of Infants on Parents: If we considered only the influence of parents on the infant, we would fail to show appreciation for one of the most important conceptual advances to take place during the past-decade the realization that human development is a transactional process, that is, a process in which the individual both influences and is influenced by the care he or she receives. Of course, we have stressed this theme repeatedly. Both parents and infants behave to maintain the other's behaviour. For example, vocalizations by the infant are exchanged with parental vocalizations and perhaps also with touching. An example of this system is found in data reported by Lewis and Lee-Painter (1974).

The looking behaviour of an infant elicits more maternal vocalization than its touching behaviour, but maternal touching and vocalization appear to evoke equal levels of infant vocalization.

Although this information indicates that parental behaviors may indeed be contingent on infant behaviour, is the nature of the relationship interactive? The data just cited seem to indicate that it is, and additional evidence reported by Lewis and Wilson (1972) supports this conclusion. Although finding no overall differences between middle-class and working-class mothers in the frequency of vocalization in the presence of their infants, a difference in the interactional use of vocalizations was found: middle-class mothers were more likely to respond to their infants' vocalizations with a vocalization than were working-class mothers. And it is such contingent responsiveness, it should be recalled, that has repeatedly been shown to foster optimal infant functioning. Indeed, such social class differences in responsiveness may be early causes of the subsequent differences that are so regularly noted in the cognitive performance of older children from lower-and middle-class families (cited in Kopp & Krakow, 1982).

From the concept Avoidance of Restriction and Punishment was the extent to which the parent intervenes to restrict or correct what the child is doing. Parental restriction is an important indicator of how age appropriate the materials and activities provided to the child are. Parents who provide age-appropriate materials have fewer occasions to prohibit inappropriate behaviour and can more readily redirect the child

by enhancing the attractiveness of an alternative activity. Attractive materials provide parent and child a shared focus for talk in which the parent can encourage exploration rather than restrict, correct, or criticize what the child is doing. This variable was measured in the longitudinal data as the percentage of parent utterances that were imperatives directing the child to "stop," "quit," or "don't", do that (Hart & Risley, 1992).

Variety of Stimulation: Yarrow, Rubenstein and Pedersen (1975) have found that infants who receive a high amount of social stimulation (including being held, being talked to, being looked at, and being played with) are more likely to be advanced in some aspects of early cognitive development. Yarrow and his associates also found that the richness and variety of inanimate stimulation (such as the number and variety of toys, textures to feel, things to look at) make a difference in the child's early cognitive development. Babies of 5 months who had received a rich variety of stimulation showed somewhat faster motor and perceptual development, more reaching and grasping, and more exploration of the environment.

Since Hunt's (1961) review of the influence of early experience on mental development, not only has the importance of the general home environment been documented but so too have more specific variables: maternal verbal behaviour; availability of play materials; maternal encouragement of developmental advance; and the responsiveness, complexity, and variety of objects in the home (Carew, 1980; Clarke-

Stewart, 1973; Goodson & Hess, 1981; Hess & Shipman, 1965; Wachs, Uzgiris & Hunt, 1971; Yarrow, Rubenstein, & Pederson, 1975).

The relation between social interaction and complexity of toddler's symbolic play was investigated by Fiese (1990). 57 toddlers between 15 and 24 months of age were observed under 4 conditions: (1) child play alone, (2) child play with mother, (3) child modeling mother, and (4) child play with mother following the modeling condition. Each subject was rated on complexity of play, maternal attention directing, reciprocity, and maternal intrusiveness. Significant condition effects were found in which more complex forms of play were observed when the children were playing with their mothers than when playing by themselves. Maternal intrusions and questioning were negatively related to symbolic play. Turn-taking was negatively related to simple exploratory play. Results of a sequential analysis demonstrated that turn-taking was more likely to precede symbolic play, and maternal intrusiveness was more likely to precede simple exploratory play.

The nature and specificity of the important social variables have not been fully determined. Certain rearing characteristics seem to be important across a broad age span, while others are relevant only at particular points in development (Wachs & Gruen, 1982). The extent of maternal involvement, the degree of variation in stimulation, and the verbal environment provided by caregivers and siblings seem meaningfully related to children's cognitive development across the early years of life. On the other hand, physical contact and responsiveness to distress

seem most significant early in infancy, while responsiveness to the child's vocalization necessarily becomes influential somewhat later (Bakeman & Brown, 1980; Stevenson & Lamb, 1979). Sustained social interactions with older siblings and peers can only affect the child at ages when these are common. The question of specificity of effects is still at issue. Home characteristics may affect development generally or may only influence the acquisition of particular skills and characteristics (Heinicke, Diskin, Ramsery-Klee & Oates, 1986; Wachs, 1984).

Studies about the HOME Inventory

Follwoing is the review of the studies carried out on various areas covered by Infant version of HOME Inventory.

Increasingly, investigators have been attracted to one instrument, the Home Observation for Measurement of the Environment (HOME; Bradley & Caldwell, 1984). Its technical merits have been well documented by its developers and others showing that the scale for infants and the one for preschoolers predict children's language development, intellectual performance, and academic achievement (Bakeman & Brown, 1980; Bee et al., 1982; Bradley & Caldwell, 1976, 1980,; Bradley, Caldwell & Elardo, 1979; Elardo, Bradley & Caldwell, 1975, 1977; Ramey & Farran, 1981; Ramey, Mills, Campbell & O'Brien, 1975; Siegel, 1981) beside other aspects, which are follwos:

Language Development

Wulbert, Inglis, Kriegsman and Mills (1974) examined the relationship between early environment and language delay. These researchers identified a group of preschool children ;with delayed language development who showed a high probability of having normal intelligence. Probable normal intelligence was defined in terms of a disparity between IQ as measured by the Stanford-Binet and the Raven's Progressive Matrices Test. The average difference was slightly in excess of 20 points in favor of the Raven's non-verbal measure. The purpose of the Wulbert, et al study was to compare the home environments of these language delayed children to the home environments of normal children and to the home environments of children with a developmental disability for which psychosocial causation would not be suspected. For this third group, children with Down's Syndrome were chosen. Results of the study revealed that the children with language disability did indeed live in home environments which differed markedly from that of the normal and the Down's Syndrome groups. The language-delayed group received significantly lower scores on the total HOME scale and on two subscales (Responsivity of Mother and Maternal Involvement) Thus, home environment factors involving such behaviors as maternal reinforcement of developmental advance and maternal warmth and availability to the child appear highly relevant to language development.

Cognitive Development

Numerous studies have documented the associations between characteristics of the home environment and the child's level of cognitive development.

Bradley & Caldwell, Barnard & Gray, Siegal, Ramay, Gottfried & Johnson (1989) attempted to examine the generalizability of home environment/ cognitive development relationships among three ethnic groups across the first 3 years of life. Social status did not show a consistent relationship to either quality of home environment or children's cognitive developmental status across the various groups. Results indicated a fairly consistent relationship between HOME scores and children's cognitive developmental status, although there were some ethnic and social status differences in the relationship. Measures of specific aspects of the child's home environment, such as parental responsivity and availability of stimulating play materials, were more strongly related to child cognitive developmental status than global measures of environmental quality such as SES. When the child's early cognitive developmental status and early home environment were both very low, the likelihood of poor developmental outcomes was markedly increased compared with cases when only one was low.

Wachs, Uzgiris and Hunt (1971) employed a modified version of the HOME Inventory in an investigation designed to relate the home backgrounds of infants to the infants' cognitive development as measured

by the Infant Psychological Development Scale (Uzgiris & Hunt, 1966). A total of 102 infants were involved in the study ranging in age from 7 to 22 months. Two kinds of home circumstances were found to be most consistently related to infant development: intensity and variety of stimulation and opportunities to hear vocal labels for objects, actions, and relationships. The first factor was at several ages negatively correlated with developmental test performance, suggesting the harmful effects of overstimulation of "stimulus bombardment." The second factor, concerned with the infants' verbal environment in the home, revealed several significant positive relationships to development beginning as early as 15 months of age. Wachs, Uzgiris and Hunt (1971) present a convincing argument that certain types of environmental stimulation may be related in a curvilinear rather than a linear manner to psychological development. Their explanation for this type of relationship rests in Hunt's (1961) concept of "Hypothesis of the Match." These researchers see a need for longitudional research to provide more information for understanding the complex relationships between home circumstances and indices of psychological development.

Fowler and his colleagues (Fowler, 1974; Fowler & Swenson, 1975) conducted a longitudinal study of 23 day care children and 23 matched home reared children living in Toronto, Canada. The study began when the children were 6 months old and continued until they were about 5/1-2 years old. A majority of the children were from single parent families and most were either lower SES or lower middle SES. The children were assessed with the Griffiths Scale, The Schaefer-Aaronson Behaviour Rating

Scale, and the Stanford-Binet Intelligence Test. The families were assessed with the HOME Inventory. Correlations between HOME scores on the measures of cognitive and social development ranged from moderate to strong (.4 to .8). The coefficients varied as a function of the age at which the child was measured. HOME scores generally showed a stronger relation to verbal factors than affective or perceptual-motor factors.

A meta-analysis of data from six studies that used the HOME and standard cognitive measures revealed moderately low environment cognition correlations at age 1 year and increasing associations at age 2 and 3years (Bradley et al, 1989).

Research about the relationship of home environment processes to children's mental development has been particularly concerned with identifying quite specific, environmental variables. As a consequence, studies using the HOME have examined not only the relation of developmental outcomes to total score but also to individual subscale scores. The six HOME subscales were derived primarily through use of scale construction techniques (Caldwell & Bradley, 1984). Five subscales had high and a sixth evidenced moderate internal consistency, indicating each uniformly measured a given environmental dimension.

In the research on home environments, optimal cognitive outcomes have been associated with home environments that offer a child many and varied opportunities to learn through interaction with caring adults and age-appropriate materials (Gottfried, 1984). Measures of home

environments such as the Home Observation for Measurement of the Environment (HOME) Inventory (Bradley & Caldwell, 1984) incorporate items that address the nature of parent-child interactions in conjunction with parental provision of play materials and variety in daily stimulation.

School Competence

VanDoorninck, Caldwell, Wright and Frankenburg (1975) reported a study of competency among 286 elementary children who were part of a follow-up group from the Syracuse Early Learning Project (Caldwell & Richmond, 1968). Each child's home was assessed with the HOME Inventory when the child was 12 months old. Several kinds of school related information were also obtained for each child: IQ scores, achievement test scores, letter grades in math and reading, curriculum level in math and reading, referral for any learning disability program, and current grade level. IQ scores and achievement test scores were converted to percentile scores based on norms for the tests. Percentile scores for letter grades and curriculum levels were estimated from data collected on the entire Early Learning Project follow-up group. The 286 children used in their study were designated as having some competency "problem" on the basis of meeting one or more of the following criteria: repetition of grade, referral for learning disability program, letter grades of D or F for math and reading, and average percentile of less than 31. HOME total scores obtained when the child was one year old were examined to determine how well they could predict who would have a competency problem. Results showed that the 12 month HOME scores predicted

competency problems with only a 22% error rate. This low error rate was better than the error rate obtained using social class as a predictor.

Program Evaluation

Hamilton (1972) employed a previously developed (63-item) version of the HOME Inventory as part of his evaluation strategy for the Parent Child Center Program in the State of Washington. The Center, part of a national project begun in 1967 by the Office of Economic Opportunity, was designed to serve disadvantaged families with children less than three years old. Services included day care (5 days a week, 8 hours a day) for the children, with a focus on activities designed to stimulate physical, intellectual, and emotional development. The program also had a parent component which aimed at educating parents in child development, family management, employed difficulties, and self-confidence. An additional aspect of the program was the attempt to improve the mother's child-rearing skills by hiring her into the program (most mother's participated in this aspect of the program). 16 participating, families were tested with the HOME Inventory (among other measures).

After a three month period, parental treatment of the child improved from about half of the total possible score on the HOME to two-thirds of this score, a statistically significant and practically important gain, which was further improved upon with continuing participation in the program. Hamilton (1972) interpreting these results as indicating that useful changes had occurred in the amount and quality

of developmental stimulation provided in the home, and noted that the HOME subtest score which changed the most was that of "developmental and vocal stimulation" with a 71% improvement between pretest and posttest. Vocal stimulation was an area toward which intervention was heavily targeted. Children in the program registered gains on the Denver Developmental Screening Test which approximately parallel the progress made by their parents as recorded by the HOME Inventory, thus suggesting that intervention focused on ameliorating the specific environmental deficits found in a particular home may result in developmental gains for the child. Further research is needed to examine the correctness of this hypothesis.

Johnson, Kahn and Leler (1976) report a study of three cohorts of Mexican-American children from the Houston Parent-Child Center where HOME was used as an index of program effectiveness. In two of the cohorts children who received intervention showed higher HOME scores than control children. Among these children, HOME demonstrated a significant relation to 24-month Bayley MDI (.4) and 36-month IQ (.5 -.7).

High Risk Families

The HOME Inventory was used to compare the quality of stimulation found in home environments of 30 infants at high-risk for developmental retardation and 30 infants from the general population (Ramey, Mills, Campbell & O'Brien, 1975). The "high risk" group were generally from homes where there was density (i.e. more crowding) and where parents had

poorer educational backgrounds. Infants were matched for age, sex, and parity. 15 of the high-risk infants attended a day care intervention program; 15 did not. There were significant differences favoring the general population on all six subscales of HOME; but none between the two high-risk groups. These results suggest that homes which are thought to be potentially high contributors to the developmentally retarded population differ substantially on all of the factors measured when compared to homes drawn at random from the general population. The most striking differences occurred on the subscales Maternal Involvement, and Provision of Appropriate Play Materials.

The HOME Inventory has also been employed as part of an extensive assessment battery in the Nursing Child Assessment Project conducted by Barnard and her colleagues (1976). The 164 participating families from the state of Washington were given the HOME when target children were 4, 8, and 12 months old. Correlations between HOME scores at the three time points indicated a moderate level of stability for the scale (.2 -.5); however, not the level of stability shown in the Little Rock sample. HOME scores for the primarily middle class families tended to be high and the variability small. Modest correlations were obtained between HOME scores and measures of maternal behaviour (.3) and maternal education (.3 -.4). These correlations are likely underestimates due to the small standard deviation of HOME scores and the fact that many Washington families "ceilinged" on the subscales.

Stanislawski (1977) investigated the differential ability of the

HOME Inventory and the Denver Developmental Screening Test (DDST) to discriminate between three groups of children (developmentally delayed, developmentally disabled, developmentally normal). The 42 children studied ranged in age from 2 to 3.5 years and were from lower-middle class and middle class families. The HOME differentiated the environment of delayed children from those of disabled and from those of normal children. By comparison, the DDST differentiated the disabled from the delayed and the normal. The developmentally normal and disabled groups showed significantly higher scores on three HOME subscales: (1) Avoidance of Restriction and Punishment, (2) Provision of Appropriate Play Materials, and (3) Maternal Involvement. The particular samples obtained yielded generally high HOME scores and low standard deviations, thus the generalizability of these findings is questionable.

Stanislawski found that Maternal Involvement was related to all components of the DDST. Generally, there were differences in the interrelation between HOME and DDST scores on the basis of which of the three groups was being considered. These differences may be at least partially due to the sample differences and the small sample size.

Hayes (1977) reported an investigation of the effects of environmental stimulation of premature infants. The study included 17 premature infants who received various forms of visual and tactile stimulation during the weeks immediately after birth, 14 premature infants who received no special enrichment stimulation, and 16 full term infants. Performance on the McCarthy Scales of Children's Abilities was

used as an index of the children's cognitive capability and HOME Inventory scores were obtained for all children. A higher score on the HOME was related to higher developmental scores for all groups- - albeit results differed somewhat from group to group. For the total group, HOME was significantly associated with the General Cognitive Index score from the McCarthy, plus the verbal and the perceptual performance subscores. Among HOME subscores, Avoidance of Restriction and Punishment showed the highest correlation with infant cognitive ability. Results for premature subjects were essentially the same. Interestingly, when the HOME score and infants' APGAR scores were combined to predict competence, HOME was by far the better predictor. Findings from the study indicate that HOME is a good predictor of development among premature infants. Moreover, it appears that certain features of the environment (Avoidance of Restriction and Punishment) may be more salient for development in this group than among fullterm infants.

Malnutrition

One of the most comprehensive investigations of differences in early home environment was made in connection with a study of malnutrition among Guatemalan infants. Cravioto and DeLicardie (1972) reported findings from a longitudinal study of a cohort of 229 children followed from birth which indicated a strong relationship between the two variables. Extensive environmental, health and developmental data were gathered on all children, including HOME assessments twice yearly up to age three and once yearly thereafter. Of the 229 infants, 19 were

identified as having experienced severe clinical malnutrition some time before 39 months of age (with most of the cases occurring between the ages of one and three). After the 19 index cases of malnutrition had been identified, Cravioto and DeLicardie selected from the remaining 210 children a matched sample of 19 children for a control group. The results indicated that at six months of age the malnourished children were living in homes much lower in stimulation and support for development than were matched controls. An examination of the home environment scores of the same children were also made when the children were 48 months old. The picture at 48-months of age was essentially the same: the malnourished children were living in less stimulating homes than were control children during their period of recovery from malnutrition. These data offer impressive support for the principle that the social environment must be considered in future research on malnutrition. What is especially exciting from the Guatemalan data is that scores on the Inventory could have been used as an effective means of screening families for purposes of primary prevention. A cutting point could have been established (a HOME score of around 32 for the Cravioto and DeLicardie sample) which would yield a minimum of either false positives or false negatives when used to select those families that could benefit from a primary prevention program and those that could not. Very similar data have been reported by Richardson (1972) using another index of environmental adequacy.

The HOME Inventory (72-item version) was also employed in the Chase and Martin (1970) study of undernutrition and child development. 19

children with a primary diagnosis of generalized undernutrition provided the chief focus of the investigation. The mean HOME scores of these children was 8 points lower than the mean HOME scores of 19 control children from similar SES backgrounds. Such findings corroborate those reported by Cravioto and DeLicardie (1972). In general, the environmental characteristics measured appear to provide a kind of early warning system for the eventual development of malnourishment.

Combining Environmental Measures

In his sophisticated investigation of environmental effects on educational and cognitive attainment, Jordan (1976) used three means of assessing environmental quality (SES, HOME, and the Coddington Scale). The Coddington Scale (1972) measures the amount of "change" in a child's life via the occurrence of such events as divorce of parents, birth of a sibling, moving, etc. These events are then translated into "life change" units with some events assigned greater weight than others.

The 165 St. Louis children who took part in the longitudinal study were assessed with the WRAT reading achievement scale and the Raven's Coloured Progressive Matrices. An interaction regression procedure was used to gauge the impact of the environment on these two instruments. Results demonstrated a significant relation between environment and development. Perhaps more importantly-- interactions were observed between the three environmental measures in terms of their relation to

cognitive competence. Certain aspects of the environment appeared significantly related to the criterion developmental measures only when certain other environmental measures reach a particular level. To be more specific, among those whose SES score were low, scores on the WRAT were significantly related to the HOME scores.

Cross-Validation

Hollenbeck (1978) attempted to cross-validate the HOME Inventory on 70 mother-infant dyads from a primarily rural area in the state of Washington. The home was assessed when the children were 6 months old. Results showed that the HOME scores were significantly correlated with several socioeconomic status indices. Predictable relations with age were also noted.

Genetic Mediation

Recent research has demonstrated that measures of the environment show genetic mediation. Braungart, Fulker and Plomin (1992) in their study examined resemblance of 105 nonadoptive and 85 adoptive sibling pairs from the Colorado Adoption Project on an objective measure of the environment (Home Observation for Measurement of the Environment, HOME). Each sibling's home environment was assessed at 12 and 24 months of age. Nonadoptive sibling correlations were greater than those for adoptive

sibling pairs at both ages, suggesting genetic contributions on the HOME. In addition, they explored the possibility that bivariate associations between environment and outcome measures may be mediated genetically by using the HOME and Bayley's Mental Development Index (MDI). Phenotypic and cross-sibling correlations were greater for nonadaptive siblings than for adoptive pairs at age 2, suggesting genetic mediation of the HOME-MDI association.

In another study Coon, Fulker, DeFries and Plomin (1990) says that family environment may be related to childhood cognitive abilities either directly through environmental transmission or indirectly through correlations with parental genotypes. Using the methodology of quantitative behavioral genetics, the magnitude of such effects can be determined. In the present analysis, these relations were investigated using measures of the home environment obtained from infancy through 7 years of age and WISC-R full scale IQ at age 7 on a sample of 153 adoptive and 136 nonadoptive families. Some aspects of the home environment, including activity-recreation orientation measured by the Moos FES scales and organized environment measured by the Caldwell HOME Inventory, were found to have significant direct environmental effects on 7-year-old cognitive ability. However, ostensible environment-development relations for most measures were due to indirect genetic mediation.

Family Environment Studies

Using the Inventory of Home Stimulation to assess the environments

of 77 infants, Elardo, Bradley, and Caldwell (1975) reported some aspects of the home environment measured at different ages that correlated with the childs Stanford-Binet IQ at 36 months. The variable "Provision of Appropriate Play Materials", "Organization of Physical and Temporal Environment", and "Maternal Involvement with Child" when assessed at 6 or 12 most recent home assessments showing the highest correlations, as would be expected. It is interesting to note that the appropriateness of the play materials available to the child was again found to be a highly significant variable, continuing its importance beyond the first half of the first year of life found in the Yarrow et al. (1975) investigation. Assessment of the home environment at 24 months indicated the importance of the variables already mentioned but showed that except for"Provision of Appropriate Play Materials", the two variables "Opportunities for Variety in Daily Stimulation" and "Emotional and Verbal Responsivity of Mother" correlated most highly with IQ at 36 months. The authors concluded that by 24 months, children are better able to structure their own activities as long as appropriate opportunities exist in their environments, making the organization of activities by others less important.

In evaluating change in children's level of achievement from 6 months (Bayley scale) to 36 months. (Stanford-Binet test), Bradley and Caldwell (1976) found these same variables to be quite highly related to changes in intellectual level. These data are of particular interests, since the level of achievement in infancy did not correlate as highly with later IQ as these environmental variables.

Maternal Social Suport

Jacobson and Frye (1991) in a study used an experimental format to evaluate the influence of maternal social support on the development of attachment. 46 WIC (Women, Infant, Children) primigravidas were randomly assigned to an experimental or control condition. Volunteer coaches, trained to provide maternal support and information, met with experimentals prenatally and during the first postpartum year. Experimentals and controls did not differ on demographics, ego level, verbal ability, affect, or perceived social support. At 14 months, experimental infants scored higher on an Attachment Ratings cluster from Waters an%wDeane's new Q-sort procedure. This cluster was more sensitive than a Criterion Sort measure in detecting the effect of the manipulation and as or more sensitive to maternal affect, perceived support, and the HOME. These findings provide experimental evidence regarding the importance of social support on infant attachment and support for an alternative approach for reducing data from the attachment Q-sort.

Mother's social support, their instrumental use of extended family members and of professionals for help, and their sense of personal control were examined as predictors of parenting skill by Stevens and Bakeman (1988) using the HOME Inventory for families of Infant and Toddlers in 3 groups of low-income women. Separate regression models were generated for black adult mothers, white adult mothers, and black teen mothers, all of whom had at least 1 infant. Black teen and white adult mothers who sought help with child-rearing problems from extended family

members were more skillful parents. Among white mothers, use of professionals for help with child-rearing problems and mothers' sense of internal control were also significant predictors. Black adult mothers' parenting skill was predicted only by locus of control. These prediction models suggest that in 2 of the groups, social ties to significant others were the linkages through which child-rearing information flowed to affect parenting behaviour.

Others

A factor analysis was conducted on Home Observation for Measurement of the Environment (HOME) item scores of low-income black and white urban mothers of infants 13 to 30 months of age by Reynold and Lee (1991) to determine the extent to which the existing subscales were evident in this factor analysis. Emotional and Verbal Responsivity, and Avoidance of Punishment were apparent as distinct, independent factors. Items from three other subscales (Play Materials, Maternal Involvement, and Variety), which reflected concept development toys, maternal involvement in children's play, and story reading activities loaded on a third factor designated here as Support for Intellectual Development. The HOME's predictive ability with respect to intellectual development was dependent most on items reflecting the materials for learning provided by the mother and her instrumental support for developmental advance.

OBJECTIVES

As, described earlier in this chapter, a lot of work has been carried out in different areas on the HOME Inventory (Infant version) in the West. But, this stands for the West only as no such work is carried out in Pakistan. The goals of the present research are as follows:

a. To use HOME Inventory (Infant version) in our culture i.e., with Pakistani sample so as to see its applicability/generalizability here.

b. To find out if the six sub-scales of HOME Inventory i.e., (i) Emotional and Verbal Responsivity of Mothers; (ii) Acceptance of Child's Behavior (previously entitled Avoidance of Restriction and Punishment); (iii) Organization of the Physical and Temporal Environment; (iv) Provision of Appropriate Play Materials; (v) Maternal Involvement with Child; and (vi) Opportunities for Variety in Daily Stimulation has an equal applicability and generalizability in Pakistan.

c. To find out if there is significant gender differences among children on the HOME Inventory.

d. To see if there is difference in the home envirronment for infants differing in terms of their parental socioeconomic status (SES).

e. To see if there is difference in the demographic variables age group, fathers' and mothers' education, fathers' and mothers' occupations, birth order of the child, number of male/female siblings, language used in the family, current child care

arrangements, family size and type.

f. Intercorrelations of the six sub-scales of HOME Invenoty.

g. Reliability of the Inventory.

CHAPTER II

METHOD

The study was carried out at two stages:

I. Pilot Study

II. Main Study

I. Pilot Study

Purpose

(i) The pilot study was carried out to try out the Urdu version of the interview schedule used during the observation.

(ii) To bring changes in the interview schedule in the items which were culturally biased.

Sample

The tryout of HOME inventory was done on 10 infants (5 boys and 5 girls). They were from 10 families, taken randomly. These families were mostly in neighbourhood, among relatives or family friends.

Instrument

The HOME (Home Observation for Measurement of the Environment) Inventory (Infant/Toodler version) developed by Bradley and Caldwell

(1984) was used. It consist of 45 items (Appendix-C), scored in binary (yes - no) fashion and composed of six sub-scales namely: (i) Emotional and Verbal Responsivity of Mothers; (ii) Acceptance of Child's Behavior; (iii) Organization of the Physical and Temporal Environment; (iv) Provision of Appropriate Play Materials; (v) Maternal Involvement with Child; and (vi) Opportunities for Variety in Daily Stimulation. The HOME Inventory is an observation/interview technique that assesses the quality of the social and emotional stimulation avsilable to a child in the home environment.

Procedure

For the purpose of data collection the families were contacted first, i.e., the visit were made with careful advance arrangements. These advance contacts were made via telephone or through a prior visit before administration. The families were contacted first and the purpose was made clear to them not only to make the mother at ease but also the time of the visit arranged such which was convenient for them. Moreover, it was told to the mothers that the home visit would be made at the time when the child was awake, as our purpose was to observe the child, behaving in his/her natural environment and this visit would last for about an hour.

Results

The results of the pilot study showed that this instrrument could be used for our research purpose.

II. MAIN STUDY

Sample

A sample of 50 infants (25 males and 25 females) were taken from middle class socio-economic status (SES). They were from grades 11 to 19 further divided into two categories: (i) Lower-Middle Class: from grade 11 to 16 or and (ii) Upper- Middle Class from grades 18 to 19, or the family monthly income equivalent to these grades . Within these grouping 50% were selected in the lower-middle and 50% in the upper-middle SES. Tables 2:1 to 2:11 describe the demographic details of the sample.

TABLE 2:1
Age and Sex

Age (in months)	SEX		
	Boys (N=25)	Girls (N=25)	Total (N=50)
4-12	3	4	7
13-24	8	7	15
25-36	14	14	28

TABLE 2:2
Socioeconomic Status (SES)

SES	Boys (N=25)	Girls (N=25)	Total (N=50)
Lower-middle SES	14	11	25
Upper-middle SES	11	14	25

TABLE 2:3
Parent's Education

Education	Father (N=50)	Mother (N=50)	Total (N=100)
Illiterate	-	5	5
Primary	-	7	7
Middle	-	1	1
Matric	9	16	25
F.A/F.Sc.	6	7	13
B.A/B.Sc.	15	9	24
M.A/M.Sc.	5	2	7
M.Phil/Ph.D.	1	1	2
MBBS/Enginn./LLB/CSS	14	2	16

TABLE 2:4
Parent's Occupation

Occupations	Father (N=50)	Mother (N=50)	Total (N=100)
Teaching	-	4	4
Professional	11	2	13
Armed Forces	1	-	1
Business	9	-	9
Office Job (Supporting Staff)	21	2	23
Office Job (Executives)	8	-	8
None/Housewife	0	42	42

Table 2:5
Birth Order

Birth Order	Boys (N=25)	Girls (N=25)	Total (N=50)
Only Child	3	6	9
Eldest	3	2	5
Middle	3	2	5
Youngest	16	15	31

TABLE 2:6
Number of Male Siblings

Siblings	Boys (N=25)	Girls (N=25)	Total (N=50)
1	8	11	19
2	11	4	15
3	4	6	10
4	2	3	5
5	-	1	1

TABLE 2:7
Number of Female Siblings

Siblings	Boys (N=25)	Girls (N=25)	Total (N=50)
1	5	12	17
2	10	5	15
3	4	6	10
4	5	-	5
5	1	2	3

TABLE 2:8
Family Type

Family Type	Boys (N=25)	Girls (N=25)	Total (N=50)
Nuclear	18	15	33
Extended	7	10	17

TABLE 2:9
Family Size

Family Size	Boys (N=25)	Girls (N=25)	Total (N=50)
3-5	7	7	14
6-8	15	15	30
9+	3	3	6

TABLE 2:10
Languages used in the family

Languages	Boys (N=25)	Girls (N=25)	Total (N=50)
Urdu	17	20	37
Punjabi	3	2	5
Sindhi	2	0	2
Pushto	2	2	4
Baluchi	-	-	-
Hindko	1	1	2
English	-	-	-

TABLE 2:11
Current Child Care Person

Persons	Boys (N=25)	Girls (N=25)	Total (N=50)
Mother	24	23	47
Other family member	0	1	1
Servant without family members	1	1	2

Instrument

Demographic data sheet: The demographic data sheet included the information about the following: sex, age and birth order of the child; number of male/female siblings with sex, age and education; SES of the family; parental age, occupation, education; current child care arrangements; family type, size, and language used in the family (Annexure B).

HOME Inventory: The HOME Inventory is designed to assess the quality of stimulation and support available to a child in the home environment. Information needed to score the Inventory is obtained through direct observation and interview done in the home with mother or other primary caregiver of the child. The Inventory consist of 45 items, scored in binary (yes - no) fashion and composed of six sub-scales namely:

(i) Emotional and Verbal Responsivity of Mothers;

(ii) Acceptance of Child's Behavior;

(iii) Organization of the Physical and Temporal Environment;

(iv) Provision of Appropriate Play Materials;

(v) Maternal Involvement with Child; and

(vi) Opportunities for Variety in Daily Stimulation.

The items are composed to represent these areas: frequency and stability of adult contact, amount of developmental and vocal stimulation, on motor and exploratory behavior, types of play materials available, and home characteristics indicative of parental concern witth achievemtn. HOME Inventory have been found to be quite a reliable and valid inventory (Caldwell and Bradley, 1984; Elardo & Bradley, 1981).

Procedure

Selected families were contacted in advance explaining the purpose of the visits. The mothers who participated in this research were emphasized that we wished usual daily routine of the child. Efforts were made to disrupt family patterns of interaction as little as possible. Once the mothers' agreed to participate in it all subsequent observation/interview took place in their homes. The inventory was administered at a time when the child was awake and could be observed in interaction with their mothers' or primary caregivers. An attempt was made to do so in a manner that is as "natural" and unobtrusive as possible, so as to allow normal behavior among family members to occur. There was also no restriction on the family members if they were present. The items in the inventory are based totally on observation of what goes on at the time of the visit. However, in order to cover certain important aspects not likely to occur during the visit informants statements were recorded. About one third of such items are based upon parental report or interview, therefore information about them were collected from the mother or other caregiver. These included attitude of the parent's towards the child's discipline, recreation etc. Information regarding a wide range of demographic details of the family was collected through interview.

The observation/interview period lasted about an hour. In the beginning 10 extra minutes constituted a warm up or rapport development period which was not included in the time of the study for HOME Inventory.

CHAPTER III

RESULTS

The t-test was computed on the total score of HOME Inventory and also the six subscales of it for determining the difference between socio-economic status, gender, and family type. Tables 1 to 3 shows their mean, SD, t-value and significance level.

Table 1

The Mean, SD, and t-values of the HOME Inventory (subscales and total) comparing upper-middle and lower-middle socioeconomic status (SES)

	Lower-middle SES			Upper-middle SES			
Subscales	*n*	*Mean*	*S.D*	*Mean*	*S.D*	*t*	*p*
Responsivity	11	7.04	1.51	9.12	1.05	-5.64	.000*
Acceptance	8	5.08	1.47	6.64	.91	-4.52	.000*
Organization	6	3.00	1.04	4.56	1.19	-4.93	.000*
Play materials	9	3.16	1.57	5.52	1.74	-5.04	.000*
Involvement	6	2.12	.97	3.96	1.46	-5.25	.000*
Variety	5	2.44	.87	3.40	.58	-4.60	.000*
Total	45	22.84	4.44	33.20	4.05	-8.62	.000*

df=48 *p<.001

The results in table 1 shows a highly significant difference for the two SES groups (upper-middle and lower-middle) on HOME Inventory (total and subscales) at p<.001. There mean scores indicate that the families from upper-middle ses scored higher on HOME Inventory (total and subscales) as compared to the families from lower-middle SES.

Table 2

The Mean, SD, and t-values of the HOME Inventory (subscales and total) comparing gender (boys and girls)

		Boys		Girls			
Subscales	n	Mean	S.D	Mean	S.D	t	p
Responsivity	11	7.76	1.69	8.40	1.61	-1.37	.176
Acceptance	8	5.88	1.13	5.84	1.72	.10	.923
Organization	6	3.68	1.31	3.88	1.42	-.52	.608
Play materials	9	4.64	2.02	4.04	2.03	1.05	.300
Involvement	6	2.88	1.56	3.20	1.52	-.73	.468
Variety	5	2.88	.88	2.96	.89	-.32	.751
Total	45	27.72	6.26	28.32	7.26	-.31	.756

df=48 *p<.05

The result in table 2 shows that there is no significant difference in gender on the HOME Inventorry. This shows that the parents provide same type of home envirronment to boy & girl child.

TABLE 3

The Mean, SD, and t-values of the HOME Inventory (subscales and total) comparing family type (neclear & extended)

		Lower-middle SES		Upper-middle SES			
Subscales	*n*	*Mean*	*S.D*	*Mean*	*S.D*	*t*	*p*
Responsivity	11	7.85	1.44	8.53	2.00	-1.25	.225
Acceptance	8	5.73	1.44	6.12	1.45	-.90	.374
Organization	6	3.45	1.28	4.42	1.33	-2.45	.020*
Play materials	9	4.06	2.02	4.88	1.99	-1.37	.179
Involvement	6	2.79	1.52	3.53	1.51	-1.65	.109
Variety	5	2.62	.95	3.12	.69	-1.27	.121
Total	45	26.60	6.32	30.59	6.90	-1.94	.061

df=48 *p<.05

Table 3 shows no significent difference in the total HOME

Inventorry. Out of the subscales the only significant difference was found in organization at $p<.05$.

Inter correlations among the HOME subscales and KR-20 for the total & subscales of HOME were computed. These are given in tables 4 and 5.

Table 4

Intercorrelations among HOME subscales at 12, 24, and 36 months of age

4-12 months subscales

Subscales	II	III	IV	V	VI
I. Responsivity	.5728	.5705	.4148	.4941	.4583
II. Acceptance	-	.4183	.4752	.4383	.3819
III. Organization		-	.9655**	.6460	.8672*
IV. Play materials			-	.5752	.8555*
V. Involvement				-	.7332

13-24 months subscales

Subscales	II	III	IV	V	VI
I. Responsivity	.3727	.4020	.1177	.4091	.4711
II. Acceptance	-	-.1966	.1151	.3633	.2543
III. Organization		-	.3682	.1214	.1867
IV. Play materials			-	.1401	.2498
V. Involvement				-	.0370

25-36 months subscales

Subscales	II	III	IV	V	VI

I. Responsivity	.7640**	.5683**	.5812**	.4809*	.4230
II. Acceptance	-	.3807	.4694*	.3491	.3424
III. Organization		-	.6837**	.6793**	.5713**
IV. Play materials			-	.6541**	.7020**
V. Involvement				-	.4942*

1-tailed signif. *p-.01 **p-.001

Table 4 shows the Intercorrelations among HOME subscales with the age of child significant at p<.01 and p<.001.

Table 5

Internal Consistency Coefficients for the HOME Inventory for families of Infants

Subscales	KR-20
I.Responsivity	.1893
II. Acceptance	.1972
III.Organization	.4170
IV. Play materials	.7254
V. Involvement	.7002
VI. Variety	.1451
Total	.8293

N=50

Table 5 shows that the results are highly significant in the total and two subscales i.e. Play material and Involvement of the HOME Inventory for the infant families.

Analysis of variance (ANOVA) was computed on HOME Inventory for determining the differences between children of different ages group, fathers' and mothers' education, fathers' and mothers' occupations, birth order of the child, number of male/female siblings, language used in the family, current child care arrangements and family size. In these variables the results which were significant with fathers' education are given in tables 6 to 9.

Table 6

Difference in the total scales of HOME Inventory: Fathers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	834.032	5	166.808	5.338	.0006*
Within Groups	1374.948	44	31.249		
Total	2208.980	49			

*$p<.05$

Table 6 shows that there is significant difference in total scales of HOME Inventory with fathers' different education. Their mean score indicate that the fathers' with professional degree (i.e. MBBS/Engin/LLB/CSS) provides better social and emotional stimulation to a child in the home environment than the father's with other educational qualifications.

Table 7

Difference in the subscale I "Responsivity" of the HOME Inventory: Fathers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	56.700	5	11.340	6.318	.0002*
Within Groups	78.980	44	1.795		
Total	135.680	49			

*p<.05

Table 7 shows that there is significant difference in the subscale I "Responsivity" of HOME Inventory with father's education. The mean scores indicate that the father's with professional degree are more responsive (verbally, physically and emotionally) towards their children.

Table 8

Difference in the subscale II "Acceptance" of the HOME Inventory: Fathers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	45.898	5	9.180	7.197	.0001*
Within Groups	56.122	44	1.275		
Total	102.020	49			

*$p<.05$

Table 8 shows that there is significant difference in the subscale II "Acceptance" of HOME Inventory with fathers' education. The mean scores again indicate that the fathers' having professional degree provides an environment containing a minimum of social restriction on exploratory and motor behaviour.

Table 9

Difference in the subscale IV "Play materials" of the HOME Inventory: Fathers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	56.469	5	11.294	3.433	.0105
Within Groups	144.751	44	3.290		
Total	201.220	49			

*$p<.05$

Table 9 shows that there is significant difference in the subscale "Play materials" of HOME Inventory with fathers' education. The mean scores indicate that the fathers' with intermediate education provides more play material to their children.

In the other three subscales of the HOME Inventory i.e.,

Organization, Involvement and Variety no significant difference with different, fathers' education was found.

Tables 10 to 14 shows significant differences on the total and subscales of HOME Inventory with mothers' education.

Table 10

Difference in the total scales of the HOME Inventory: Mothers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	1077.901	8	134.738	4.884	.0003*
Within Groups	1131.079	41	27.587		
Total	2208.980	49			

*$p<.05$

Table 10 shows that there is a significant difference in the total scales of HOME Inventory with different mothers' education. The mean scores indicate that the mothers' having Master's degree provides an environment which fosters maximum development to their child.

Table 11

Difference in the subscale I "Responsivity" of the HOME Inventory: Mothers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	50.471	8	6.309	3.036	.0090*
Within Groups	85.209	41	2.078		
Total	135.680	49			

*$p<.05$

Table 11 shows that there is significant difference in the subscale "Responsivity" of the HOME Inventory with mothers' education. The mean scores indicate that the mothers' having M.A/M.Sc degree are more responsive (verbally, physically and emotionally) to their children.

Table 12

Difference in the subscale III "Organization" of the HOME Inventory: Mothers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	30.515	8	3.814	2.604	.0212*
Within Groups	60.065	41	1.465		
Total	90.580	49			

*p<.05

Table 12 shows that there is significant difference in the subscale "Organization" of HOME Inventory with mothers' education. The mean scores indicate that the mothers' having professional degree organizes the environment (physical and temporal) in a way which provides their child with more cognitive, emotional and social development.

Table 13

Difference in the subscale IV "Play materials" of the HOME Inventory: Mothers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between groups	72.911	8	9.114	2.912	.0114*
Within Groups	128.309	41	3.129		
Total	201.220	49			

*p<.05

Table 13 shows that there is a significant difference in the subscale "Play materials" of the HOME Inventory with the mothers' education. The mean scores indicate that the mothers' having M.A/M.Sc degree provides more appropriate play materials to their children foser their cognitive and sensory-motor development.

Table 14

Difference in the subscale V "Involvement" of the HOME Inventory: Mothers' Education-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	39.506	8	4.938	2.650	.0193*
Within Groups	76.414	41	1.864		
Total	115.920	49			

*p<.05

Table 14 shows that there is significant difference in the subscale "Involvement" of HOME Inventory with mothers' education. The mean scores indicate that the children whose mothers' possess education of as Master's degree have more involvement with them as compared to the ones with less education.

The difference was not found in the other two subscales of HOME Inventory i.e. Acceptance and Variety.

Tables 15 to 21 below gives the difference of the (total and subscales) of HOME Inventory with differnt Fathers' occupation.

Table 15

Difference in the total scales of HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	854.530	4	213.633	7.098	.0002*
Within Groups	1354.450	45	30.099		
Total	2208.980	49			

*p<.05

Table 15 shows that there is significant difference in the total scales of HOME Inventory with different fathers' occupation. The mean scores indicate that the fathers' executive jobs provides better environment to their children as compared with those in others occupations.

Table 16

Difference in the subscale I "Responsivity" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between groups	32.477	4	8.119	3.540	.0135*
Within Groups	103.203	45	2.293		
Total	135.680	49			

*p<.05

Table 16 shows that there is significant difference in the subscale "Responsivity" of the HOME Inventory with fathers' occupation. The mean scores indicate that the fathers' working in the Armed Forces are more responsive (verbally, physically and emotionally) to their children.

Table 17

Difference in the subscales II "Acceptance" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S.*	*F*	*P*
Between groups	19.166	4	4.791	2.602	.0484*
Within Groups	82.854	45	1.841		
Total	102.020	49			

*p<.05

Table 17 shows that there is significant difference in the subscale "Acceptance" of HOME Inventory with fother's occupation. The mean scores indicate that again the fathers' working in the Armed Forces imposes less restriction on their children and provides more acceptance of their behaviour.

Table 18

Difference in the subscale III "Organization" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	21.446	4	5.361	3.490	.0145*
Within Groups	69.134	45	1.536		
Total	90.580	49			

*p<.05

Table 18 shows that there is significant difference in the subscale "Organization" of HOME Inventory with fathers' occupation. The mean scores indicate that the fathers' with executive jobs organizes their environment (physical and temppral) which helps in the better development of their children.

Table 19

Difference in the subscale IV "Play materials" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	59.073	4	14.768	4.675	.0031*
Within Groups	142.14	45	3.159		
Total	201.220	49			

*p<.05

Table 19 shows that there is significant difference in the subscale "Play materials" of HOME Inventory with fathers' occupation. The mean scores indicate that the fathers' with executive jobs closcly followed by the businessman provides more play materials/toys to their children as compared to the ones in other occupations.

Table 20

Difference in the subscale V "Involvement" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	30.907	4	7.727	4.090	.0065*
Within Groups	85.013	45	1.889		
Total	115.920	49			

*p<.05

Table 20 shows that there is significant difference in the subscale "Involvement" of HOME Inventory with fathers' occupation. The mean scores indicate that the fathers' who have executive jobs have more involvement with the children as compared with the fathers' in other occupations.

Table 21

Difference in the subscale IV "Variety" of the HOME Inventory: Fathers' Occupation-wise

Source of Variance	*S.S*	*d.f.*	*M.S.*	*F*	*P*
Between Groups	7.917	4	1.979	2.992	.0284*
Within Groups	29.763	45	.661		
Total	37.680	49			

*p<.05

Table 21 shows that there is significant difference in the subscales "Variety" of HOME Inventory with fathers' occupation. The mean scores indicate that the fathers' having executive jobs provides more variety of stimulation in their homes.

ANOVA was computed to find out the difference between the (subscales & total) of HOME Inventory with mothers' occupation. Out of the six subscales and total the result were significant only on one subscale i.e "Involvement" which are given in table 22.

Table 22

Difference in the subscale V "Involvement" of the HOME Inventory: Mothers' Occupation-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	18.444	3	6.148	2.901	.0449*
Within Groups	97.476	46	2.119		
Total	115.920	49			

*p<.05

Table 22 shows that there is significant difference in the subscale "Involvement" of HOME Inventory with mothers' occupation. The mean scores indicate that the mothers' who are professional (doctor etc.) have more involvement with their children as compared to the ones in other occupations.

Tables 23 to 25 show significant differences (total and subscales) of the HOME Inventory with the birth order of the child.

Table 23

Difference in the total scales of HOME Inventory: Birth Order-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	453.209	3	151.070	3.958	.0136*
Within Groups	1755.771	46	38.169		
Total	2208.980	49			

*p<.05

Table 23 shows that there is a significant difference in the total scales of HOME Inventory with birth order of the child. The mean scores indicate that the eldest children in the family are provided with more stimulation in the home as compared with the middle and younger children.

Table 24

Difference in the subscale III "Organization" of the HOME Inventory: Birth Order-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	19.549	3	6.516	4.220	.0102*
Within Groups	71.031	46	1.544		
Total	90.580	49			

*p<.05

Table 24 shows that there is a significant difference in the subscale "Organization" of HOME Inventory with birth order of the child. The mean scores indicate that the eldest children in the family are provided with better environment (physical and temporal) then the middle or younger children.

Table 25

Difference in the subscale IV "Play materials" of the HOME Inventory: Birth Order-wise

Source of Variance	*S.S*	*d.f*	*M.S*	*F*	*P*
Between Groups	64.981	3	21.660	7.313	0004*
Within Groups	136.239	46	2.962		
Total	201.220	49			

*p<.05

Table 25 shows that there is significant difference in the subscale "Play materials" of HOME Inventory with birth order of the child. The mean scores indicate that the eldest children in the family has more play materials as compared with middle or younger children.

In the other four subscales of HOME i.e. Responsivity, Acceptance, Involvement and Variety, the results were not significant with the birth order of the child.

CHAPTER IV

DISCUSSION

The purpose of the present study was to use the HOME (Home Observation for Measurement of the Environment) Inventory (Infant version) with the Pakistani sample so as to see its applicability/generalizability here. Also to find out if there is difference in the six subscales and total of HOME with the various demographic variables/characteristics, gender (boys & girls) and SES (upper-middle & lower-middle) of the family.

As the SES of families is known to be a factor in determining the nature of family life and kinds of interaction among family members. The t-test was computed for it in which the results indicated that in SES the upper-middle significantly differed from the lower-middle on the HOME Inventory (sub-scales and total) at $p<.001$. This can be explained as such that out of the six sub-scales of HOME i.e. Responsivity, Acceptance, Organization, Play materials, Involvement and Variety the difference were significant in all these subscales at $p<.001$ for the two groups. This shows that the parents of the upper-middle SES are more responsive (verbally, physically and emotionally) to their child, they imposes a minimum of social restriction on exploratory and motor behavior, they provide better environment (physical and temporal), have more involvement, also provides more play materials/toys etc and have variety in daily stimulation for their children as compared with the

children of lower-middle SES. It can further be interpreted as such that usually the caregivers (mostly the mothers) in our sample from the upper-middle SES talked more to their infants (children) than did lower-middle SES caregivers. Also the higher SES infants spend more time in intellectual tasks i.e. with books, blocks and different types of toys or play materials which facilitated the coordination of sensory-motor processes and provided by a play environment permitting their utilization.

The t-test was also computed for gender (boys & girls). The results shows that there were no gender differences or in other words no sex differences have been found which shows that the HOME Inventory has no sex bias.

This can be interpreted as such that almost all of the investigators conducted analysis comparing the genders. In the investigations using the HOME scales there were no significant differences in the correlations between males and females (Bradley & Caldwell, Gott fried & Gottfried; Barnard, Bee, & Hammond; Siegal).

ANOVA was computed to find out the difference between the HOME Inventory (sub-scales & total) with the parents education and occupation. The result were significant at $p<.05$ for the fathers' education indicating that the educated fathers' were more responsive, provided an environment containing a minimum of social restriction on exploratory and

motor behavior, and provides more play materials which helps in the cognitive and intellectual development of a child. The results on the other hand were also significant at $p<.05$ for the mothers' education for the total & subscales of HOME i.e Responsivity, Organization, Play material and Involvement. This can be interpreted as such that the educated mothers' are more responsive (verbally, physically and emotionally) to their child, provides better organization of the physical and temporal environment have more involvement and contact with the child and also provides more play materials to their children as compared with the less educated mothers.

ANOVA was computed to find out the difference between the subscales and total of HOME Inventory with the Birth order of the child. The result showed significant difference for the total scales of HOME as well as in the subscale Organization and Play materials at $p<.05$. The mean scores indicated that the child who is the eldest in the family is provided with more stimulation in the home; (ii) a better physical and temporal environment; and (iii) more play materials, toys etc. as compared with the middle-order or younger sibling of the family i.e who are later born.

The relationship of birth order to home environment also showed a generalizable finding. In the studies investigating this relationship, the data indicated that firstborn, compared to later-borns, received more intellectually stimulating environment. Bradley and Caldwell (1984) reported that a substantial relationship exists between birth order and HOME scores at 12-and 24-months. Gottfried and Gotttfried (1984) found

differences between first and later-borns on the HOME at 15 and 39 months, PHSI (I-III) at 15 months, and Family Environmental Scale (FES) at 36 months.

Thus, the evidence is reliable that during infancy and the preschool years, firstborn compared to later-borns have environments that are advantaged for enhancing intellectual skills. This holds for children differing in race and SEA, and who differed in gestational age. For the three studies using the HOME, there were no birth-order differences found on any scale across all three studies. However, differences were found in two of three studies for play materials, organization, maternal involvement, and variety of stimulation. There were no birth order differences in any of the three studies for maternal responsivity and for avoidance of restriction and punishment.

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HOME INVENTORY FOR FAMILIES OF INFANTS AND TODDLERS

Bettye M. Caldwell and Robert H. Bradley

Child's Name_____ Date of Birth_____ Age___ Sex_____

Father's Name _____ Date _____

Family Composition:

Sr. No	Name	Relation ship to child	Sex	Age	Education	Occupation	Grade/ Income

Language Spoken_____ Current child care arrangements_____

Address_____

_____

SUMMARY

Subscale	Score	Lowest Middle	Middle Half	Upper Fourth
I		0-6	7-9	10-11
II		0-4	5-6	7-8
III		0-3	4-5	6
IV		0-4	5-7	8-9
V		0-2	3-4	5-6
VI		0-1	2-3	4-5
TOTAL SCORE		0-25	26-36	37-45

HOME Inventory*

...ace a plus (+) or minus (-) in the box alongside each item if the behavior is observed ...ring the visit or if the parent reports that the conditions or events are characteristic ... the home environment. Enter the subtotal and the total on the front side of the Record ...eet.

... Emotional and Verbal RESPONSIVITY	
... Parent spontaneously vocalized to ...ild twice.	
... Parent responds verbally to child's ...calizations.	
... Parent tells child name of object ...r person during visit.	
... Parent's speech is distinct and ...udible.	
... Parent initiates verbal exchanges ...ith visitor.	
... Parent converses freely and easily.	
... Parent permits child to engage in ...messy" play.	
... Parent spontaneously praises ...hild at least twice.	
... Parent's voice conveys positive ...eelings toward child.	
10. Parent caresses or kisses child ...t least once.	
11. Parent responds positively to ...praise of child offered by visitor.	
Subtotal	
II. ACCEPTANCE of Child's Behavior	
12. Parent does not shout at child.	
13. Parent does not express annoyance with or hostility to child.	
14. Parent neither slaps nor spanks child during visit.	
15. No more than one instance of physical punishment during past week.	
16. Parent does not scold or criticize child during visit.	
17. Parent does not interfere or restrict child more than 3 times.	
18. At least ten books are present and visible.	
19. Family has a pet.	
Subtotal	
III. ORGANIZATION of Environment	
20. Substitute care is provided by one of three regular substitutes.	
21. Child is taken to grocery store ...t least once/week.	
22. Child gets out of house at least four times/week.	
23. Child is taken regularly to d... ...tor's office or clinic.	
24. Child has a special place for toys and treasures.	
25. Child's play environment is safe.	
Subtotal	

IV. Provision of PLAY MATERIALS	
26. Muscle activity toys or equipment.	
27. Push or pull toy.	
28. Stroller or walker, kiddie car, scooter, or tricycle.	
29. Parent provides toys for child during visit.	
30. Learning equipment appropriate to age--cuddly toys or role-playing toys.	
31. Learning facilitators--mobile, table and chairs, high chair, play pen.	
32. Simple eye-hand coordination toys.	
33. Complex eye-hand coordination toys (those permitting combination).	
34. Toys for literature and music.	
Subtotal	
V. Parental INVOLVEMENT with Child	
35. Parent keeps child in visual range, looks at often.	
36. Parent talks to child while doing household work.	
37. Parent consciously encourages developmental advance.	
38. Parent invests maturing toys with value via personal attention.	
39. Parent structures child's play periods.	
40. Parent provides toys that challenge child to develop new skills.	
Subtotal	
VI. Opportunities for VARIETY	
41. Father provides some care daily.	
42. Parent reads stories to child at least 3 times weekly.	
43. Child eats at least one meal per day with mother and father.	
44. Family visits relatives or receives visits once a month or so.	
45. Child has 3 or more books of his/her own.	
Subtotal	
TOTAL SCORE	

*For complete wording of items, please refer to the Administration Manual.