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**MOTHER-INFANT BONDING
THEORY AND PRACTICE**

by

LYNDA CAROLL BERTRAND, B.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Master of Arts
Department of Sociology and Anthropology

Carleton University

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**MOTHER-INFANT BONDING
THEORY AND PRACTICE**

submitted by Lynda Carroll Bertrand, B.A.
in the partial fulfillment of the requirements for
the degree of Master of Arts

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ABSTRACT

In 1976, Klaus and Kennell proposed that there exists a brief 'sensitive' period immediately after birth for establishing mother-infant bonding. Moreover, interruption of the bonding process may lead to suboptimal child development and disturbed mother-infant relationships, including abuse and neglect. Although based on flawed research, bonding has become part of the normal birth routine in most hospitals, and is used in the evaluation and prevention of child abuse. This thesis explores the construction and consequences of a scientific idea: how it was accepted despite a dearth of valid research, the social and political influences involved, and the practical consequences of its acceptance. The bonding research and studies on the etiology of child abuse are evaluated. The evidence does not support the brief sensitive period hypothesis or its side effects. An alternative ethological approach is suggested which emphasizes the interactive nature of the bonding process. Analysis indicates the rapid ideological co-option of the bonding thesis by multiple interest groups intent on preserving their own institutional placement in society while responding to the need for changes in social policy and practices.

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INTRODUCTION

Since the 1970s, maternal attachment has become synonymous with the theory of mother-infant bonding as proposed by pediatricians Klaus and Kennell. Their theory has not only dramatically altered the way hospital births are conducted, it is also incorporated into the diagnosis, description, and prevention of child abuse and neglect. In a series of studies, Klaus and Kennell and their colleagues (Klaus et al., 1972; Kennell et al., 1974; Klaus and Kennell, 1976; Ringler et al., 1975, 1979; de Chateau and Wiberg, 1977 a, b; de Chateau, 1980 a, b) claimed that there exists a hormonally based 'sensitive' period in the first few minutes and hours after birth during which it is necessary for mothers to have close physical contact with their newborns in order for maternal attachment to develop. The doctors were inspired by ethological research, in particular studies of rats and ungulates which showed that maternal hormones are especially powerful determinants of behavior during and after birth. For instance, female goats that are separated from their young for 5 minutes after birth will reject their infants upon being reunited with them. By analogy the animal studies were extended to human mothers. Since humans are similar to other mammals, human mothers must also have a *species-specific* sensitive period to bond with their young. If human mothers are separated from their infants during this period they too might reject their newborns. In fact,

Klaus and Kennell argued that separation was the *crucial difference* between premature and healthy full-term infants that often leads to suboptimal child development and to various forms of aberrant parental behavior, including child abuse and neglect.

Klaus and Kennell's concepts about the nature of the bonding process, including the sensitive period hypothesis, became so firmly entrenched in medical research and practice that it was 10 years before critical voices raised fundamental empirical concerns. Criticisms, when finally raised by experts in child psychology, social work, and medicine, centered on the validity and accuracy of the ethological and human research used to demonstrate the existence of the bonding process as well as the benefits of early mother-infant contact. For instance, Lamb (1983:488) argued that the animal studies do not support the notion that hormonal mechanisms play a part in the initiation of maternal behavior or that there exists a 'critical' or 'sensitive' period during which mothers need to imprint upon their young. Also, most of the early human studies were inconclusive in demonstrating any long-term effects of early bonding or of maternal separation.

The scientific method is an idealized set of rules for the creation of a particular kind of knowledge. If one follows the rules, the knowledge acquires a privileged status in many sectors of contemporary society. However, often a body of knowledge is accorded scientific status even

through the method by which it was created clearly violates the rules of empirical evidence, and despite the publication in peer evaluated journals of contrary data and critiques. This apparently has happened with Klaus and Kennell's theory of mother-infant bonding. Hence the central aim of this thesis is to try to understand how this occurred. The research purportedly supporting the sensitive period hypothesis and its side effects is examined and evaluated. The social and political influences affecting the diffusion of the sensitive period hypothesis, are analyzed, and the practical consequences of its diffusion — its effect on the assessment and treatment of mother infant pairs in hospital settings and in social work — are discussed and evaluated. Thus, this is a study of the social construction, diffusion, and consequences of flawed idea advanced as a doctrine with a firm knowledge base, derived from painstaking research.

Early Bonding Research as 'Pseudoscience':

The early bonding research, according to Arney (1980:563), "has all the characteristics of a 'pseudoscience' — a sustained process of false persuasion transacted by simulation or distortion of scientific inquiry and hypothesis testing". Viewing this research as a pseudoscience helps explain its appeal and the lack of criticisms directed toward it. As Arney states:

A pseudoscience garners no popular criticism because it serves as a kind of wish fulfillment, enabling people to discover what they

→

would like to believe. It garners no scientific criticisms because ..scientists generally do not like polemics, and when conflict occurs they usually try to minimize its importance (Arney, 1980:563).

As the bonding process was so poorly defined and poorly understood, various interests groups — the natural childbirth movement, child care educators, and parents — could use various aspects of the bonding research to further their own ends.

Indeed the sensitive period hypothesis proved to be a socially and politically useful tool. Hospital practices, presumably rooted in scientific research, had long demanded that infants be separated from their mothers immediately after birth and be placed in nurseries where they would be protected from infection. In order not to disrupt the hospital routine, infants were brought to their mothers only at scheduled intervals. As well, pregnancy and childbirth were treated as illness and therefore subjected to a whole array of technological interventions. In particular, use of anesthesia and instruments, and the induction of labour were all common features of childbirth. However, the wishes of parents, and childbirth reformers (including many doctors and nurses) conflicted with 'scientific' hospital practices and policies. Many women, influenced by the natural childbirth movement, wanted their husbands with them during birth and they also wanted their newborns with them during their stay in the hospital. As a result, during the 1960s and

1970s, many parents began to seek alternatives in home births and at alternative birth centers operated by midwives.

Bonding research provided the scientific support needed to convince the skeptical medical establishment to accommodate some of the desired changes. As Klaus and Kennell stated:

All these clinical reports suggest that the events occurring during the first hours after birth have special significance for the mother. Nursery practices in the modern hospital in the United States do not generally acknowledge this, and, instead separate mother and infant immediately after birth...If there were convincing evidence of an early sensitive period in the human being, major changes in hospital care would be necessary...(Klaus and Kennell, 1976:53).

The emphasis on early mother-infant contact appeared to give women more control over their birth experience, and it allowed them to have their newborns and other family members with them during what was often a lonely and demeaning experience. The sensitive period hypothesis also enabled obstetricians, whose livelihoods were being threatened by the natural childbirth movement, to secure women and their newborns as patients and to find a new pathology in this clientele, which only they could treat. Indeed, as the bonding research was a construction of the medical profession it would ultimately serve to protect the interests of that institution (Arney, 1980:561; Eyer, 1992:2).

An uncritical acceptance of the sensitive period hypothesis was fostered not only by the need to reform hospital practices and policies, but also by its analogical basis. Klaus and Kennell concentrated solely

on similar patterns of maternal behavior in humans and animals at the expense of diversity within and between species. Thus the relationship between human mothers and infants right after birth is no longer *similar* to the instinctual behavior of animals; they become the *same*. When applied to human caretaking, ethological data can only demonstrate a range of possibilities. The concept of a maternal bond is part of a tradition in which scientists and the public have extended biological research beyond the data to explain human behavior. Psychologists from Freud to Bowlby have used instinctual analogues to explain women's sexual and maternal behavior. Social Darwinists used Darwin's biological theories as a rationale for their advocacy of laissez government rather than policies to help the poor, who were believed to be the least fit to survive.

Throughout the 1970s and early 1980s, maternal 'bonding' quickly became institutionalized. Klaus and Kennell toured the United States giving workshops on 'bonding', and in 1976 they published their influential book, *Maternal Infant Bonding: The Impact of Early Separation or Loss on Family Development*. Dr. Benjamin Spock, and Dr. Barry T. Brazleton, two of America's most renowned childcare experts, also jumped aboard the 'bonding bandwagon'. In a series of articles in *Redbook* and *Parents Magazine* from the early 1970s to 1978, they helped to popularize the benefits of maternal bonding (Eyer, 1988:172-216). Dr.

Garbarino (1980), an expert in child protection, mounted a public relations campaign to encourage hospitals to 'actively' persuade socially and economically improvised families to opt for natural childbirth and bonding instead of the usual method of hospital child birth. As a result of such publicity campaigns, significant but diverse groups — doctors, child psychologists, social workers, and parents — embraced the notion of a 'sensitive period' for maternal bonding. For some professionals early 'bonding' became a doctrine of almost religious proportions. At the height of the bonding craze one doctor is said to have fought with nurses to take infants off respirators in the intensive care unit in order to allow mothers to hold their newborns and bond, thus jeopardizing the health of the infants (Eyer, 1992:167-168).

Due to the efforts of Klaus and Kennell, as well as the La Leche League and other childbirth activists, 'bonding' is now part of the normal birth routine in most hospitals. Hospitals have special birthing rooms and the medical staff are responsible for ensuring that mothers are properly bonded to their infants. Mothers are encouraged to make skin-to-skin contact with their newborns soon after birth and to have their babies room in with them; breastfeeding in the first hour is recommended, and ill and low-birth weight infants also receive more physical contact. 'Bonding' has even become a catchword popularized by the increasing number of books on childbirth and development. The

term is commonly used by parents talking about their children and prospective parents talking about the anticipated birth of their child. The latter may hope that there is 'an opportunity for bonding'; while the former may note that they feel 'more bonded to one child than another'.

By the 1980s most of the scientific community had dismissed the early bonding research as inconclusive. Nevertheless, many in the medical and social work professions still view assessment of maternal bonding as the first step in prevention of child abuse. While the immediate postpartum period is no longer viewed as extremely 'sensitive', early mother-infant contact is still deemed essential to 'proper' maternal bonding. Within hours after birth, mothers are evaluated on criteria designed to distinguish the problem, or 'high-risk', mother from the 'good' mother on the basis of whether or not she had bonded with her infant. However, most indices of bonding reflect a middle-class North American bias and/or are vague in interpretation. If a mother appears to have difficulty bonding with her infant, nurses intervene to teach the mother how to 'properly' care for and interact with her newborn. When nursing intervention is not effective, and continuing concern exists, referrals are made to the Children's Aid Society for further evaluation and treatment of mother-infant pairs believed to be at risk for future abuse or neglect

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Social work and child psychiatry have incorporated the concept of mother-infant bonding into the diagnosis, description and prevention of childhood psychopathology, child abuse and neglect, and failure-to-thrive syndrome. However, various professionals within both fields have criticized the idea that child abuse can be predicted on the basis of the mother's early behavior toward her newborn. For example, Stuart Montgomery (1982) claims that because pediatrics discovered child abuse in the 1960s and mobilized concern for it, the problem has been framed in the medical model. The implication is that child abuse is a form of disease inherent in the mother, the signs of which may be discovered long before the symptoms are there for all to see. The idea that child abuse could be accurately predicted was appealing, but re-evaluation of the evidence indicates social workers often overemphasize the consequences of maternal bonding at the cost of dealing with the complex socioeconomic and emotional problems of all family members.

Emphasis on normative bonding behaviors has created unrealistic expectations in the minds of many nurses, doctors, and social workers of how a 'good' mother behaves toward her baby (Chess and Thomas, 1982, Herbert et al., 1982, Sluckin et al., 1983). This attitude has distressed many parents who have not been able to be with their babies during the 'sensitive' period, either because the babies were adopted or premature, or because either the mothers or infants had been ill immediately after

birth. These parents often feel overwhelmed with regret and grief. In response to such criticisms, Klaus and Kennell in 1982 published a revision of their 1976 book on bonding in which they tried not only to reassure parents but also to deflect criticism. The doctors (1982:xii) state that they were distressed when mother-infant bonding became too popular and was “confused with a simple, speedy, adhesive property rather than the beginnings of a complex human psychological process”.

They explained that:

...in spite of a lack of early contact experienced by parents in hospital births in the past 20-30 years, almost all these parents became bonded to their babies. The human is highly adaptable. Sadly, some parents who missed the bonding experience have felt that all was lost for their future relationship. This was (and is) completely incorrect...(Klaus and Kennell, 1982:55-56,66).

However, Klaus and Kennell still argue that mothers are hormonally primed during the immediate postpartum period, and that this period is a particularly sensitive time for infant development: “We believe that there is strong evidence that at least 30 to 60 minutes of early contact in privacy should be provided every parent and infant to enhance the bonding experience” (Klaus and Kennell, 1982:55-56).

Prescriptions for changes in daycare practices and in social welfare policies are also being advocated based on Klaus and Kennell’s theory of mother-infant bonding. For instance, Dr. Barry T. Brazleton cautions that working mothers miss out on an important time for bonding which is crucial for the child’s development. In a public television series called

"The World of Ideas" (1988), Dr. Brazleton, who sees bonding as essential for the first year of life, states:

the child gets a sense of being important...if he doesn't have that through infancy, its hard to put it in later...and these kids that never get it...will become difficult in school, they'll never succeed in school; they'll make everybody angry; they'll become delinquents later and eventually they'll become terrorists (cited in Eyer, 1992:4).

Dr. Brazleton (1986) also argues that working mothers are likely to develop defenses, such as denial of problems, projection of important caregiving responsibilities onto substitute caregivers and detachment.

On the Oprah Winfrey Show, May 16, 1995, Dr. Brazleton joined forces with Hillary Clinton, the wife of the president of the United States, to recommend that early intervention programs be established where mothers will be taught to 'bond properly' with their infants. Proctor-Gamble is already sponsoring a small test program. However, adding an 'ounce of bonding' will not solve problems of child poverty, absentee parents, or child abuse and neglect. During the 1970s, many hospital intervention programs were developed based on the hypothesis of a maternal sensitive period. These programs identified high-risk populations for 'inadequate parenting' and manipulated the hospital environment to promote bonding in the high-risk mothers who were sometimes observed against a matched control group. Those mothers deemed to be 'high-risk' are usually poor, nonwhite, teenage, or single mothers, mothers of low-birth weight infants, and previous child

abusers. Rarely is there any attention paid to providing a socially and economically supportive environment for the mother and infant once they leave the hospital (Schepher-Hughes, 1985:308-309).

A few development psychologists support Dr. Brazleton's position. Belsky, who formerly supported day care as nonharmful to children and parents, has revised his views (Birns and Ben-Ner, 1988:60). He now claims that employed mothers are either selfishly depriving their infants or selfishly overwhelming their babies with excess attention in order to alleviate their guilt. Belsky cites studies indicating that working mothers spend as much time with their infants as nonemployed mothers, but that fathers with working wives spend less time with their babies than fathers with nonworking wives. Belsky uses these data to claim that employed women are overstimulating their infants and preventing fathers from having their share of play with the infants. Mothers in this case are indicted for providing too much rather than too little affectionate interaction. On the other end of the continuum, Scarr (1984) argues that employed mothers are for the most part happier and therefore better mothers. With conflicting advice to parents, "in contemporary North American society women feel pressure to both stay at home and raise their children and to enter the work force" (McCartney and Phillips, 1988:72). This double pressure leads to role conflict, which for working mothers can lead to guilt. Thus, as Chess and Thomas (1982) and

Caplan and McCorquodale (1985) argue the bonding imperative has become another form of 'mother blaming' equally as corruptive as were earlier theories of maternal deprivation and infant-mother attachment. Mothers are still indicted for making or breaking their children.

Process of Discovery Used:

The following is a brief chapter outline that explains the process of discovery used in this thesis. In order to critique the bonding research and to serve as a theoretical foundation for Chapter 3, Chapter 1 briefly discusses the nature and limitations of ethological research, especially problems of making direct comparisons between animal and human behavior. Klaus and Kennell understood the necessity of focusing on the correlations between *social* and *biological* factors in human behavior and development, which an ethological perspective provides. Nevertheless, they extended the animal research beyond the data in an attempt to construct universal principles of maternal behavior by selective analogy.

As Eyer aptly states:

By selecting the behavior of a few species of animals that coincided with popular notions about women's maternal "instincts", bonding research reduced women to automatons who behave the way they do, not because of their capacity to reason, their complex psychology, or their economic or social circumstances, but rather because of their inherent and inevitable inferiority (Eyer, 1992:5-6)

Moreover, Klaus and Kennell have downplayed the *interactive* nature of the bonding process to concentrate mainly on the negative effects of the mother's behavior on her infant. While the infant is

reduced to a passive recipient of external influences, the father's influence is conspicuously absent. Yet as Hinde advises (1983, 1987) any attempt to apply ethological principles to the study of human social behavior must also consider the dialectical relations between the successive levels of social complexity. Hence our discussion will also examine his 'relationship approach' which emphasizes that analysis and generalizations of human behavior must always proceed from the 'relationship' level of social complexity, and includes examining the incidence of and relations between different types of behavior in the same dyad. In this approach, both mother and infant are 'active agents' in the dyad. In turn, each partner is also influenced by other members of their family, the wider social community, and by the physical environment.

Chapter 2 outlines Klaus and Kennell's theory of mother-infant bonding, including the sensitive period hypothesis, and the principles of attachment. Next an in-depth analysis of the ethological research, including the concept of 'critical' or 'sensitive' periods for behavioral and biological systems, reveals that Klaus and Kennell's hypothesis is not supported by the data. Instead, depending on the nature and intensity of environmental stimuli, the duration of sensitive periods differ from species to species with individual variation in evidence. Indeed, the lesson to be learned from the rat, goat, and sheep studies is the extreme complexity of *hormonal* and *experiential* mechanisms that determine

maternal and infant behaviors. I also demonstrate that the early human studies — which served as the model for later studies and for cross-cultural research — are beset by methodological problems: design, conception of variables, sampling, and the recording, analyses and interpretation of data. Finally I show that some of the most methodologically sound studies also fail to support the bonding hypothesis.

In chapter 3, I argue that a valid model of mother-infant bonding can still be constructed using an ethological perspective. Based on principles derived from the early bonding research, Hinde's 'relationship approach', and pertinent studies of human behavior and development, an alternative model of mother-infant bonding is presented which emphasizes the *reciprocal* nature of this early relationship. As well some of the variables — individual personality characteristics, demographic, bio-cultural, and contextual — that have been shown to influence the patterning, content, and quality of mother-infant interactions will be discussed.

Throughout the 1970s, dozens of studies were produced using Klaus and Kennell's model. Then in the 1980s the research was attacked on the ground that there was little evidence to suggest any but temporary effects of early bonding. However, many researchers, including Klaus and Kennell, still continue to defend it. In part the ready acceptance of

their model was made possible by Bowlby's earlier research on maternal deprivation as well as his ethological attachment theory. Chapter 4 discusses the theoretical foundations of bonding. Bowlby's work established the notion that children need the constant, devoted attention of their mother, or, like children cared for in institutions, they too would suffer depression, physical illness, and perhaps even die. His ethological attachment theory stipulated that the infant's need for attachment has an instinctual basis similar to imprinting behavior in many species of birds. However, by the late 1970s, reassessment of his work indicated that the conclusions drawn were inappropriate. Far too much emphasis was placed on the pathogenic importance of the mother-child separations in the early years while ignoring the significance of general social deprivation. Evidence also suggested that some of the harmful effects on the child's development were not irreversible. Moreover, theoretical analysis suggests that it would be more adaptive if the infant's attachment was not tied to a sensitive period or to one primary and consistent attachment figure.

A movement to reform hospital childbirth practices started quietly in the 1940s and coalesced in the 1970s into the natural childbirth movement. Chapter 5 examines the use of the sensitive period hypothesis as a political and social tool by consumer rights activists, child care educators, and the natural childbirth movement to pressure

hospitals into implementing family-centered birth and bonding as a means to enhance family functioning and to prevent problems of child abuse. A review of the allied health science journals reveals the readiness by which the concept of maternal bonding, including the sensitive period hypothesis, was adapted into nursing practices and used to extend the professional status and responsibilities of obstetrical nurses. Evaluation of a number of nursing assessment tools reveals serious problems which jeopardizes their validity and effectiveness in assessing mother-infant pairs deemed to be 'at-risk' for problems of bonding failure. While bonding may have given families easier access to their infants in nurseries and intensive care units, the net gains for women have been minimal. Women experiencing hospital childbirth are subject to more intervention than ever before in part due to the complex technology and the atmosphere of danger surrounding birth.

Chapter 6 discusses the validity of using the bonding concept as a diagnostic tool in social work. Again much practice and research is based on a uni-directional model which emphasizes mother-to-infant influences, particularly the negative ones. Advocates of Klaus and Kennel's theory of maternal bonding ignored two decades of research in the mental health which demonstrates that the child's experience in the first few years of life, including the mother-child relationship, were unreliable predictors of later behavior. As well a review of the current

clinical and research studies indicates that the mother-infant relationship is but one of many variables implicated in the etiology of child abuse and failure-to-thrive syndrome.

Two of the key questions that inspired this thesis were how closely do nurse practitioners and social workers who assess and counsel mother/infant pairs adhere to the sensitive period hypothesis? What changes have occurred in practice since the early 1980s? Chapter 7 discusses data obtained from key informant interviews conducted with a social worker from the Children's Aid Society involved in prenatal counselling, a nurse practitioner working in the maternity ward at one of Ottawa's hospital and the same ward's social worker. These interviews indicate that a reconceptualization of maternal bonding has taken place, from an instantaneous and 'sensitive period' phenomenon to an ongoing process that may take weeks to develop fully. Women's proximity to their infants (whether they desire it or not) is still regarded as necessary for preventing later problems of the child. Although assessment of mother-infant pairs still reflect a middle-class North American bias, there seems to be a growing awareness among some professionals that the interaction of mothers from different ethnic backgrounds with their infants may be different but still normal.

However, the Children's Aid Society receives complaints from many mothers, especially unmarried teenage mothers, that during their two day postpartum stay in the hospital they often feel harassed by the

nursing staff, in a way that suggests an inappropriate emphasis on 'normative' maternal bonding. The Children's Aid Society uses the bonding concept as 'scientific evidence' in their battle with the family court system over removal of infants from their natural families and placement in the agency's Fostering-With-A-View-To-Adoption Program. Bonding also serves as the scientific rationale behind the agency's ambivalence counseling program and their Infant Stimulation Clinic where mother-infant pairs are re-assessed for any behavioral problems, and are then taught about spending time in 'proper' bonding behaviors with their infants.

CHAPTER ONE

THE USE OF AN ETHOLOGICAL PERSPECTIVE FOR THE EXPLORATION OF HUMAN BEHAVIOR AND DEVELOPMENT

Biologists tend to focus on biological factors affecting human behavior, particularly on how our behavior differs from that of other species, while many social scientists concentrate only on the social, looking for differences between individuals, groups or cultures. However, both views are one-sided and inaccurate. In contrast, ethology bridges the hiatus between the biological and the social sciences. A basic tenant in ethology is that individuals have no separate biological and cultural characteristics. Rather, as development proceeds, the processes of socialization (becoming a person, able to perceive others as comparable persons) and acculturation (acquiring the beliefs, values, etc. of the society) proceed simultaneously (Hinde, 1987:26). In fact, Darwin in his two books, *The Descent of Man* (1871) and *The Expression of Emotions in Man and the Animals* (1872), first recognized the necessity of understanding the relations between biological and social factors in human behavior and development. Full understanding of human behavior thus requires the judicious use of an ethological perspective. However, this does not imply direct comparisons between humans and animals, or a concern merely with the evolution of human behavior.

Second, as Hinde (1987) argues, the study of human behavior also requires a clear understanding of the dialectical relations between successive levels of social complexity — interactions, relationships, social groups, and social-cultural structure. Attempts to apply biological principals to social behavior must understand the dialectical relations between these successive layers of social complexity, especially at the level of relationships. Thus a discussion of ethology's basic principles and Hinde's 'relationship approach' is necessary in order to understand and critique Klaus and Kennell's sensitive period hypothesis, the ethological and human studies used to substantiate their hypothesis, and third to formulate an alternative model of mother-infant bonding.

THE NATURE OF ETHOLOGY

The task of first defining what is meant by ethology is problematic. For instance, Lehner (1979:2) complains that "Everyone seems to have their own definition of ethology". The term ethology stems from the Greek word 'ethos' meaning character — the distinguishing character. Accordingly, we can state that ethology refers in the first instance to the study of behavior patterns, and especially animal behavior patterns (Hinde, 1987:11; Kaplan et al., 1994:179). Note that this current definition applies equally to the study of human behavior. As used earlier, ethology referred strictly to the study of non-human animal behavior, an approach pioneered by biologists and differing in a number

of ways from that then used by comparative psychologists (Hinde, 1987:11-12; Lehner, 1979:2-6). However, currently many ethologists either reject outright, or view as incomplete, attempts to link ethology with a particular phenomena or concepts, theories, or certain methods. For instance, Hinde (1983:28) argues that "ethology can not be delimited as the study of innate behavior. It is not merely descriptive, and it does not involve any particular theory of development or motivation". A very brief historical overview shows that 'fluid boundaries' are indeed inherent in how ethology views itself.

The foundation for modern ethology was laid in the 1930s by Konrad Lorenz, Niko Tinbergen, and Karl von Frisch. These three ethologists were interested in the diversity and intricacy of the adaptations shown by animals to their environment. Von Frisch conducted studies on changes of color in fish. He demonstrated that fish could learn to distinguish among several colours and that their sense of colour was fairly congruent with that of human beings (Kaplan et al., 1994:180-181). Von Frisch later (1950, 1966) studied the colour vision and behavior of bees, and is most widely known for his analysis of how bees communicate with one another. His description of the complex behavior of bees prompted the study of information systems in other animal species.

Lorenz (1935,1970) is most famous for his studies of imprinting — a process by which the behavior of the newly hatched young of precocial avian species shows a pattern of close reliance on stimuli provided by a parent or, in its absence, by some other figure. Imprinting is denoted by the young animal's cued-response patterns to that parent. He also showed how stereotyped and species-characteristic movements could be used as taxonomic characters. In addition, Lorenz provided theories about the relations between instinct and learning and on the nature of motivation (Hinde, 1983:28; Reed and Leiderman, 1983:52-53; Petrovich and Gewirtz, 1991: 70-72). In turn, Tinbergen (1951) elaborated on the early imprinting studies. As well his laboratory studies of the courtship behavior of the stickleback (1951) exemplified the combination of observation and experiment which came to characterize subsequent ethological research. However, it was Tinbergen's *The Study of Instinct* (1951) that had the greatest impact on ethology. This work included material relevant to the four questions which are now considered crucial for a full understanding of behavior: What causes this behavior? How did it develop? What is its biological function? How did it evolve? (see page 28, The Four Questions)

Although ethologists were united on the main issues, they came to differ in emphasis on others. During the 1950s and 1960s, ethologists in Germany, Scandinavia, and the United States were primarily influenced

by Lorenz, while those in Holland and in Britain were influenced by Tinbergen. Those researchers who were influenced by Lorenz continued to distinguish between innate and learned behavior, to use energy models of motivation, and to suggest that natural selection operated for the benefit of the group. In contrast, those influenced by Tinbergen adopted an interactionist approach to development, an intervening variable type of approach to problems of motivation, and saw natural selection operating on individuals (Hinde, 1983:28).

The lack of a dominant theoretical approach, which serves as a framework for the discipline, makes a precise definition of ethology extremely difficult. In light of this, Hinde proposes a rather discursive definition:

The term ethology is applied particularly to the work of students who, although differing widely in the problems they tackle, the level of analysis at which they work, the methods they use and the theoretical interpretations (if any) they adopt, share certain *orienting attitudes* which are, perhaps more important as unifying factors than any particular theoretical scheme. Many of these attitudes are a consequence of the zoological training of the early ethologists. They felt, for instance, that the description and classification of behavior is a necessary preliminary to its analysis; that the behavior of an animal cannot be properly studied without some knowledge of the environment to which its species has become adapted in evolution; and that questions about the evolution and biological function of behavior are, in principle, as valid and important as those about its immediate causation (and it may be added development) (Hinde, 1983:28-29) [italics added].

Thus in order to understand the nature of ethology, we must discuss the nature of these 'orienting attitudes'. Indeed a crucial aspect

of ethology is its ability to integrate data, methods, and theoretical approaches from a variety of physiological and biological sciences, from social and developmental psychology, and from the social sciences. For instance, based on his early maternal deprivation studies, John Bowlby (1969), a British psychoanalyst, set out to conceptualize how infant-mother attachment develops and how it affects the infant's development. His 'ethological attachment theory' replaced the notion that infants become attached to their caretakers because of the caretakers' association with satisfaction of hunger. Similarly, Blurton Jones emphasized the need for an ethological approach in the study of child behavior and development. In his book, *Ethological Studies of Child Behavior* (1972), he called for objective description in terms of behavioral elements, with more global concepts, such as aggression, attachment and anxiety, being eschewed. The work of both Bowlby and Burton Jones provided a powerful stimulus for the acceptance of an ethological approach in developmental psychology. In fact, although some differences in emphasis remain, the distinction between ethologists and comparative psychologists has now largely disappeared. Hinde (1983:30) calls for the complete integration of ethological and developmental psychological approaches. However, he cautions that whereas ethology has traditionally been concerned with behavior, a full understanding of much of human action also requires the researcher come to terms with

the meanings ascribed to actions and what individuals think they do, hope to do, or feel they should do.

Ethology's Comparative Method:

At the root of ethology is the use of animal models to gain an understanding of human behavior. A certain animal species, resembling humans in some ways, is presumed to also resemble them in other ways. Although the comparative method may work well in some cases, the dangers of false conclusions are considerable (Hinde, 1983; Sternglanz and Nash, 1988). In particular, Hinde (1987:2-11) details the following four issues which can make direct comparisons between particular aspects of animal and human behavior misleading 1) the superior cognitive ability of humans, 2) our possession of cultures specific to groups of individuals, 3) diversity of both animal and human species, and 4) difficulty of finding the appropriate level of analysis at which parallels should be drawn:

1. Differences in Cognitive Abilities: The increased brain size and longer developmental period of humans allows greater phenotypic (including behavioral) variability than is found with different animal species. Thus humans have a greater capacity to adapt to various circumstances. Also human capacity for language enables further cognitive development. Thus humans can do things that animals cannot do.

2. Culture: Unlike the non-verbal communication of animals, 'language-based' culture permits humans to share symbols that order and classify the world in ways specific to a particular society or group. Concepts can then be manipulated to make higher ordered concepts including cosmologies that have no direct correspondence with the real world. In

turn these belief systems that unite concepts and relate them to behavior in the real world are adjusted to minimize contradictions.

'Language based' capacity for culture also permits the labeling of relationships between individuals, and the classification of relationships into types. In turn this permits the existence of a limited set of roles (i.e. mother, father, etc.) with specific rights and duties within institutions in each society. Individuals internalize their roles as goals which causes certain behavior. In contrast, animal species do not have equivalent roles and institutions. Nor is there any evidence that different animal species have the ability to conceptualize roles.

3. Problem of Diversity: As there large numbers of animal species and human cultures, each with a behavioral repertoire adapted to its own environmental conditions, it is easy to find parallels between animal and human data that will support practically any hypothesis. Thus straight comparisons are bound to be misleading. Moreover, diversity within the species makes straight comparisons even more difficult.

4. The Problem Of Level of Analysis: Some researchers have thus sought for parallels at a global level, while others work at a lower level of analysis. In either case, superficial similarities in behavioral and psychological characteristics do not necessarily imply similar underlying mechanisms or similar functional significance and vice versa. In other cases, the problem is finding the right level for making comparisons.

Although these issues indicate that direct comparisons pose difficulties, animal models can be useful if they account for both similarities and differences between animal and human behavior. The relative simplicity of animal models facilitates the refining of concepts and the elaboration of principles whose applicability to humans can then be assessed. For instance, our ability to understand the impact of language and culture on human cognition or on human relationships can be enhanced by comparison with animal species, where their influences are absent or minimal. Thus processes contributing to

complex phenomena can often be more readily studied in simpler organisms.

Another approach is to compare a range of species, abstract principles from the comparisons, and then assess the applicability of those principles to the human case (Hinde, 1983:31,1987:11). The following example has implications for the frequency with which newborns should be nursed. Comparative studies of a wide range of mammals show that frequency of suckling is inversely related to the protein content of the milk. Although some species nurse their youngsters almost continuously, others producing milk with a high protein content, nurse them only once a day or even less. Human milk has a low protein content which suggests that newborns are adapted to be nursed more frequently than the four hourly feeds that are standard in many hospitals (Blurton Jones, 1972). This agrees with the findings that breast-fed babies cry more over the first 10 days and more after feedings than do bottle-fed babies because bottled milk has a higher protein concentration (Bernal, 1972 in Hinde, 1983:31).

The Four Questions of Ethology:

As stated previously, ethology is concerned with the control, development, function and evolution of behavior and development. Although these four areas of inquiry seem logically distinct, they are interrelated. For instance, which are developmental issues and which

are issues of current causation is to some extent arbitrary. Questions of immediate causation are concerned with the factors that cause an individual to behave in a certain way. While questions of development are concerned with the factors that led to the individual being what he/she is at the time in question (Hinde, 1987:54; Lehner, 1979:8-9).

The causal analysis of behavior is concerned with the question: What made the organism behave in this manner? However prior to any causal analysis the behavior under study has to be described and classified. Total description is neither possible nor desirable. The researcher must decide the level of analysis at which the behavior is to be described (the species level, the level of the individual, or the physiological level describing the mechanisms underlying species-typical behavior patterns), and the degree of precision to be used, all of which are influenced by the implicit theories of the researcher (See Figure 1). The researcher also has to decide whether to use 'physical' description or 'description by consequence' (Hinde, 1983:35, 1987:12; Lehner, 1979:44-45). The former refers to the strength, duration, and patterning of body movements (i.e. knee jerk, smile, raised eyebrow, cuddling), or change in some other physiological property. Hinde (1987:12) cautions that although this type of description is suitable for the stereotyped action patterns of animals, it is not suitable for most aspects of human behavior.

Figure 1. The dimensions of ethology. Behavior occurs at various levels along the individual-species and macro-micro dimensions (adapted from Lehner, 1979:2)

"Description by consequences' cover all patterns that lead, or could lead, to the results specified: 'seeking for food', 'washing the baby', 'breastfeeding'. Description by consequences calls attention to important aspects of behavior, such as responsiveness to certain stimuli, that could easily be missed. Classification of behavior in terms of consequences is often more free from errors of observation than classification in terms of movement patterns (Hinde, 1983:35; Lehner, 1979:45). Whether an infant smiled and picked up a toy is easily discerned. Yet, when using this technique, the researcher can not be entirely sure of the meaning of the behavior exhibited and this may bias theorizing. For example, was the child approaching its mother or fleeing from a stranger or both?

After behaviors are described, each type of behavior is then categorized into one of four groups. First, types of behaviors that share the same causal factors are classified together. The researcher may classify together all types of behavior a baby shows when it has not been fed for a period. Second, behavior may be classified in terms of consequence or third, items of behavior may be grouped together according to their evolutionary origin (i.e. the human smile and the monkey fear grin). Fourth, items of behavior may be grouped together because they were acquired in the same manner (Hinde, 1983:35).

After description and classification, the next step is to specify the relations between behavioral events and to relate them to antecedent

conditions. This preliminary analysis depends on the use of correlations between events. Temporal correlations may arise in more than one way and only serve to *guide* further analysis or natural experiments. The behavioral level of analysis may lead to explanatory concepts which will allow for prediction and control of behavior within a specified range of conditions. However, complete understanding of causation usually requires further study and re-synthesis, often involving physiological and physicochemical techniques (Hinde, 1983:32, 1987:13).

Inherent in questions of causation is another group of problems. As an organism develops, its behavior changes and thus the course of ontogeny¹ also demands analysis. The question to be answered is: How does behavior change? From this descriptive base further causal questions can be posed: To what extent do the changes observed depend on environmental or cultural influences? How do such changes produce their effects? Problems of immediate causation often overlap problems of ontogeny. For example, delinquent adolescent behavior which may depend on propensities acquired in childhood, is often made more probable by the effects of continuing recent frustrations, and be precipitated by examples from peers.

A third type of problem in the analysis of causation concerns the situation toward which the behavior is directed (goals), and these goals

¹Ontogeny is the course of development of an individual organism.

or other consequences may affect the probability that the behavior is repeated (reinforcers). For instance, the search for food (goal) and the food or further consequences of eating increases the probability that the animal will search in the same place again. Hence, some variations in consequences are often of long-term evolutionary importance. In contrast other consequences, although beneficial, are by-products of natural selection, being fully present in all individuals. However, other consequences may be neutral or even harmful. (Hinde, 1983:32).

A fourth question concerns the evolutionary origins of the behavior under study. Comparisons between closely related species enable us to theorize about the course of evolution of particular aspects of behavior (Hinde, 1983:33). Although the environments in which nearly all humans now live are different from the 'environment of evolutionary adaptedness' (Bowlby, 1969), researchers gain an understanding if apparently functionless behavior is seen as part of a repertoire that was formerly adaptive. For example, Trivers (1974) accounts for the development of mother-infant relationship in terms of the difference in the biological benefits and costs to the mother and the child's independence. If benefits and costs are measured in terms of future reproductive potential, continued dependence on the mother is not only beneficial but costs little to the child. On the other hand, it involves considerable costs on the mother because of its effects on the probability

of her conceiving and successfully rearing further children. In evolutionary terms the mother benefits less than her child. Although most genes are identical in mother, infant, and father, the infant carries on average only half of the maternal genes that are not shared with the father. Thus it would be normal for the mother to encourage her children's independence. This is supported by data on nonhuman species (Hinde, 1983:33; Hrdy, 1987:97-139).

Functional considerations also help researchers to understand apparently abnormal behavior. Although the infant's attachment behavior, for example, is usually functional, in some infants, who tend to be insecure, clinging to mother can become dysfunctional. While functional questions are important considerations in ontogenetic or causal analyses, speculations about function can involve crude comparisons between humans and our hypothetical ancestors, outdated biological theory, and even a naive view of function (Hinde, 1983:33-34; Sternglanz and Nash, 1988).

HINDE'S RELATIONSHIP APPROACH TO HUMAN BEHAVIOR

In his approach to the study of human development and behavior, Hinde (1987) emphasizes the need to integrate a biological perspective with a clearer understanding of the successive levels of complexity in social behavior — interactions, relationships, social group, and socio-

cultural structure — and the mutual relations between them. Moreover, Hinde insists that as different interactions within a relationship affect each other, generalizations must be based on the 'nature of relationships' instead of, or as well as, on interactions. His 'relationship approach' reflects a basic re-orientation in ethology from how individuals behave generally to the level of relationships and how those relationships contribute to the structure of the group. This change was due in part to studies commencing in the 1950s that demonstrated the complexity of primate social groups and the fact that how individuals behave depend in part on whom they are with (i.e. social context).

In Hinde's 'relationship approach', an interaction is defined as a series of interchanges over a limited span of time. The behavior involved can be described in terms of the content of the interchanges (is the mother cuddling her baby?) and their quality (is the baby crying or smiling at the mother?). The course of the interaction is influenced by both partners. A relationship involves a series of interactions over time between two individuals known to each other. Prolonged interactions often take on many of the properties of a relationship. As far as behavior is concerned, relationships are described in terms of the patterning, content and quality of their constituent interactions. Relationships are always placed within a nexus of other relationships — family, relatives, the church, and so forth. Each network may overlap extensively or may

be separate and behave as distinct groups. Each group influences and is influenced by other groups with which it comes into contact, and each group affects and is affected by the physical and biological environment in which it lives. In turn, this social structure leads to further levels of complexity concerned with the interrelations between groups. Moreover, each of these levels has properties that are not relevant to other levels. For example, some properties of relationships such as intimacy, temporal patterning of interactions, or their relative frequency, can only be applied to relationships and are not applicable to isolated interactions (Hinde, 1987:23-25).

Hinde (1987:26) does caution that these various levels of social complexity "are in part heuristic devices: they are not entities but *complexes of inter-related processes in continuous creation through the dialectical relations between levels*"². In turn, this implies that individuals have no separate biological and cultural characteristics: rather as development proceeds the processes of socialization and acculturation proceed simultaneously. However, to be precise Hinde is not dealing with different levels of analysis, but with two different kinds of analysis. While interaction is a process, relationship is a state of being related or interrelated, and is not a process. A relationship (i.e. mother-infant, wife-husband) is the result of a process (successive interactions)

Italics added.

that takes place over time. Similarly a social group refers not to a process but a number of individuals assembled together or having a unifying relationship. Again social groups are formed due to a process (successive interactions) that takes place over time.

Dialectics Between Levels of Social Complexity:

Long-term relationships involve successive interactions between the participants. Thus analyses of behavioral sequences can provide considerable insight into the dynamics of relationships. According to Hinde (1987:41) all interactions proceed by negotiation with each participant's postures signifying not sequelae with fixed possibilities, but rather a stimulus-response pattern: "I want to do X, but if you do Y, I will so Z ". Although it may be implied, Hinde does not specifically mention that behavioral analysis must also account for a stimulus that does not receive a response from the partner and that ultimately may lead to dysfunctional interactions. In fact, in a dyadic social situation each individual brings certain preconceptions about the likely behavior of other participant or about the behavior appropriate to the situation. The behavior an individual can show is also affected by past relationships. At the next level, the individual's view of the relationship will affect the nature of interactions within it, and the nature of the relationship is determined by its constituent interactions. With long-term relationships behavioral signaling often becomes attenuated because negotiation is unnecessary.

Figure 1: The dialectics between successive levels of social complexity as per Hinde's Relationship Model (Hinde, 1987:xi)

At the group level, the relationship between the mother (A) and her infant (B), for example, is affected by the mother's relationship with her spouse/partner, and by the network of relationships in which it is embedded (see Figure 2). In turn the characteristics of the group are influenced by its constituent dyadic relationships. Moreover, in any interactional context how individuals behave is influenced by the group's social norms, and by the rights and duties appropriate to the roles they are currently occupying. It is these role and the institutions of which they are a part, plus, customs and capacities shared by the members of the group, and the two-way relations between them that are referred to as the socio-cultural structure of the group. The group's structure, relationships, and interaction affect, and, in turn, are affected by the socio-cultural structure (Hinde, 1987:25-26, 144-147).

Finally, at each level of social complexity there are dialectical relations with the environment. Humans have evolved within a limited range of environments and currently our development and behavior is affected by and affects the environment. Ethology rejects genetic determinism on the one hand, and on the other, the view of human behavior as infinitely malleable that is advocated by some social scientists (i.e. Berger and Luckman, 1966). Instead Hinde (1987:63) asserts that part of the relation between human genetic constitution and experience is the existence of 'predispositions' in what an individual

responds to and in what she/he can learn, and constraints upon what she/he can learn that are not merely limited to capacity. These constraints and predispositions may arise from the very nature of our bodies, from the properties of our sensory/perceptual apparatus, from our motor patterns, or from the properties of the nervous system which become apparent in specific learning situations.

Moreover, all predispositions share two important properties. First, they are fairly, although not completely, consistent across individuals. This does not infer a total absence of individual variation nor genetic determinism. Instead, each predisposition depends to a great extent on the properties of the social and physical environment. Second, predispositions place constraints on development, predisposing individuals to develop in differing ways, and more specifically predispose individuals to learn some things rather than others. The behavior through which predispositions find expression, and the behavior and psychological characteristics whose development they facilitate, varies with circumstances and between individuals. Human predispositions thus constitute an integral part of the two-way relationship between the various levels of social complexity (Hinde, 1987:67-69).

Hinde is not the first researcher to distinguish different levels of social complexity. For example, Harris (1979) distinguished infrastructure (infant care, work patterns, etc.,) structure (division of

labour, class structure, etc.) and superstructure (art, music, rituals, etc.). Geertz (1970), among others, criticized this approach stating that it involves successive superpositions of the findings of anthropology, sociology, biology as well as psychology. Geertz's argument, Hinde (1987:26) contends, "implies an over-simplistic view of the inter-relations at each level and between levels". While social science often ignores the importance of biological factors emphasizing instead the influence of society on the individual, in biology the primary emphasis is from the individual to society. Instead, in Hinde's approach the focus is on the dialectical relations between each level of social complexity. All human behavior and development is a product of both "nature and nurture".

Thus Hinde argues that real understanding:

must embrace the influence within each lifetime both by the individual at any point in time on his relationships and on the sociocultural structure, and by the group and socio-cultural structure on relationships and the individual (Hinde, 1987: 26).

Moreover, to achieve 'real understanding', the researcher must analyze and re-analyze the levels of social complexity and comprehend the inter-relations at each level and the two-way relations between levels.

Generalizations from the Relationship Level:

In most studies of human behavior generalizations are usually made from the level of interactions. The technique involves remaining at the same level of social complexity, and seeking for generalizations about

each type of interaction *across* dyads. For instance, this technique is used in child development studies to determine the relationship between certain independent variables (sex and age of child) and the dependent variables (maternal attachment). However, Hinde (1987:32) recommends that analysis and generalizations always proceed from the relationship level of social complexity, "examining the incidence of and relations between *different* types of interactions in the *same* dyad". Data about some of the most important properties of relationships, especially the relative frequency and patterning of different types of interactions, are lost when generalizing about relationships from generalizations made about specific interactions. For example, a given number of commands from a mother who often expresses affection is likely to have a different meaning from that of the same number of commands from a mother who never expresses affection. Thus measuring simple aspects of interaction (e.g. frequency) is often less revealing than measuring the relations between interactions (i.e. proportion of maternal controlling behavior that are successful or proportions of interactions that are positive). Interaction measures are also less revealing than ratio measures (Hinde and Herrmann, 1977). The proportion of occasions on which a baby cries in which the mother picks it up gives different data about their relationship from the absolute frequencies of crying or picking up.

Where dyadic differences are the focus of research, and one type of

interaction is important, then it may be adequate to use differences at the interaction level as an index of the relationship. However, where relations between different types of interaction within relationships are important, the comparisons are at the relationship level.

Description of Relationships:

A descriptive framework categorizing each level of social complexity according to its properties is necessary so that the data can be transformed into generalizations whose range of validity can be specified. Moreover, a multitude of interacting variables — biological, psychological, environmental, cultural — all which influence social behavior make an adequate descriptive framework all the more necessary.

Description should facilitate the identification of differences and similarities in behavior. However, for most relationships, including the mother-infant dyad, the important dimensions have yet to be identified. Also, researchers still do not know at what level of analysis to describe the phenomena in which they are interested. For instance, with respect to the mother-infant relationship, should the researcher focus on details of behavior such as fondling, kissing, smiling, gazing, breastfeeding, etc., which are seen as indicators of maternal attachment? Or should researchers concentrate on more global properties such as warmth, acceptance, rejection, hostility (see Rohner, 1986)? The point is that in

describing behavior there are an infinite number of dimensions that could be used. Hinde (1987:35-38) groups the dimensions which he feels are important for describing relationships into 8 categories as follows: 1) content of relationships, 2) diversity of interaction, 3) quality of interactions, 4) relative frequency and patterning of interactions, 5) reciprocity and complementary, 6) intimacy, 7) interpersonal perception, and 8) commitment. These categories move from those concerned primarily with what the individuals do together, and with the properties of individual interactions, to more global properties involving subjective aspects of the relationship as a whole:

1) Content of relationships This refers to what the individuals do together. Whether the researcher is concerned with differences between major categories of a relationship (mother-child vs. father-child) or with differences within a category, content dimensions provide an initial basis for differentiating among relationships.

2) Diversity of the interaction: This refers to the number of different things the participants in a relationship do together. The more diverse the interactions within a relationship, the more one type of interaction will be influenced by other types of interactions and the experiences shared by the two partners will be more diverse.

3) Quality of the interaction: This is one of the most important properties but at the same time the hardest to evaluate. The qualities of a relationship, as opposed to those of its constituent interactions, may depend on:

4) Relative Frequency and Patterning of those interactions: Several issues are involved here. First, if a number of different types of interactions have similar qualities, global terms such as 'warm', 'loving', 'sensitive', 'hostile', and so forth are often applied to the relationship. This is important because individuals evaluate their relationships and their assessments influence its future course. A second issue concerns the relative frequencies of interactions. For example, what matters about a relationship may not be how often a mother comforts her baby, but

how often the mother comforts her baby relative to how often the baby needs to be comforted. A third issue concerns properties of relationships that are consequent upon different types of interactions. A father who always plays with his child may be seen as indulgent, but a father who sometimes refuses to play may be seen as controlling.

5) Reciprocity vs Complementarity of Interactions Comprising the Relationship. Reciprocal interactions are those in which the participants each do the same thing. With complementary interactions, participants do different but complementary things. For instance, parent-child relationships mainly involve complementary interactions, some friendships mainly involve reciprocity, while close personal relationships involve an interweaving of reciprocal and complementary interactions.

6) Intimacy: This concerns the extent to which the participants in a relationship reveal all aspects — emotional, experiential, and physical — of themselves to each other.

7) Interpersonal perception: involves, for instance, whether A see B as B really is (does A understand B); and whether B feels that A sees B as B sees B (i.e. does B feel understood). The study of interpersonal perception is important for understanding the development of the self concept, of self esteem, and of many aspects of personality. Many individuals who are capable of understanding another's world-view do not always do so. Thus it is necessary not only to specify whether two individuals are capable of mutual understanding, but the extent to which it actually influences the course of their relationship.

8) Commitment: concerns the extent to which the partners accept their relationship as continuing indefinitely or direct their behavior towards ensuring its continuance or towards optimizing its properties.

While Hinde (1987:38) feels that these categories are convenient tools for the ordering of descriptive data on interpersonal relationships, not all categories will be relevant to any one problem. These categories may also be supplemented by additional categories concerned, for instance, with the sociocultural context or the relationship's history. Whatever its description, it must be pointed out that a relationship is not

a static entity but a process in continuous creation through time. Thus descriptions refer only to a limited time span. Moreover, it is important to remember that the future course of a relationship may well be affected by events before the period in which it was studied.

SUMMARY

In the first part of this chapter, I argue that ethology's 'orienting attitudes' can provide a deeper understanding of human behavior and development. These 'orienting attitudes' include the emphasis on description and classification of behavior, the importance of questions of function, evolution, development and causation, the need to synthesize results of analysis and the importance of moving between levels of complexity. However, when comparing animal and human behavior the dangers of false conclusions are considerable. In particular, the researcher has to be cognizant of ethology's particular limitations due to: 1) the superior cognitive abilities of humans, 2) human's capacity for 'language based' cultures specific to groups of individuals, 3) diversity of human culture and animal species providing evidence for almost any hypothesis, and 4) the problem of determining the level of analysis at which parallels should be drawn.

The second part of this chapter focuses on Hinde's relationship approach to the study of human nature. Hinde emphasizes the necessity of considering successive levels of social complexity with the dialectical

relations between them. While social science is mainly concerned with the influences of society on the individual, the dialectics nearly always intrude. In fact, social behavior is never an 'end point', but a series of inter-related processes in continuous creation through the dialectical relations between different organizational levels.

Since different interactions within a relationship may affect each other, all generalizations should be based on relationships instead of, or as well as, on interactions. Finally eight categories suitable for the description of relationships are discussed. As relationships are a process in continuous creation, their description must refer to a limited span of time. As well the future course of relationships may be affected by events before the period in which it was studied. Changes in the salient dimensions are hence important for the prognosis as are the dimensions themselves.

CHAPTER TWO

THEORY OF MOTHER-INFANT BONDING AT BIRTH

Klaus and Kennell, in their book *Maternal-Infant Bonding* (1976), introduced the most influential and controversial formulation of a biologically based maternal instinct. Their book consolidates animal research and several years of human studies as proof of the existence of a 'brief sensitive period' immediately after birth when it is necessary for human mothers and their newborns to have close physical contact in order for maternal bonding to occur. This chapter introduces and examines the theory of mother-infant bonding, the principles of attachment as well as the sensitive period concept. A critical evaluation of the animal and human research demonstrates the fallacious assumptions and invalid conclusions which served as the theoretical underpinnings for the bonding hypothesis. The researchers adopted a relatively simplistic approach to the animal research concentrating on commonalities at the expense of diversity within and between species. The fundamental premise on which the research is based — the sensitive period concept — is not supported by the ethological evidence. In addition, the early human studies fail to conform to some of the basic rules of research design and thus their findings are at best dubious. Yet for a decade, dozens of studies, including cross-cultural research, were

produced using this model. Stern comments (1977:32) that "whenever we see a set of behavior that is probably used by all societies in a particular natural human situation, and which has had thousands of generations of evolutionary history to fashion an adaptive purpose, we wonder to what extent the acquisition is built upon some biologically innate base". However, it is dangerous, when practitioners unfamiliar with the theoretical and methodological difficulties of ethological and attachment research subscribe to biological explanations such as innate tendencies and 'critical' or 'sensitive' periods because things simply look that way.

MATERNAL BONDING AND THE SENSITIVE PERIOD HYPOTHESIS

Mother-infant bonding is defined by Klaus and Kennell (1976:2) as a "unique relationship between two people that is specific and endures through time", and is indexed by specific behaviors such as fondling, kissing, smiling, and other behaviors which serve to maintain contact and show affection to the infant. Despite these behavioral indicators, bonding remains an ambiguous concept. In fact, Klaus and Kennell (1976:2) admit the difficulty of arriving at an appropriate operational definition.

From the start Klaus and Kennell clearly state their thesis about the primacy of this early relationship:

This original mother-infant bond is the wellspring for all the infant's subsequent attachment and is the formative relationship

during which the infant develops a sense of himself. Throughout his lifetime the strength and character of this attachment will influence the quality of all future bonds to other individuals (Klaus and Kennell, 1976:1-2).

This dire warning echoes throughout the book. For example:

This is one of our principles of attachment—that early events have long-lasting effects. Anxieties a mother has about her baby in the first few days after birth, even about a problem that is easily resolved, may affect her relationship with the child long afterward (Klaus and Kennell, 1976:52)

We are told that the mother's attachment to her child is the strongest human bond. Indeed the power of this special bond is so great that it enables the parents to make unusual sacrifices necessary for the care of their infant — changing dirty diapers, attending to his³ cry, protecting him from danger, and giving feedings in the middle of the night. Moreover, ancient folk wisdom bolsters the nature of maternal attachment. The researchers cite a Russian proverb that states "You can't pay anyone to do what a mother will do for free" (Klaus and Kennell, 1976:1).

An important impetus to Klaus and Kennell's research was the medical profession's desire to change certain hospital practices —early mother-infant separation, especially for ill and premature infants who were cared for in intensive care units. Mothers were barred from the ICU, where only medical staff were able to handle their infants due to the threat of infection and the complex technology. Thus some mothers

³ In order to avoid confusion with the mother's action, the male pronoun will be used to refer to the infant

worried that they could not adequately care for their infants and often wondered if their infant really belonged to them (Klaus and Kennell, 1976:6-10). Moreover, the staff in intensive care nurseries observed that premature infants would often be returned to the hospitals "battered and almost destroyed by their parents, even though the infants had been sent home intact and thriving" (Klaus and Kennell, 1976:2). Also influential was research on the behavioral capacities of normal neonates to adapt to their environment, and studies detailing biological and social synchronization between the mother and her infant (Klaus and Kennell, 1976:11-12, 67-82).

Eyer (1988:97-102) clearly illustrates the manipulations that the term 'bonding' undergoes in the hands of Klaus and Kennell. First, in the opening paragraph in Chapter 1, it is used in an anthropological sense to mean a general class of close human affectional relations: "Most of the richness and beauty of life is derived from the close relationship that each individual has with a small number of other human beings—mother, father, sister, brother, husband, wife, son, daughter and a small cadre of close friends. With each person in this small group, the individual has a uniquely close attachment or bond" (Klaus and Kennell, 1976:1).

Second, throughout the book, 'bonding' is used as an analogy for the concept of "instinct" that is employed in developmental psychology

and ethology. Human maternal behavior is held to be similar to the instinctual behavior of various animal species. Moreover, since humans are like other animals, they also must have species-specific 'critical' times to bond with their young. For example, at the start of Chapter 2, "maternal behavior in mammals", Klaus and Kennell affirm that:

Just as the neonatologist, who is interested in the respiratory changes occurring at birth has used the models of the fetal lamb and monkey...the study of human parental attachment has been partly aided by observation of animal mothers. This is done not to explain human behavior but rather to view human beings *within the context of evolutionary development* (Klaus and Kennell, 1976:16) (italics added).

This evolutionary premise also derives directly from John Bowlby's ethological theory of attachment. Bowlby (1969) originally used the term 'attachment' to denote the emotional bond between an infant and its caregiver which the child displays through various proximity seeking behaviors such as crying, calling, following, watching, and protest at separation. Attachment in the infant develops over several months with specific behaviors such as separation distress and stranger anxiety not shown until the infant is approximately one year old. Bowlby believed that these behaviors kept the child close to its caregiver and thus safe from predation and other dangers.

While Bowlby concentrated on the infant, Klaus and Kennell note that there has been little work done on the effects of separation on the mother. "This book describes the development of attachment in the

opposite direction", the authors state (1976:1), "from parent to infant; how it grows, develops, and matures and what distorts, disturbs, promotes, or enhances it". The next statement more clearly reflects the influence of Bowlby, especially his work on maternal deprivation:

Over the past 40 years, investigators from a variety of disciplines have painstakingly elaborated the process by which the human infant becomes attached to his mother (Bowlby, 1958, Spitz, 1965). They have described the disastrous effects on the infant of long-term maternal separation in terms of his motor, mental, and affective development (Klaus and Kennell, 1976:1).

Throughout the book, bonding is also used interchangeably with the term attachment. Although maternal bonding and infant attachment both develop through a dyadic interchange, the two terms denote *distinct* processes which many critics, such as Leiderman (1981) and Myers (1984), feel should not be used interchangeably. Leiderman (1981:455) argues that equating the mother-infant relationship (bonding) with the infant-mother relationship (attachment) ignores the obvious discrepancy in developmental state, prior experiences, as well as biopsychological requirements of the two participants.

Apparently the maternal bond is not only crucial to the infant's survival and development, but perhaps even more important, it has a definite and precarious onset period:

Immediately after birth the parents enter a unique period during which events may have lasting effects on the family. This period, which lasts a short time, and during which the parents' attachment to their infant blossoms, we have named the *maternal sensitive period*. Because we believe this concept is crucial to the understanding of the bonding process, we will examine in detail

the evidence supporting its existence (Klaus and Kennell, 1976:50-51)

The sensitive period hypothesis is clearly defined in the following quote:

...we strongly believe that an essential principle of attachment is that there is a sensitive period in the first minutes and hours after an infant's birth which is optimal for the parent-infant attachment (Klaus and Kennell, 1976:65-66)

The above-noted quotes demonstrate another apparent difficulty with the term bonding - the continual emendation of 'mother' to read 'parent' (Eyer, 1992:30-31). Although Klaus and Kennell acknowledge that both parents interact with the infant, the implication is that the mother's influence seems to have a more direct and dire consequence than the father's influence. On the other hand, the father's bond is described merely as 'engrossment', a term first coined by Greenberg and Morris in 1974 (Klaus and Kennell, 1976:49). The father's developing 'engrossment' with the infant is indicated by his attraction to the child, his perception of the child as perfect, extreme elation and an increased sense of self-esteem. Klaus and Kennell do not state if the father's 'engrossment' is biologically determined or if it has a sensitive period.

Principles of Attachment:

Klaus and Kennell (1976:14) propose 7 principles that they believe to be crucial components of the bonding process:

1. There is a sensitive period in the first few minutes and hours of life during which it is necessary that the mother and father

have close contact with their neonate for later development to be optimal.

2. There appears to be species-specific responses to the infant in the human mother and father that are exhibited when they are first given their infant.
3. The process of attachment is structured so that the father and mother will become attached optimally to only one infant at a time. (Bowlby (1958) earlier stated this principle of the attachment process in the other direction and termed it monotropy).
4. During the process of the mother's attachment to her infant, it is necessary that the infant respond to the mother by some signal such as body or eye movements. We have sometimes described this as, "You can't love a dishrag".
5. People who witness the birth process become strongly attached to the infant.
6. For some adults, it is difficult simultaneously to go through the processes of attachment and detachment, that is to develop an attachment to one person while mourning the loss or threatened loss of the same or other person.
7. Some early events have long-lasting effects. Anxieties about the well-being of the baby with a temporary disorder in the first day may result in long-lasting concerns that may cast long shadows and adversely shape the development of the child.

Klaus and Kennell do acknowledge that the parents' behavior towards their infant is:

derived from a complex combination of their own genetic endowments, the infant's responses to them, a long history of interpersonal relations with their own families and with each other, past experiences with this or previous pregnancies, the absorption of the practices and values of their cultures, and probably most importantly, the way in which each was raised by his or her own parents (Klaus and Kennell, 1976:13).

Some of these variables are ingrained and unchangeable, such as the quality of the mother's care by her own mother, genetic endowment of mother, cultural practices, the mother's relations with her spouse and family, her experiences with previous pregnancies. Other variables can be altered, such as behavior of the medical staff, hospital practices, the nature of the infant, and mother-infant separation.

According to Klaus and Kennell (1976:13-14) mother-infant separation in the immediate postpartum interval, as well as other unusual circumstances, can lead to a series of mothering disorders. In particular, these disorders range from mild anxiety, such as persistent concerns about a baby after a minor problem has been completely resolved in the nursery, to the most severe manifestation — failure-to-thrive and the battered child syndromes. Apparently, one easy solution to these disorders of parent-infant separation is to actively promote early mother-infant contact and interaction during a brief maternal sensitive period.

However, the authors do not develop the exact ways in which these fixed factors influence the bonding process—whether they can block the process or whether bonding can occur in spite of unfavorable history with respect to these factors (Tulman, 1981:9). In addition, although several studies are cited, which describe both the behavioral capacities of the infant to adapt to and control their environment, the consequences of

the infant's behavior and temperament in shaping the mother's responses and behavior are not fully explored. Instead Klaus and Kennell concentrate only on the mother's effect on her infant and on a biologically based maternal sensitive period in the first few hours and minutes after birth. In other words, maternal bonding is seen only as a qualitative "yes-no" phenomenon—either bonding occurs during the critical time period or it does not. If bonding during this period does not occur, any opportunity for maternal bonding is entirely lost. This in effect denies there exists the capacity within mothers and infants for resiliency and developmental growth. As well, it also denies there exists the possibility of mothers becoming attached to adopted children or to their own infants who because of medical necessity have to be temporarily separated after birth.

ETHOLOGICAL EVIDENCE BEHIND THE SENSITIVE PERIOD HYPOTHESIS

Evidence suggesting that bonding occurs and that it has important consequences derives from two main sources: ethological (animal) research and human experimental research. Ethological research provides the historical model for the bonding hypothesis as it was later applied to human mother-infant pairs. Central to both areas of research is the "sensitive period" hypothesis for particular developmental phases. A brief critical evaluation of the sensitive period hypothesis and as well

as the ethological research will serve as a theoretical and empirical introduction to an overview of the early human studies..

Sensitive Periods in Ethology:

A sensitive or optimal period is the “softer” version of the earlier critical period hypothesis. A critical period was essentially defined as a limited period during development in which a particular stimulus will have a profound effect upon the organism. Before or after this interval the same stimuli will have little or no effect upon the individual (Myers, 1984:241). Since its introduction by embryologists around the turn of the century, the critical period hypothesis has been applied to a wide range of biological and behavioral systems. The concept has been used, for instance, in studies concerning the effects of endocrinological and temperamental responses of rats, in behavioral sciences for understanding early experiences which trigger normal social development (e.g. Lorenz 1970, study of imprinting in precocial birds); and in research on the effects of physical-developmental vulnerability to a noxious stimuli (Leiderman, 1981:454; Myers, 1984:241).

Colombo (1982) provides an extensive evaluation of the critical period hypothesis in postnatal behavioral development. He reviews various studies in visual development, embryonic development, socialization of dogs and monkeys, imprinting in birds, auditory and olfactory development in rodents, and language development in humans.

Previously, Nash (1978) proposed the following essential criteria for all critical periods: there must be a definite onset and offset period; the organism's sensitivity must be triggered by some maturational event; there must be some environmental stimulus or event to which the organism is sensitive. However, after reviewing these developmental studies, Colombo (1982) concludes that most of them have not met Nash's basic criteria for critical periods. Both the onset and termination of the critical periods are more flexible and less dramatically set than were assumed. Also the timing of the periods are affected by both exogenous and endogenous factors. The physiological or maturational component is often only inferred instead of being properly identified or measured directly. Quite often the stimulus to which the organism is exposed or not exposed during the critical period is not specified or so vague that one does not know what elements of the stimulus are important (Colombo, 1982:261-264).

In addition, Colombo cites major methodological problems inherent in most of these studies. With the variety of developmental systems being measured there is great variability in how a critical period is defined and measured. While some researchers are rigorous and conservative in their labeling of critical periods, others used more lax criteria (Colombo, 1982:264). Although a diverse methodology was used, most researchers did not control for the limitations inherent within each

methodology. When using the experimental methodology the duration of treatment should be systematically varied, but this design factor does not consistently appear in any literature except the visual deprivation studies. This failure inhibits the assessment of onset-by-duration interactions which could create the illusion of critical periods. Sample correlational methods, used mostly in assessing critical periods in human development, were often used incorrectly. For example, this method can only detect behavioral correspondence between different ages and cannot provide a valid demonstration of the importance of an earlier period for later manifestation of the trait under study (Colombo, 1982:266-267).

Therefore, since its introduction, the critical period concept has been problematic. One of the sources of ambiguity was its use in reference both to periods during which the organism "needed" stimulation or experience for proper development and to periods during which the organism was "vulnerable" to some type of stimulation or experience (Colombo, 1982:267). However, over the past 50 years in behavioral science, the alleged irreversibility of effects and the alleged universal nature of critical periods have been challenged. New evidence suggests that changed conditions after the critical period can lead to some recovery of function (Colombo, 1982; Iminelmann and Suomi, 1981; Reed and Leiderman, 1983). Thus is true for areas such as

mother-infant bonding in goats and sheep, social rehabilitation of monkeys reared in isolation and language capacity in humans (Myers, 1984:22). Most researchers now favor a less rigid definition. They see imprinting and other developmental phenomenon as characterized by sensitive phases: "the *whole* space of time in the individual's life during which a particular preference can be determined or altered" (Immelmann, 1972:15).

Empirical evidence, according to Immelmann and Suomi (1981:408), now indicates that sensitive periods are: 1) in most cases fairly extended, 2) never sharply defined, but are gradual as far as their onset and termination are concerned, 3) differ in duration from species to species, between functional systems, and between individuals, 4) depend on the nature and intensity of environmental stimuli both during the sensitive phase itself and during the time preceding it.

The discrepancy between earlier claims about the short duration of sensitive phases and the recent data, which demonstrates that in certain cases, the duration of these periods may be fairly extended lies in the question of whether sensitive periods apply equally to species as well as individuals. Immelmann and Suomi (1981:408) contend that both the species and the individual must be considered. Discrepancy between the long duration of sensitivity within a given species and the shorter time exposure needed to establish a preference in a given individual means

that there is room for individual variation. Theoretically it is possible that an individual can form a stable relationship early or late during the period of sensitivity, or somewhere between the two extremes. The end of the sensitive phase for the species and the end of the imprinting process for the individual are not identical (Immelmann and Suomi, 1981:409).

Ethological Literature:

The ethological literature is based upon three major types of studies: inference from evidence on birth practices in a wide variety of species; separation studies in which the effects of postnatal separation of mother and infant are studied; and adoption studies in which the goal is to get an animal to adopt some other animal's offspring after the newborn has been separated from its mother for differing periods.

Species whose maternal behavior have been studied include cats, rats, goats, sheep, cows, gerbils, hamsters and various primates. As noted already, a review of the animal studies that Klaus and Kennell used to substantiate their hypothesis of a hormonally based sensitive period can be found in Chapter 2 of their book. More recent reviews of the ethological literature can be found in Gubernick and Klopfer's, *Parental Care in Mammals* (1981), or in a more recent book by Krasnegor and Bridges called *Mammalian Parenting: Biochemical, Neurobiological, and Behavioral Determinants* (1990).

Although the ethological literature shows that there is variability in birth practices across species, the bonding researchers decided to concentrate on 'commonalities' rather than studying diversity within or across species. For example, on the one hand, Klaus and Kennell (1976:22) state that "the universal needs of young mammals are met in a variety specific ways by different species. Each species has specific patterns of organized behavior that it has evolved in relation to its environment to ensure its survival". On the other hand, in a previous paragraph, they also comment that "...observations of maternal care in a number of mammalian species ...[show] that different species have evolved comparable caretaking behaviors to meet similar needs". The fact that social behavior may be unique to each species is not considered relevant. Instead, their research centers only on the "individualized, enduring bonds [that] develop between mother and infant" (Klaus and Kennell, 1976:22).

Separation Studies:

Separation of mother and infant of various species is accomplished by either removing the infant from its mother after birth, or by surgically delivering the newborn. Dependent variables include acceptance of the young (indicated by nursing, retrieval of young moved a short distance from its mother, etc.), and species-specific maternal behaviors such as nest building in rats (Klaus and Kennell, 1976:22-28). Different species

were found to have various reactions to separation. For instance, rats are believed to have a critical period, but it appears to be longer and much less defined than in goats. The study by Rosenblatt and Lehrman (1963) indicates that separation of the pup from the female rat is debilitating, especially if it occurs immediately after birth and lasts for at least more than a day. If the female rats were allowed as few as 3 days after birth in which to establish maternal behavior patterns before they were separated from their pups, they were more likely to respond maternally to new pups even after 4 days of separation

Separation affects maternal behavior in goats even more significantly since attachment in this species is formed much earlier and is more individualized than in rats (Klaus and Kennell, 1976:23). Goats' rapid recognition and acceptance of their young is termed 'maternal imprinting'. Collias (1956) separated newborn kids and lambs from their mothers soon after birth for varying periods. After 45 minutes of separation the youngsters were still accepted by their mothers. Yet, after more prolonged separations (2-4 1/2 hours) 5 out of 6 mothers butted their young away. In a study by Klopfer (1971), one group of goats were allowed 5 minutes of contact with their kids before separation, while a second group were separated immediately. The mothers with prior contact easily accepted their own kids and rejected alien youngsters even after 3 hours of separation. In contrast, 13 of the 15 female goats denied

any prior contact rejected their young. Hence, goats' maternal acceptance of the young is established by a brief period of contact and stimulation. Klopfer also tested the role that sight, sound, and smell play in establishing maternal behavior, and found that while visual and sound cues did not have an effect, olfactory cues help the mother discriminate her own youngster from strange kids.

Attachment theorists therefore conclude that "for each species there seems to be a specific length of separation that can be endured. If separation extends beyond this sensitive period, the effects on mothering behavior during this breeding cycle are often drastic and irreversible" (Klaus and Kennell, 1976:28). However, it might be that the effect of separation is also contingent on the extent of the previously allowed contact time in a species specific way.

Adoption Studies:

Separation studies deal with the stimuli that support maternal behavior and how its removal causes maternal behavior to decline in parturient females. In contrast, adoption studies concern the conditions that promote maternal behavior in nonparturient females toward alien youngsters (Klaus and Kennell 1976:29). Confirmation of the existence of a sensitive period has come from various adoption studies in which mother rats, cats, and goats accepted alien youngsters. For instance, under normal conditions female goats will butt strange kids.

Nevertheless, Hersher et al., (1963a, b) found that goats will adopt kids, provided that the mother and kid are isolated from others and left in proximity to each other. Once the kid is accepted, no differences are observed between the mothers with adopted young and mothers with their natural offspring. Cross-species adoptions with goats have also been recorded. In addition, forced contact over many days will sometimes cause a rejecting sheep or goat to accept her youngster.

Adoption studies tend to confirm the existence of a sensitive period, but with one qualification: both the setting in which one tries to effect an adoption and the behavior of the infant affect maternal responsiveness. This suggests the importance of mother-infant interaction and the importance of the environment on attachment (Arney, 1980:549).

Biological Mechanisms:

Research into the physiological bases of maternal attachment have been inspired by developments in endocrinology that show the impact of social stimuli on hormonal secretion and later maternal behavior across various animal species. Researchers believe they can demonstrate how the presence or absence of an infant affects the hormonal status of a mother. According to Klaus and Kennell the results in this area of research indicate that:

...biological mechanisms are primarily responsible for a mother's receptivity to her young at time of birth but quickly subside

afterward. Within the sensitive period, maternal behavior quickly disappears if young are not present to elicit and maintain it...Because of her physiological state after parturition, a mother is sensitized to the behavior cues of her newborn and begins to respond to them. The infant, in turn, responds to maternal behavior, and patterns of interaction quickly develop that establish the bond between mother and infant, preventing her from abandoning him (Klaus and Kennell, 1976:37).

This belief is based on evidence concerning the hormonal determinants of maternal behavior in rodents and on separation studies reporting a narrow sensitive period for maternal acceptance in various ungulates.

Rosenblatt and his colleagues (Rosenblatt and Lehrman, 1963; Terkel and Rosenblatt, 1971; Rosenblatt, Siegel and Mayer, 1979; Rosenblatt and Siegel, 1981) have attempted to determine if maternal behavior in rats is elicited by characteristics of the pup or if it is initiated by hormonal changes in the females. Rosenblatt and Siegel (1981) demonstrate that the hormones of pregnancy — estrogen, progesterone, and prolactin — are the principal candidates for stimulation of maternal behavior. Pregnant female rats are primed by the hormones of pregnancy¹ to respond to the terminal rise in estrogen (and perhaps other hormones) by initiating maternal behavior. At the end of pregnancy, the secretion of progesterone by the ovaries declines while the secretion of estrogen increases. The female's responsiveness to pups is tested by placing them in a cage with the pups and measuring the

¹hormonal priming refers to hormonal effects that do not in themselves stimulate maternal behavior but that enable a subsequent hormonal stimulus to elicit the behavior (Rosenblatt, 1979:43).

latency to showing maternal behavior. Artificial imposition of the same hormonal pattern also induces a rapid responsiveness to pups. Prolonged treatment with estrogen and progesterone, combined with endogenous prolactin, which stimulates the hormones of pregnancy, can also prime females to respond to the triggering stimulus of estrogen. However, maternal behavior is blocked if progesterone levels remain high (Rosenblatt, 1990:47).

In rats a behavioral intervention will also elicit maternal behavior. In both males and nonpregnant females mere exposure to pups, a process called 'sensitization', will induce maternal behavior. Latencies to sensitization range from 2 days in females confined to small cages to 4-6 days in females living in large cages. Young pups are also more successful at eliciting mothering than older pups (Rosenblatt, 1990:43).

While hormones play a role in the onset of maternal behavior, Rosenblatt, Siegel and Mayer (1979), and Rosenblatt and Siegel (1981) clearly demonstrate that the onset of maternal behavior in rats is not always hormonally induced. For instance, both virgin female and male rats whose ovaries and pituitary or gonads were removed responded to pups with various maternal behaviors such as retrieving, crouching, nest building, and licking. Virgin female rats that received cross-transfused blood from female rats at different times around parturition did not show maternal behavior within 48 hours whereas virgin rats that exchanged

blood with newly delivered mother rats did. Thus maternal behavior can be supported by hormones, but only for a limited period. The presence of pups is necessary to ensure the continuation of maternal behaviors. Finally, maternal behavior will be displayed even by male rats that are not castrated.

Rosenblatt and Siegel (1981) suggest that there are two phases in the regulation of maternal behavior. An onset phase is regulated by hormonal influences, followed by a maintenance phase which is regulated by stimulation from the infant. Between these 2 phases is a transition in the regulation from hormones to external stimuli. While one system declines, the other gains in strength.

Other studies have shown that nonhormonal induction of maternal behavior also occurs in mice, hamsters, and sheep (Myers, 1984:244). Studies by Poindron and LeNeidre (1979, 1980) demonstrate that in sheep a hormonal condition of maternal readiness exist postpartum. This condition can be created in virgin sheep by injecting estrogen, or can be prolonged beyond a normal 4 to 12 hour postpartum sensitivity by using estrogen or progesterone. If females are denied contact with a youngster beyond 24 hour postpartum, and do not receive additional hormones, 75% will reject their lambs. Forced contact over many days may cause a rejecting sheep or goat to accept a youngster. Consequently there seems to be an initial postpartum hormonal condition of maternal

readiness during which contact is normally made and a permanent bond established. However, this hormonal readiness quickly disappears and requires contact with an infant if the bond is to be established successfully (Myers, 1984:244).

In the rat, mouse, and sheep, oxytocin, associated with contractions during pregnancy and milk letdown during lactation, has been shown to be involved in the stimulation of maternal behavior. Rosenblatt (1990:50) cites studies which suggest that in the rat and ewe, oxytocin is released centrally, possibly from the paraventricular nucleus into the cerebral ventricles, but is primarily transmitted to various brain sites that mediate maternal behavior. The release of oxytocin centrally may be in response to the vaginal-cervical stimulation during parturition, but stimulation of maternal behavior in females requires that they receive prior estrogen stimulation. It is postulated that estrogen-stimulated oxytocin acts on receptors in one of these brain regions. The research on rats raises questions about strain specificity of the effect of oxytocin on maternal behavior, and where effective, the possible mechanism involved. The key question is whether oxytocin, when it is effective, is acting on the background of reduced olfactory function, itself a condition that elicits rapid onset of maternal behavior in nonpregnant females.

The ethological evidence, advanced by certain researchers, presents a model in which there exists an initial postpartum hormonal condition of maternal readiness during which contact is normally made and a permanent bond established. However, this hormonal condition quickly disappears and if contact is not made before this transition period, the bond will be made with great difficulty. "From an evolutionary perspective", Klaus and Kennell (1976:37) argue, "such a model is reasonable, since it provides for the survival of the species in the face of changing and potentially destructive environmental conditions."

Indeed, this model would have been a perfect prescription for the pediatrician who was worried that the necessary medical separation of premature infants from their mothers came with the cost of creating deviant maternal attachment. Often the mothers seemed to be less attached to their infants when reunited. Moreover, many of these mothers rejected and some subsequently abused their child. Thus, the ethological evidence raised the possibility that by simply ensuring contact between mothers and their infants in the immediate postpartum interval, the medical profession might prevent or attenuate the ill effects of separation (Campos et al., 1983:875).

Critique of the Ethological Evidence:

Michael Lamb is one of the most outspoken critics of the early bonding research conducted by Klaus and Kennell and other attachment researchers. Lamb contends:

When critically reviewed, the available animal literature provides no strong grounds for hypothesizing either that hormonal triggers play an important role in the initiation of human maternal behavior, or that there exists a 'critical' or 'sensitive' period shortly after birth during which mothers need to imprint upon their young (Lamb, 1983:488).

Although not as critical as Lamb, other researchers, such as Arney (1980), Herbert et al., (1982), and Myers (1984) voice similar concerns about the acceptance of this analogy between humans, goats and rats.

Certain weakness are apparent in Klaus and Kennell's interpretation and use of the ethological evidence to demonstrate how human development takes place within an evolutionary context. By concentrating solely upon "similar patterns of maternal behavior in humans and animals" (Klaus and Kennell, 1976:2) at the expense of diversity within and between species, Klaus and Kennell either ignored or misunderstood the basic premises of evolutionary adaptation and the problems inherent in ethology's comparative method. Instead they seized upon evidence and patterns of animal behavior that most fit their preconceptions and the medical problem with which they were confronted with — the seemingly ill effects of separation upon human mother-infant pairs. However, as previously discussed, Hinde (1987:7)

cautions that due to "very diversity of animal species and human cultures" and "the diversity within species" that "straight comparisons between particular aspects of animal behavior and particular human characteristics are almost bound to be misleading". Indeed Sternglanz and Nash similarly point out:

...by selective choice of species to cite and/or from inaccurate assumptions based on limited data, it would be equally easy to build a case (easily toppled) for nonmaternal care. Ethological evidence when applied to human caretaking can only demonstrate a range of possibilities (Sternglanz and Nash, 1983:42).

From an evolutionary perspective diversity in sensitive phases is to be expected because different selective (ultimate)⁵ and control mechanisms (proximate factors)⁶ are operating in different functional systems in different species (Immelmann and Suomi, 1981:403).

Different selective factors, Immelmann and Suomi (1982:399) argue, have not resulted in uniform sensitive phase phenomenon, but rather have produced a variety of specific adaptations. For example, rats live in individual nests and deliver large litters 5 or 6 times per year. Maternal behavior is highly stereotyped and relatively short lived. Although the mother rat responds to her pups, she does not seem to recognize individual pups and does not form specific bonds. Ungulates,

⁵ Selective (ultimate) factors influence the survival rates and reproductive success of organisms living and breeding in different ecological niches, and lead to specific adaptations (Immelmann and Suomi, 1981:397).

⁶ proximate factors are those characteristics (color, density, and character of vegetation, etc.) that provide the necessity signals for the individual to recognize and return to the appropriate environment (Immelmann and Suomi, 1981:397).

by contrast, live in herds, have a well defined breeding season, and the young are precocious, being able to live independently from birth. Ungulates have a narrow sensitive period during which the mother learns the characteristics of her young so that she can respond selectively to it (Lamb, 1983:488). Thus for some mammals whether or not a sensitive phase occur seems to depend on the nature of the parents' tasks, which is in turn determined by characteristics of the young and the social ecology of the species.

Such examples indicate that for many species, and for different functional systems, selective pressures may favour great sensitivity to certain environmental stimuli and a maximum of learning during early stages of life (Immelmann and Suomi, 1981:399). Results of early experience may show greater stability which provides a degree of protection against later possible influences on the organism. Differences in the specific needs and demands between species are partly responsible for the enormous diversity in the degree of stability and in the duration and characteristics of sensitive phases. As well, differences between functional systems reflect different requirements.

The criteria for sensitive phases proposed by Immelmann and Suomi (1981:409) allows for differences both between species and between individuals. The following study, which examines the effects of neonatal separation among goats, clearly illustrates that even among

unulates maternal behavior is not a unitary phenomena. Instead it consists of at least two factors--maternalism and individual care. The former can develop in the absence of the latter.

In this study (cited by Richmond, 1959:111-112) 24 domestic goat mothers were separated from their newborns for periods ranging from 1/2 hour to 2 hours immediately after birth. A control group of 21 mothers and kids were allowed to follow normal caretaking patterns. Three distinct patterns of behavior were observed, and between the separated and nonseparated groups, the distribution of these 3 types of patterns was not random. None of the separated mothers accepted their own kids in the normal manner. Mothers in half of this group did not nurse any young--neither their own nor others. This is the excepted rejecting pattern. The other half of the separated mothers nursed kids indiscriminately, suckling other kids as long or longer than their own. A control group of 21 mothers and kids who were allowed to follow normal caretaking mothers did exhibit normal nursing patterns. None of the nonseparated mothers nursed indiscriminately although 1/3 were rejecting.

Thus, Richmond (1959:112) concludes that the effects of early separation on maternal care varies among individuals, some mothers reacting to separation by rejecting all youngsters, and other mothers

reacting by exhibiting highly maternal, though nonindividual-specific, behavior.

An unexpected result of the study is the appearance of rejecting behavior among the mothers of the nonseparated group. No rejecting or indiscriminate behavior was observed in another group where the mothers and their newborn kids had been separated during the postpartum interval. To Richmond (1959:112) this suggests that the act of separating half the mothers in the experimental herd, had probably been the principal factor affecting mother-infant relationships of the nonseparated 'rejecting' mothers. The behavior of the nonseparated mothers may have developed when their own kids wandered off and were accepted by the separated 'indiscriminate' mothers. Separation of some of these animals had influenced the social structure of the herd as a whole, changing the behavior of "control" animals whose early postpartum experiences had not deliberately been disputed, but whose environment had been affected in turn by abnormal maternal and filial behavior produced in the experimental group. Again evidence indicates that sensitive phases are not a unitary phenomenon, but depend in various ways on the nature and intensity of environmental stimuli.

Proximate factors are the underlying mechanisms that actually regulate the decrease and increase of sensitivity in the organism. These factors are often difficult to determine simply because sensitive phases

most probably "are not regulated by a single factor but rather by a joint operation of several variables" (Immelmann and Suomi, 1981:400). The two general regulatory systems in an organism, the hormonal and the central nervous system, are the likely candidates for the focus of such timing mechanisms. However, neural and/or hormonal control of sensitivity does not exclude the possibility that other variables might also play a part in such control mechanisms (Immelemann and Suomi, 1981:401-402). For instance, Gubernick (1980) reported that a mother goat will accept any alien kid provided that the kid had not been too long with another mother. The acceptability of kids by their mothers depends not so much on maternal imprinting as on the absence of "olfactory labels" put on them by other mother goats. Gubernick (1981) later confirmed that maternal labeling in goats appears to be based upon cues passed from the mother to her young both by licking and the mother's milk. Rather than maternal imprinting, it is this mechanism that seems to account for the maternal "bond".

Primates, like other mammals, demonstrate a great deal of variability in mother-infant behavior. In fact, maternal behavior among primate species, as Sternglanz and Nash (1988:35) point out, "...covers the entire spectrum from species that would delight the most radical feminists to those that would warm the hearts of the Moral Majority." For example, an early study of hormonal influences on maternal behavior

reported that a pregnant rhesus macaque, 3 weeks from her due date, showed no interest in the newborn infant of her cage mate. Her interest in another newborn was markedly high 3 days from her due date. This suggests that hormonal changes had an effect on her behavior. Only in their last 2 weeks of pregnancy do female squirrel monkeys respond consistently to young infants. For many primate species, nevertheless, hormonal effects of parturition are not crucial for the emergence of maternal behavior or interest in neonates (Trevathan, 1987:200).

Protest behaviors at being separated are found only in some monkey species. Behavioral responses between separated pig-tailed and bonnet macaque mother-infant pairs are strikingly different. A pig-tailed macaque mother in a cage with other adults will not allow them to interact with her infant. Also she keeps the infant close to her. A bonnet macaque mother, on the other hand, allows conspecifics to groom and handle the infant and allows the infant greater freedom in its movements. The bonnet macaque infant displays much less stress than the pig-tailed infant when its mother is removed. Pigtailed macaque infants, which are reared in social isolation, do not show the behavioral deficits that rhesus macaque monkeys displayed in Harlow's original research. The response of the rhesus macaque youngster differs depending on whether the mother, the infant, or both are removed from the social group (Eisenberg, 1990:15).

The langur lives in troops and is famous for its "auntie" system or alloparenting. Mothers allow other females to handle their newborns immediately after birth. Newborns often stay with its "auntie" for half the first day of its life. Infants also spend much time being passed around from female to female. Primatologists have noted that nulliparous females are more clumsy at handling infants and maternal skill seems to be acquired through shared child care (Sternglanz and Nash, 1988:36). At the same time, infant langurs actively seek out motherly love. Infants will initiate their own adoption by another adult female when the mother is removed from the group. Following most experimental separations, the infant elects to remain with its adopted mother even after its biological mother is returned. Although infanticide has been reported among langurs living in and around villages with major changes in patterns of foraging and colony behavior, it is rare or nonexistent among langurs living in natural conditions in the wild (Eisenberg, 1981:409). Thus even among primates of the same species environment and culture appears to be a great influence on parenting behavior.

The isolation experiments conducted on primates by Harlow and his associates best demonstrate whether mothering is instinctive or not. Rhesus macaques, raised in total isolation by Harlow and Suomi (1970) were found to be both socially and sexually unskilled. Normally reared

males could only impregnate the isolated-reared females by use of a rack that maintained proper position. Moreover, these females were grossly incompetent as mothers and several of the first batch of infants were killed. Hence in rhesus monkeys, mothering is not instinctive. However, some females did become more maternal during the postpartum period and were much better mothers with their second and third babies. Thus later experiences with young monkeys can ameliorate the damage done by social isolation (Suomi et al., 1972; 1974). The female offspring of motherless mothers (those that survived) were not entirely bad mothers. A maternal instinct that is exclusively hormonally driven was not disrupted because motherless monkeys raised with other motherless monkey peers were better mothers than those reared with peers (Harlow, 1969). It appears that even male rhesus monkeys are capable of learning to care for infants. Although male monkeys reared in isolation showed less positive behavior toward youngsters than males born in natural environments, they did learn to form effective social relationships with infants (Sternglanz and Nash, 1988:27). The isolation studies by Harlow and his associates demonstrate that at least in animals most closely related to humans, parenting is not solely instinctual. Social learning for both males and females is also an extremely important factor that can, to some degree, overcome the effects of early deprivation.

MATERNAL ATTACHMENT IN HUMAN STUDIES

Human experimental research focuses on the central question of whether traditional hospital practices of separating mothers and their infants in the immediate postpartum interval damages the mother-infant bond. The assumption is that if separation is as harmful to human mother-infant pairs as it is to rats and ungulates, then disturbances in bonding will be proportional to the length of separation (Myers, 1984:246). Using this logic, in early human separation studies, the usual independent, or explanatory, variables were timing and duration of maternal-infant contact after birth. Researchers manipulated mother-infant contact and then searched for associated differences in maternal behavior or in infant behavior and development. Studies which adopt variations on this theme use different schedules of maternal contact and different dependent variables. Ethical constraints prevent the replication of animal experiments using human subjects. Thus, with limited methodologies available, each of the few human studies is important in delimiting the conditions and circumstances under which various patterns of maternal bonding emerge (Myers, 1984:245).

Early Human Studies by Klaus and de Chateau:

Two of the most widely cited and influential of the human experiments are a series of studies by Klaus and his associates (Klaus et

al., 1972; Kennell et al., 1974; Ringler et al., 1975; Ringler et al., 1978), and another set of studies by de Chateau (de Chateau and Wiberg, 1977a, 1977b; de Chateau 1980a, 1980b). These report superior maternal bonding and child development persisting over several years in families given early mother-infant contact. The following is a brief discussion of these studies which will serve as a foundation for a methodological critique of the early bonding research.

In the first study, Klaus et al. (1972) followed a small number of families from birth until 5 years of age. Twenty-eight, lower-class, predominately black mothers and their full-term, healthy infants were divided into an 'extended contact' group and a control group. The two groups were matched for age, marital and socioeconomic status, race, medication, and infant's gender and weight. Random selection was used in assigning each subject to a group. Each member of the control group saw her baby for a short period after birth, had a brief contact period 6 to 12 hours after birth for identification purposes, and then visited her infant for 20-30 minutes every four hours for feedings. This was the standard hospital procedure. The extended contact group members were permitted to hold their nude babies for 1 hour during the first 2 hours after birth, and also for 5 extra hours on each of the next 3 days. The difference in contact totaled 16 hours over the first 3 days postpartum.

Thus the experimental manipulation involved both early and extended contact.

Each mother returned to the hospital 29 to 32 days after discharge for a follow-up session consisting of (1) standardized interviews, (2) observations of mothers' behavior during a physical examination of her infant, and (3) a film study of the mother feeding her infant. (There is no mention if the observers were blind to group membership). Mothers in the extended contact group, at 1 month following birth, were more reluctant to leave their babies with babysitters, were more attentive during the physical examination, and engaged in more soothing, fondling and 'en face' ⁷ behaviors than did mothers in the control group. This was seen as evidence of stronger mother-infant bonding.

At the first year follow-up session, only four differences emerged, which again were interpreted as indicating "more attachment" in the experimental group of mothers: upon returning to work more extended contact mothers reported missing their infants; they spent a greater percentage of time soothing and kissing the infants when they cried; they spent more time helping the physician as he examined the infants (Kennell et al., 1974). Although there were four measures which discriminated the two groups, there was also a larger body of data which showed no differences. In particular, none of the mother infant

interactions during the interview, the Bayley examination, the picture taking, or the free play showed differences between the two groups. The behaviors in all these analyses are not listed, nor are the number of behaviors they included, so the reader cannot determine the probability that the four significant differences occurred by chance (Myers, 1984:248).

When the infants were 2 years of age, 5 mothers were selected from each group and the linguistic behavior of the mother toward her infant was tested (Ringler et al., 1975). The extended-contact mothers asked more questions, and used more words per proposition, fewer content words, more adjectives, and fewer commands in addressing their children than did the control mothers. Such verbal behavior was believed to suggest closer mother-infant bonding. These differences were believed to indicate a style of speech that is greater in variety and elaboration. Yet it is not clear from the report what other linguistic factors were tested for differences, so again it is difficult to determine to what extent the reported differences might have occurred by chance.

At 5 years, 19 of the 28 children took three tests of intellectual and linguistic functioning (Ringler et al., 1978). Their mothers were given an IQ test. There were no significant differences on any of the tests between the mean scores of the extra contact and control children. Also there were no differences between the groups on maternal IQ. However, an

interesting pattern did emerge. In the early contact group a few measures of maternal speech were significantly correlated with measures of the child's linguistic competence: several dimensions of maternal speech (number of adjectives, words per proposition) were correlated with their children's performance (receptive abilities, IQ). Moreover, this groups of mothers' IQ was significantly related to their childrens' IQ. In contrast, these correlations were not significant in the control group. Neither the r values nor the raw scores are provided. Thus a relationship between the mothers' speech when their children were 2 and the childrens' intellectual and language performance at age 5 occurred only among the extra contact mother-infant pairs. According to Klaus and Kennell (1976:59) these findings suggest that "just 16 extra hours of contact within the first three days of life affect maternal behavior for one year and possibly longer and offer support for the hypothesis of maternal sensitivity".

Nevertheless, as both Leiderman (1981:457) and Rutter (1982:203) point out a review of these studies raises two fundamental questions. First, Klaus and Kennell do not address the issue of whether early contact constitutes a 'sensitive phase' as there are no data on early deprivation and then later contact over an extended period for comparison. A second concern centers on whether early contact is necessary as well as sufficient to modify maternal behavior, and whether

or not other factors, such as marital status, socioeconomic status affect the generalizability of the results. Long term effects that these series of studies report generally apply to women who are predominately unmarried, black and of relative low socio-economic status. Socially disadvantaged mothers who receive social and psychological support from hospital and clinical researchers when given the opportunity for early contact with their infants do modify their behavior toward them. Moreover, effects of greater maternal involvement with the children were not apparent until much later. Extended contact children showed improved cognitive performance when tested at 5 years of age.

As Klaus and Kennell failed to control for the possible effects of marital status, ethnicity, culture, and SES, the studies of de Chateau are important. de Chateau and Wiberg (1977a) allowed 22 middle-class Swedish primiparas^a and their infants 15 minutes of extra skin-to-skin contact shortly after delivery during which a midwife helped the mothers establish nursing. These mothers were then compared with 20 primipara control mothers. Behavioral measures were taken at 36 hours, 1 year, and 3 years postpartum. Thirty-six hours after delivery, one relevant difference appeared. The experimental group held their babies more during a 25 minute observation period. Two other behavioral differences appeared, but their significance is unclear: the experimental group

^afirst time mothers

mothers sat up more, and the control group mothers leaned on an elbow more. These 3 differences were the only effects found in 35 measures observed. Moreover, these effects were found only for the boys. More direct indicators (i.e. smiling at infant) did not differentiate early contact from late contact mothers.

At the 3 month follow-up, a home observation and interview were conducted. de Chateau and Wiberg (1977b) found that the early contact mothers kissed and held their infants more in the 'en face' position and cleaned their infants less than did the control group mothers. Again these differences were only for the boys. Infants in the early contact group cried less and smiled and laughed more than infants in the control group. A total of 61 behavioral items were scored, and t tests (tests of significance) were performed using 6 sets of paired comparisons for each behavior sampled. In a total of 366 t tests (two-tailed), 16 differences of $p < .05$ were found. With $\alpha = .05$, this proportion of univariate tests of differences achieving significance would itself have occurred by chance. According to Myers (1984:251) "18 significant differences would be expected at $p < .05$ chance level".

At one year postpartum, the differences seemed more pronounced. An observation of the mother's behavior took place during a pediatric examination. Of the 26 behaviors recorded, 3 distinguished the 2 groups: the early contact mothers held their infants more closely,

engaged in more caressing and touching, and used more positive talking (de Chateau, 1980b). (The p values of these differences are not given.) The contact group infants showed superior performance on the Gesell Developmental Test (reports of the significance of the mean differences are not given). However, the magnitude of the differences is small — 2 differences were less than 1 week, 2 less than 2 weeks, and one, gross motor, being 3.3 weeks. A maternal interview also revealed a number of group differences. Compared with control mothers, early contact mothers reported more accelerated language development, less eagerness to return to work, less parental involvement, less willingness to give infants rooms of their own, and earlier bladder training. Although the meaning of these differences is not clear, for de Chateau these differences indicated superior maternal bonding for the early contact mothers. This conclusion, as many critics such as Lamb (1982:756) and Myers (1984:252) counter, is clearly not justified. It is not evident that a delay in returning to work or giving the infant its own room indicate positive feelings. As in the studies by Klaus and Kennell, de Chateau does not examine the specific question of a sensitive phase. Moreover, as the results overall are not really significant, one has to question if 15 minutes of extra contact time postpartum versus no contact time is a sufficient test of the bonding hypothesis.

Methodological Critique of Human Bonding Studies:

The field of child development and the family "...is, in fact, one beset by methodological problems arising at all stages of the research endeavor: design, conception of variables, sampling, recording, compiling, analyzing, and interpreting data" (Clarke-Stewart, 1977:6). More than twenty studies on maternal attachment have now been completed and many have generated multiple reports. However, viewed as a whole, their findings provide little support for the claims of Klaus and Kennell (Arney, 1980; Goldberg, 1983; Herbert et al., 1982; Lamb, 1982, 1983; Myers, 1984; Svejda et al., 1980). For instance, reviews of these studies⁹ conclude that while several researchers claim to have shown that early mother-infant contact has positive short-term effects (Ainsfeld and Lipper, 1981; Carlsson et al., 1978; de Chateau et al., 1976; de Chateau and Wiberg, 1977; Haies et al., 1977; Klaus et al., 1972), only four have claimed no significant effects (Curry, 1979; Gewirtz, 1979; Svejda et al., 1980; Taylor et al., 1979). Of the eleven studies which explored long-term effects on mother infant attachment, six have proposed positive long-term consequences (Ali and Lowry, 1981; Ainsfeld and Lipper, 1981; de Chateau and Wiberg, 1977; Kennell et al., 1974; Kontos, 1978; Ringer et al., 1975; Siegel et al., 1980). Five studies have reported no long-term effects (Carlsson et al., 1979; Curry, 1979,

⁹ See Herbert et al., 1981; Goldberg, 1983; Lamb, 1982; and Clarke-Stewart, 1977.

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Grossman et al., 1981; Taylor et al., 1979; Vietze et al., 1978). In short, research suggests that early contact may have immediate positive effects but that long-term effects occur less reliably. Yet this conclusion is tentative at best due to the various methodological flaws inherent in these early studies (Lamb, 1983:498).

Most of the research on bonding fails to take into account the formidable methodological problems of specifying precisely what such a global term means. In turn, assessing of the significance and inter-relatedness of those component behaviors thought to be indicators of bonding is equally problematic (Arney, 1980:552; Goldberg, 1983:1362; Herbert et al., 1982:213; Lamb 1982, 1983; Lamb et al., 1985:18; Svejda et al., 1980). The definition put forth by Klaus and Kennell (1976:2) — an attachment is a unique relationship between two people that is specific and endures through time—has been criticized for its vagueness and many alternatives have been proposed. For instance, both Herbert et al., (1982) and Miriam Rosenthal (1973) object to viewing attachment as a bond between two people that has a significant influence on the development of only one member of the dyad. Instead attachment is viewed as only one aspect of mother-infant interaction. Rosenthal (1973:202-203) argues that attachment is not a 'trait' or 'system' which characterizes the personality of one of the partners in the interaction. Attachment does not exist outside the interaction between mother and

infant, but is a *characteristic of some patterns of interaction* between mother and infant itself (i.e. a given conditional probability for a certain sequence of events) (italics added). However, Rosenthal's definition itself is not precise — attachment is not a characteristic of patterns of interaction. Instead, attachment is a *psychological state* that results from some patterns of interactions between the mother and infant.

As there is little agreement on how maternal bonding is operationally defined, a variety to discrete behaviors thought to reflect maternal feelings and attitudes have been used. However, it is not always clear how these behavioral indicators are interrelated or are related to maternal bonding and attachment. Nor is it clear what criteria can be used in order to test their validity. In order to subsume under one concept two different behavioral categories, as indicators, these two categories should "behave" in a similar fashion in a varied set of conditions (Rosenthal, 1973:202). For example, studies of extra contact during hospital stay used two major classes of outcome variables. The first set of variables tested the frequency of the mother's affectionate behavior using the following indicators: body contact, en face presentation, gaze, vocalization, and touching. The second set of variables consists of some measure of success at breastfeeding, such as length of time mother breastfeed her infant or extent of supplementary feeding. However, the value of breastfeeding as an indicator of maternal

bonding is questionable. A woman's decision to breastfeed and how long she does so, Leiderman (1981:461) points out, "...is a derivative of cultural values, social and economic conditions in the family, and individual preferences." Thus, while there may be effects of extra contact opportunities on feeding practices, these most likely are not relevant to mother-infant bonding. As yet, no study has demonstrated that mothers who breastfeed rather than bottle feed or who breastfeed for a longer time period are actually more "bonded" to their child (Myers, 1984:255). Breastfeeding, therefore, can only facilitate social bonding. It is not a good direct indicator of bonding (Goldberg, 1983:162; Konner, 1981:10-11; Leiderman, 1981:462; Lamb, 1982, 1983).

Other researchers have chosen to include even more idiosyncratic measures in their studies. As already discussed, in their studies Klaus and Kennell questioned mothers at 1 month postpartum about their caretaking abilities. One of the interview questions was: "When the baby cries and has been fed, and the diapers are dry, what do you do?" On a scale of 0 to 3, a score of 0 was given for letting the baby cry it out and 3 for picking it up every time. Another interview question was: "Have you been out since the baby was born, and who sat?" A score of 0 was given if the mother had been out, felt good about it, and did not think about the infant while she was out. A score of three was given if she did not leave the baby or if she did go out but thought constantly about the baby

(Klaus and Kennell, 1976:54-55). These questions did not yield a significant difference when taken alone, but did distinguish the groups when artificially combined. While it is common practice to planfully combine individual test items into a composite score in order to increase the reliability of a measure, it is not acceptable to do this combining *post hoc*. There is no evidence that there was a prior plan to create a scale which included these measures (Myers, 1984:250). Moreover, the meaning of the mothers' responses is not easy to interpret. The practice of picking up a crying baby or letting the baby cry for a while is more culturally determined than it is a display of affection. Feeling worried when away from one's infant can be caused by insecurity as it could be by affection.

Similarly, the maternal language variables measured by Ringler et al., (1975) bear little relation to maternal affection — for example, contact mothers used more adjectives, asked more questions, gave fewer commands, and used more words per propositions than routine care mothers (Goldberg, 1983:1367; Lamb, 1983:490; Myers, 1984:250).

In a Canadian study conducted by Kontos (1978) a summary attachment score was devised by adding together 15 behavioral items judged to indicate attachment. These behaviors were chosen to concentrate on the amount of attention, bodily contact, and stimulation provided the infant. Some of the behavioral indicators seem to bear little

relation to bonding — hold on shoulder, change position, play with toy, play without toy, and walk or stand with infant.

Indeed such behavioral indicators can only reflect some partial aspect of mother-infant interaction. As Rosenthal (1973:203) argues, once maternal bonding is no longer viewed as existing outside the interaction between mother and infant, there is nothing to be indexed. Instead, one studies the *lawfulness and patterns of a process* (italics added). In his 'relationship' approach, Hinde (1987:32) also contends that measuring simple aspects of interaction (i.e. frequency of maternal controls) is less revealing than either ratio measures or measuring the relations between different types interactions in the same dyad. Data about the relative frequency, and patterning of different types of interactions (i.e. were expressions of affection more or less common than maternal inhibitions?) are lost when generalizing about relationships only from the level of interactions.

Stern (1971) demonstrated that these separate maternal behaviors are elicited together in one 'coordinated package' spontaneously and almost at a level of unawareness in most caregivers. The mother performs a facial display while vocalizing and while gazing, and within the framework of a discrete head movement coupled with facial presentations. Similarly, Dunn (1975) found continuities over time which are best described in terms of "interactional styles" rather than of

exclusively maternal behavior. Thus, it is not possible to assume that a correlation between measures of maternal responsiveness is independent of infant characteristics.

In a longitudinal study which followed 77 mothers and infants from birth to five years, Dunn and Richards (1977) examined a number of behavioral indicators of affection. Correlations between measures were not high. Moreover, they did not find a unitary attribute of "warm mothering". Their analysis of early feeding interaction indicated that measures of maternal attachment do not co-vary in any simple way. Differences in maternal behavior were associated with different infant and delivery factors. For example, success and coordination of infant feeding is affected by labour and delivery variables. As well total sucking is correlated with differences in infant's latency to cry on removal of the mother's nipple and not with measures of affection and contact.¹⁰ Touching the baby, commonly used an indicator of maternal bonding, did not correlate with other indicators of maternal feelings. Interaction was bidirectional with the infant being a vital contributor.

In the case of infant-to-mother attachment, Ainsworth (1976) recommends the use of thirteen "patterns of attachment behavior" to describe the way in which such behavior is organized and manifested. No less should be demanded for mother-child bonding. In fact, in their

Korner, who has studied mother-infant interaction among the !Kung for many years, similarly states that "1981:1-11 - there is no evidence that sucking patterns exert any influence on later information processing or mother-infant relations".

study Lewis and Ban (1977), in addition to the usually six maternal behaviors (hold, look, touch, smile, play, vocalize), studied mother infant interaction. They counted how often a mother responded to an infant's behavior (smile, vocalization) with some gesture or look, and how often an infant responded to a mother. Thus, as many researchers advocate, if one views the child as an active participant in a social network, research on attachment will be more fruitful than if one focuses narrowly on maternal bonding behavior and its consequences.

Imprecision in the definition of concepts establishes the basis for serious methodological errors. Lack of consensus requires that multiple indicators of a concept be used. Yet each indicator brings with it its own difficulties of measurement. As mentioned, to reduce difficulties with any single indicator of attachment, researchers search for correlative differences in several indicators in the same study of bonding. Separate tests of statistical significance for each indicator are then performed. However, this practice biases results in favor of the researcher because each additional test increases the probability of finding "statistical significance" simply by chance (Arney, 1980:552; Lamb, 1983:490). When one considers the ratio of significant findings to statistical tests performed, Lamb (1982; 1983:490) argues that, "one is forced to conclude that the studies by de Chateau and Wiberg (1977a, b), de Chateau (1980), Hopkins and Vietze (1977), Kennell et al. (1974), Ringler

et al. (1975), Vietze et al. (1978), and Ali and Lowry (1981) obtained no reliable evidence of effects even though the authors claimed to have found some". Viewed in the context of the small number of replications, it is possible that the significant differences are random effects rather than demonstrations of successful experimental treatments.

After a review of attachment literature, Masters and Wellman (1974:218) similarly argue that "correlations which are significant in one sample often fail to reach significance in an independent sample...and the temporal stability, cross-situation consistency, and cross-behavior consistency of attachment behaviors are not great". Moreover, Masters and Wellman (1974:228) conclude that "correlational analysis of human infant attachment behavior does not provide substantial support for the concept of attachment as a psychological state or a central motive state". In other words, as measures of attachment are not easy to quantify, they are dependent to some degree upon the researchers' interpretations of the quality of observed behaviors. It is not evident that such behaviors have anything to do with specific bonding, and hence constitute unreliable measure of individual differences in attachment (Arney, 1980:553; Herbert et al., 1982:208; Lamb et al., 1985:29; Svejda et al., 1980). Such criticisms concerning the use of multiple indicators is especially severe in this field due to the high degree of inconsistency in

results which in turn means that replications of findings is relatively rare (Arney, 1980:553; Herbert et al., 1982:203; Lamb, 1982, 1983).

However, Lamb et al., (1985:29-30) aptly point out that attachment researchers were not concerned by such results; they would not have predicted high intercorrelations among attachment behaviors for the following reasons. First, specific attachment behaviors evident in any given period are determined by endogenous (fatigue, illness), contextual (familiarity or friendliness of others present), and situational (familiarity of the environment) factors. Hence high intercorrelations across time and social context would not be expected as specific behaviors multiply and are complexly determined. Secondly, most of the studies involved very brief assessment periods which are certain to yield measures of extremely poor reliability. Thirdly, ethological attachment theorists argue that it is the *patterning* of attachment behaviors that is crucial, not the absolute levels of any individual measure viewed in isolation. Many different behaviors serve the same function, and thus must be considered functionally equivalent. The fallacy of the intercorrelational studies was that they focused on intercorrelations among discrete measures without regard for the overall patterning, goals, and functions of behavior (Lamb et al., 1985:30). In addition, significant correlations only point to some kind of control mechanism, they cannot tell you what that mechanism is. Lack of correlations does not mean that there is no

control mechanism. But controls may be less deterministic which is the case with strong correlations.

There are other more serious errors of method to be found in the early bonding studies. Early studies commonly share an ideology of “normality” (Arney, 1980:553). For instance, Leifer et al. (1972) report many complicated tests of significance on multiple indicators of bonding. Some tests support a hypothesis to the effect that differences in behavior are caused by extended contact, some do not. In a post script, Leifer et al., state that:

There are other differences between the groups that are not reflected in the observational data presented here and *are probably outcomes of their separation experience*. For instance, within the sample of 26 separated and 23 contact mothers of prematures who participated in any phase of the study two relinquished custody of the infants sometime after hospital discharge. Both of these mothers were in the separated group. Also, there have been six instances of divorce among the parents in this study, five of them in the separated group...Finally, there were four mothers who attempted to breast-feed their infants. Two of these mothers were in the contact group and two in the separated group; one mother in each group was a primipara and the other a multipara who had successfully breast-fed at least one previous child. The only mother to succeed was the multiparous contact mother (Leifer et al., 1972:1213-1214). [italics added]

They conclude:

These actions (divorce and relinquishing custody) represent severe disturbances of normal maternal and marital behavior...The existence of these cases, while few in number, suggests that early separation of mother and infant may seriously disrupt maternal behavior (Leifer et al., 1972:1214).

As Arney (1980:553) contends this is a blatant example of searching out of data to bolster a theory when the original research is less than totally successful in doing so.

In addition to problems of conceptualization and measurement, there are serious problems with the design of separation studies. First, there are difficulties in obtaining comparable experimental and control groups. Also there are problems in experimental treatments being confounded with other variables (Arney, 1980:553; Lamb, 1983:490). In separation studies 'matching' controls the effects of variables, other than the experimental treatment itself, that might influence bonding behavior. In most of these studies, experimental and control groups are matched on variables that might influence results prior to the start of each study. This is especially important as the sample size in many of the bonding studies is small. Simple randomization of a small number of subjects does not adequately eliminate the plausible hypothesis that 'life course events', and not the experimental manipulations, caused the observed differences.

According to Arney (1980:554) and Lamb (1983:491) the problem is that there is no assurance that groups *remain* comparable as the study proceeds, and therefore, no assurance that the effects of life events bearing long term results of attachment or nonattachment have been controlled. Such assurance is essential when differences in groups up to

five years from experimental assignment are associated with the experimental manipulation. For instance, the study by Klaus et al. (1972), subjects were randomly divided into control and experimental groups after matching based on their day of delivery, sex and weight of infants, and the socioeconomic status of the family. Yet in order to infer that differences at one month, one, two and five years are attributable only to experimental manipulation of sixteen extra hours of maternal-infant contact in the first three days of life, the life courses of experimental and control groups prior to and after delivery would have to be similar (Arney, 1980:554; Lamb, 1982:762).

Hence many studies leave several important questions unanswered. Did equal proportions of experimental and control groups subjects have prenatal courses? What were parents' prenatal expectations concerning their babies? What proportions of pregnancies were planned? After discharge, to what kind of home environment did the mothers and infants return to? Was there continuing employment for the parent(s)? Were there pregnancies during the five year follow-up? What impact did subsequent pregnancies and births have on the family?

These questions are, as Trevethan (1987:49-50, 55-60) points out important as bonding studies are often conducted on people drawn from the unmarried ranks of lower social strata where life courses are likely to change frequently and rapidly. When not only pre-existing groups

differences, but also differences in infant characteristics such as sex or temperament, have been accounted for, as in Sosa et al.'s Guatemalan samples or de Chateau's Swedish sample, differences between members of comparison groups seem as likely as the treatment itself to account for reported treatment differences (Lamb, 1983:491).

Even if problems of life course comparability could be eliminated by conducting studies with large samples, there still remains the problem of confounded experimental variables. Nursing and medical staff members usually know that the experimental groups subjects are special. Yet such factors are rarely controlled to ensure that treatment of mothers are not affected (Arney, 1980:555; Lamb, 1982, 1983:490-491). Differences in familiarity with medical routines, and staff members who have been unusually supportive may account for the finding that early contact mothers are more likely to stand and watch physical examinations of their infants than sit passively (Arney, 1980:555; Lamb, 1983:490; Trevathan, 1987:211). These mothers might presume that they need not surrender their children to health professionals, and remain in the background during the examination. Various measures such as mothers' reaction during a pediatric examination, mothers' eagerness to return to work, degree of parental involvement in infant care, and timing of toilet training are not strongly correlated with

attachment and hence should not be used as measures of mother-infant bonding (Myers, 1984:250; Trevathan, 1987:211).

Similarly, en face position, fondling and soothing behaviors may be unintentionally or intentionally encouraged by staff members during the extended contact period (Arney, 1980:555). Encouraged in early contact, bonding behavior can take on the characteristics of normal behavior as medical staff have taken upon themselves, and have been accorded by patients, the tasks of deciding what normal parental behavior is. When mothers in the experimental group are housed with mothers being treated differently, they are likely to perceive themselves as different (Lamb, 1983:491; Svejda et al., 1980:778). This problem can be reduced by treating all women on a certain ward similarly regardless of whether or not they are in the study. Long term assessment may also be compromised by widespread publicity surrounding individual studies and the bonding phenomena generally (Lamb, 1983:491).

Critical appraisal of the early maternal bonding studies clearly indicates that methodological problems, which beset each stage of research, have eventually led to a major problem of nonreplication (Herbert et al., 1982; Lamb, 1982, 1983; Svejda et al., 1980). For instance, Goldberg (1983) and Lamb (1983:489-490) have cited the following studies which, although the same measures were employed repeatedly, failed to find the same differences in successive observations

of the same subjects: Ali and Lowry, 1981; Carlsson et al., 1978; de Chateau and Wiberg 1977 a, b; Grossman et al., 1981 a, b; Siegel et al., 1980; Taylor et al., 1979; and Vietze et al., 1978. Lamb (1983:490) also lists the following comparable studies which failed to demonstrate similar effects on the same measures: Hales et al., 1977 vs. de Chateau and Wiberg, 1977a, and Svejda et al., 1980; Hales et al., 1977 vs. Hopkins and Vietze, 1977; Klaus et al., 1972 and Hales et al., 1977 vs. Taylor et al., 1979.

Even Svejda et al.'s research (1980), which is one of the few carefully controlled studies, failed to lend reliable support to the bonding hypothesis. Svejda and her colleagues used a double blind experimental design, random assignment of thirty mother-infant dyads to contact conditions, and response indices appropriate to the attachment construct. Fifteen healthy primiparous mothers had their infants for one hour at delivery and ninety minutes at each feeding. Another fifteen were kept to the usual hospital routine: brief contact at delivery and thirty minutes at each feeding. In order to minimize a feeling of 'specialness' in the extra-contact mothers, mothers who were not in the study but who shared a room with these mothers had their infants longer at each feeding. This apparent difference in contact time was eliminated. Yet no differences in maternal behavior were obtained on twenty-eight discrete response measures or on pooled sets of individual

measures (affectionate, proximity-maintaining, caretaking and miscellaneous response criteria).

Svejda et al., (1982:777) found little support for the effect of additional early contact on maternal behavior and some of their findings run counter to previous reports. The results of several other well designed studies also fail to support the bonding hypothesis. Lamb (1982:764) and Myers (1984:260) cite a 1979 study by Taylor et al., a close replication of the Klaus and Kennell design, that showed extra contact had no effect on attachment at 1 month, on the amount of time the mother spent with the infant in the hospital, or the mother's perception of her infant at 2 days or 1 month. Extra contact was linked with better interaction during feeding but only for male infants. Although the extra-contact mothers were expected to rate their infants as being more positive in mood, more regular, less intense, and more adaptable, no contact differences were found for any of these temperamental categories.

A longitudinal study by Siegel et al. (1980) of 321 low SES mother-infant pairs examined the effects of 2 treatments: early and extended contact, as well as home visits by health care paraprofessionals. They hypothesized that extra contact between mothers and infants and home support visits would positively influence maternal bonding and would help reduce child abuse and neglect. Moreover, it was felt that both

interventions would affect the use of health care, which was measured by fewer emergency room visits and hospitalizations. However, the results demonstrate that the 2 interventions were not as important in explaining variance between the 2 groups than were maternal variables of race, marital status, parity, education, age, and verbal test score. The home visits were not significant predictors of any of these variables. Early and extended contact accounted for only 2.8% of the variance in "maternal acceptance" and 3.3 % of the variance in "consoling". At 12 months, early and extended contact accounted for only 3.2% of the variance in "infant positive/negative behavior". Early and extended contact did not affect the likelihood of reported child abuse/neglect or the utilization of health care services. In light of these findings, Siegel et al. (1980:189) suggest that "...it appears that programs other than early and extended contact and home visitation must be developed to produce substantial influences on attachment, reports of abuse and neglect, and health care utilization".

According to the bonding hypothesis early behavioral differences shown by early contact mothers might be expected to increase and even grow. An early pattern of synchronous interaction should develop which in turn would lead to optimal parenting for the mother and superior functioning in the infant (Myers, 1984:263). The series of studies by de Chateau (1980a) and by Klaus and Kennell's group (Ringler et al. 1979)

report finding certain superiorities in extra contact mother-infant pairs when the child was 3 and 5 years old. Nevertheless, studies by Grossman et al., (1981a, b) and Leiderman (1981), which reported favorable results in the first few days postpartum, found that in the following weeks and months, such differences had disappeared.

Leiderman's study gives the strongest case for the "washing out" of early effects on extra contact (Myers, 1984:264). This longitudinal study focused on how the absence of the infant in the neonatal period might shape subsequent maternal attitudes and behavior (Leiderman, 1981:458-459). Three groups of children were followed from birth up to a period of 5 to 8 years of age. Mothers in the contact group began caretaking and/or touching within 1 to 3 days postpartum. This group was then compared to mothers of premature infants who experienced the typical separation of 2-3 months. Both groups were compared to a full-term sample in order to see if an 8-12 week separation might constitute a sensitive phase. Although this study found that early separation of mother and infant did affect maternal attitude (i.e. mothers were less confident and less committed), these differences disappeared by 1 month after discharge. Maternal behavior was also modified, with less ventral-ventral contact in the separated mother-infant pairs. Again these differences disappeared approximately 1 year later. The socio-economic status of the family, the infant's play behavior, and gender of the infant

were more important variables in differentiating maternal behavior of contact and noncontact mothers than the experience of separation or nonseparation.

In the 21 month posthospital discharge evaluations all differences in maternal behavior among the 3 groups had disappeared except that mothers of prematures attended to their child more than mothers of full-terms. Other maternal behaviors were not differentiated either by prematurity or by early separation experiences. Differences in behavior which was attributed to socioeconomic status and gender of the infant at the first year of age also disappeared by the 21 month evaluation. Other family variables (such as socioeconomic status, mother's parity and postpartum experience, infant's gender and birth order) in the infant's first 2 years of life, rather than initial separation, were found to be the major influences in reducing the differences among the 3 groups at the end of the first year (Leiderman, 1981:459).

At 21 months the infants were also given the Bayley examination. It was found that none of the early variables —treatment group, early maternal attitudes, early maternal behaviors or family socioeconomic status—predicted the infant's score on the Bayley. On the mental scale, higher SES infants performed better, and girls performed better than the boys. On maternal attitude and behavior variables, infants whose mothers felt closer to them and held them more (which can be

interpreted as stronger bonding) did *less well* on the mental tests (Leiderman, 1981:460) (*italics added*).

The effects of separation for the premature group may have contributed to higher marital discord in the infants' first 2 years. More of the premature-separation families experienced marital separation or divorce in the first 2 years than did the other two groups. However, in subsequent years the premature-contact and full-term families caught up in the number of dissolved marriages.

The 5-to-8 year postdischarge interview did not reveal any outstanding differences between the separated and contact groups. This lack of difference emerged between groups whose postnatal experience was dramatically different.

Thus Leiderman (1981:460) concludes that "contact, beginning within 24 to 36 hours postpartum does not produce major changes in maternal behavior and attitudes by 2 and by 5 years after hospital discharge". Other variables affecting the mother-infant pair—specifically family's socioeconomic status, mother's parity, infant's gender, and later postpartum experiences—were more important than the immediate postpartum experience in accounting both for infant and maternal performance. "A sensitive phase", Leiderman (1981:461) asserts, "if it does exist, is at least 3 months in duration and not only influences the mother-infant bond but extends to the familial network."

SUMMARY

The ethological evidence reviewed clearly indicates the extreme complexity of the neural/hormonal and experiential mechanisms that determine maternal responsiveness. Research continues for several species to outline the timing of neural/hormonal mechanisms and to answer questions as to how much contact is needed, and when it must occur to initiate and maintain maternal behavior (Myers, 1984:245). The maternal responsiveness of nonhuman primates has been taken for granted so that there have been very few studies done on the neurological and endocrinological processes underlying maternal behavior in nonhuman primates (Coe, 1990:157). The studies on nonhuman primates, however, demonstrate that mothers and infants exhibit a wide range of behaviors adapted to differing environmental and cultural conditions. Moreover, primate infants, such as the langur and rhesus macaques, are highly active and adaptive participants in their relationships. Both males and female rhesus monkeys can overcome the effects of maternal deprivation and learn to care for infants. Thus for higher primates parenting is not strictly hormonal, social learning is also an extremely important factor.

Ethological evidence also indicates that the majority of the phenomena based on sensitive phases can be either altered, suppressed,

or superseded by other preferences or behaviors, given the appropriate environmental circumstances. Immelman and Suomi acknowledge that:

It is true that in some species, for some functional systems, the relevant sensitive phases are relatively brief, with well-defined chronological points of onset and termination....However, these cases should not be considered as representative of sensitive-phase phenomena in other species and/or functional systems, as they have been in the literature to date. Rather, they should be considered as extreme cases of a much more general and widespread phenomenon characteristic of many developmental processes (Immelmann and Suomi, 1981:425).

It follows then more common are behavior patterns that are semipermanent (Immelmann and Suomi, 1981:416). For instance, the developmental problem for humans is difficult: we must survive in many different physical and social environments and in a wider range of caregiving systems (Herbert, et al., 1982:217-219; Lamb, 1983:489; Leiderman, 1981:464; Myers, 1984:245; Reed and Leiderman, 1983:66). As Leiderman (1981:464) argues it is unlikely that human attachment and parenting would be narrowly and critically dependent on hormonal triggers and preorganized behavior patterns. Instead, it is more likely for humans, in whom a child's dependency lasts for decades, that social bonding systems will have sufficient "redundancy" to ensure the attachment of the mother (and father) to the child. Leiderman (1981:465) explains that this "redundancy" is particularly plausible for human mothers, in whom social bonding to several individuals over a lifetime is typical. This prolonging of the sensitive period for mother-

infant bonding is consistent with the longer sensitive period for sexual imprinting, absent in some avian species. This is in contrast to the relatively short sensitive phase for filial imprinting in which bonding the immature organism is to a single individual. Similarly, Lamb (1983:489) states that "as one ascends the phylogenetic hierarchy, preprogrammed behavioral patterns become less significant while environmentally sensitive behavior become more significant".

The human studies also do not support the hypothesis that the postpartum period is a brief sensitive period for mother-infant bonding. There are too many weaknesses in the positive studies and too many negative results in the remaining studies to lend support to the bonding hypothesis. At best the evidence suggests that in humans maternal attachment develops over a period of weeks (Dunn, 1975) or even over several months (Leiderman, 1981). Leiderman and Seashore (1975) suggest that the postpartum period is simply a time of high saliency and arousal in which learning can take place rapidly. Of course, this is not the only time in which learning about the infant takes place.

The human studies demonstrate that as maternal bonding is bidirectional simply assessing separate behavioral indicators is inadequate. Instead as Hinde (1987) and other researchers recommend analysis should proceed from the relationship level describing the pattern, content and quality of constituent interactions. Moreover,

various studies such as Leiderman's (1981) point out the necessity of considering various variables such as the family's socioeconomic status, mother's parity, infant's gender, and later postpartum experiences in evaluating both maternal and infant behavior.

Belsky and Benn recommend a change in the perspective on the postpartum period. Instead of asking whether bonding exists, they advocate that we should look at this period as a major transition in the life of a family which involves stress and requires significant alterations in customary life patterns (Myers, 1984:269). Myers (1984:269) suggest that researchers take this perspective a step further to move beyond bonding to (1) identify other transition points in the infant's and family's life, and (2) ask what processes or inputs would help a family make the most of this opportunity for change. What kind of life events might be indicated? Myers feels that:

This changed perspective takes the burden off proving that a particular transition point is critical to some later development in an all-or-none fashion. It also avoids the harmful practice of abandoning attention to a transition point (such as the postpartum period) if it fails to qualify as a critical period (Myers, 1984:269).

In their critiques, both Goldberg (1983) and Leiderman (1981) propose future directions that research on mother-infant bonding should concentrate on. Leiderman (1981:462) points out that the question regarding the length of the sensitive period remains unanswered. Also researchers have not addressed the question of whether the onset of the

sensitive phase for social bonding is initiated at birth or develops before birth. Biberig (1959) suggests on clinical grounds that affection for the infant begins at the time of quickening (feeling fetal movement), at approximately 5 months gestation. This observation raises the issue of individual differences in maternal attitude toward pregnancy and its influence on the initiation of social bonding. Leiderman (1981:463) also suggests that additional evidence that could help elucidate the experiential, temporal, and situation components in the ontogenesis of mother-child bonding might be the study of mothers of adopted children. As parents adopt children of different ages, researchers could test the hypothesis that the onset of the sensitive phase for bonding varies according to the age of the child. In addition, parental behavior of adoptive children may be compared with that of natural parents and behavior of mothers and fathers who have both natural and adoptive children. These studies Leiderman feels could help disentangle the complex series of events bound up in childbirth, early contact, feeding practices, and sensitive phases in social bonding. The more important issue is not to elucidate whether or not there is a sensitive period for the initiation of social bonds. Instead Leiderman (1981:464) feels it is more important to determine the necessary and sufficient conditions to maintain these bonds once they have been formed.

Goldberg (1983:1378-1379) proposes the following 4 areas for future research:

1. The study of individual differences to determine how conditions surrounding labor, delivery, and recovery affect maternal responsiveness, how factors such as parity, infant's gender, planned or unplanned pregnancies enhance or depress effects of early contact, and whether the affective quality of the first experience is contained in later interactions.

2. The assessment of parental feelings and attitudes and cognitive expectations and perceptions of the infant to supplement dependent variables in current studies.

3. The study of the effects of early contact on fathers in order to separate psychological and physiological processes underlying the effects of contact.

4. The documentation of processes involved in early contact and of behaviors during first interactions for both infants and parents. This is necessary for the adequate interpretation of both existing and future studies.

Thus, for humans at least, much additional research still needs to be done.

CHAPTER THREE

AN ALTERNATIVE MODEL OF MOTHER-INFANT BONDING

The evidence reviewed thus far does not support Klaus and Kennell's hypothesis that there exists a *brief* sensitive period when it is necessary for mothers to have *close physical contact* with her infant in order for maternal bonding to occur. Nevertheless, this chapter will endeavor to show that mother-infant bonding can still be constructed as an ethologically valid 'process'. An alternative model for understanding the process of bonding is proposed which emphasizes the reciprocal nature of the mother-infant relationship. Some of the behavioral and psychobiological evidence demonstrating that mother-infant interaction takes place on a number of sensory levels will be discussed. As well some of the primary factors (demographic, sociocultural, environmental, psychological, etc.) that influence the behavior of both partners in the dyad will be profiled.

PRINCIPLES OF MATERNAL BONDING AND INTERACTION

First, a few principles derived from the animal studies and the early human studies will be briefly reviewed. The animal research shows that *extremely rapid bond* formation, except for ungulates, is unnecessary unless there is a chance that the young will be mixed with

others in the first few minutes or hours after birth. This is not the case for most mammalian species, especially for higher primates and humans who live in groups too small for synchronous deliveries to be common and who have a level of awareness that would preclude great confusion over individual identity during the postpartum period (Trevathan, 1987:202). Moreover, as higher primates and humans have to survive in a variety of different physical and social environments and in a wider range of caregiving systems, *flexible behavioral patterns* are more adaptive than are preorganized behavioral patterns *critically* dependent upon hormonal triggers.

Primate models suggest that the mother-infant bond in most species is *bidirectional* from the moment of birth. Most primate infants are precocial enough that they can maintain proximity to their mothers by clinging to them and by nursing whenever they want. The mother helps the infant cling in the early postpartum period and provides easy access to her nipples. Individual recognition may begin with licking and visual inspection of the infant immediately after birth, but there is no evidence that a bond develops rapidly in a brief period of time. In several species infant sharing is tolerated soon after birth. However, mother and infants are not uncertain about who belongs to whom, so it is unlikely that a strong and specific bond is developed within a few hours after birth.

With humans a major difference is the relative altriciality of the human infant. This means that it is up to the mother to maintain proximity. As with other primate species, the mother's responsiveness to her newborn is *multiply* determined and may be differentially related to *hormones and experience at different time points*.

From the early human studies, we can conclude that early physical contact is not necessary in establishing and maintaining the mother-infant bond. Some of the more methodologically sound studies found that it takes time for the mother and infant to settle into a characteristic pattern of interaction: from a few days to 3-4 weeks (Dunn, 1975) or even up to 3 months (Leiderman, 1981). Indeed, social interaction always takes place over time and requires a mutual ability to integrate responses into one a consistent flow.

ALTERNATE MODEL OF MOTHER-INFANT BONDING

Based on evidence from the ethological and early human studies, and modifying Hinde's 'relationship approach' to the study of human behavior, mother-infant bonding can be re-defined as:

a process of *interactive* behavior between the mother and infant that takes place *over time* and that leads to a state of mutual attachment and entrainment.

Both partners in the dyad are intimately involved with each other on a number of sensory levels. Their behaviors complement each other: the infant elicits certain behaviors from the mother, and in turn the mother

elicits certain behaviors from the infant. The frequency, patterning, and quality of the mother's behavior (and that of other caregivers) is *guided* by: inherent behavioral and psychological predispositions¹¹ and motivations, expectations of appropriate infant behavior, past experiences, responses received from the infant, cultural values and beliefs (including those concerned with child care and rearing), and other characteristics of the sociocultural environment. In turn, the infant has signaling and other manipulative behaviors (crying, calling, following, watching, protest at separation, and so forth) as well as underlying psychological and behavioral predispositions and capacities for acquiring the necessary energetic, affectional, and informational responses from the mother. Initially the infant's behaviors are under genetic control, but as the infant develops, his/her behaviors are modified by the mother's responses in such a way as to increasingly conform to culturally prescribed social norms (Morelli and Tronick, 1991:42). Thus the mother-infant relationship varies according to each partner's individual needs, experiences, and predispositions, as well as its constituent interactions.

The mother-infant relationship is aimed at accomplishing three universal goals: infant survival and eventual reproduction, economic self-sufficiency, and enculturation. However, the behavioral strategies of

¹¹ These predispositions may arise from the properties of our sensory/perceptual apparatus, from our motor patterns, or from the properties of our nervous system (Hinde and Stevenson-Hinde, 1973).

both mother and infant varies according to various environmental conditions and sociocultural systems (LeVine, 1977). Thus, the regularities of the physical, social, and psychological parameters of the child's environment, as well culturally shared expectations for behavior by and toward individuals, is the primary source for the child's acquisition of culture, including the experience, encoding and expression of affection. This observation was also made by Konner (1976) for the !Kung, and emphasized by Caudill and Weinstein (1969), Harkness and Super, (1983), Morelli and Tronick (1991), and the Whittings (1975).

At the next level, the infant has a relationship with each and every member of the family so that father-infant and sibling-sibling interactions and relationships must be considered in addition to those of the mother and infant. In turn, relationships always involve mutual influences; children influence their parents and parents influence their children. Relationships affect each other; the mother-infant relationship is affected by the relationship between the parents. How one parent conducts him/herself with the children is influenced by the presence or absence of the spouse.

The family influences and is influenced by other social groups — extended family, friends, peers, school, church, and so forth. Moreover, in any interactional context, how the mother, infant, and other family members behave is influenced by: the beliefs (implicit and explicit), social

norms and values current in the group, the rights and duties appropriate to the person in the role (mother, father) they are occupying, and the characteristics (historic, economic, ecological, ideological, etc.) of the sociocultural structure.

MODES OF RECIPROCAL INTERACTION & ENTRAINMENT

Early research into the amazing cognitive and behavioral capacities of the normal neonate demonstrates that in the first few minutes and hours of life the infant sees, hears, and moves in rhythm to the mother's voice, resulting in a 'conversation-like' pattern in which each partner appears to be responsive to the other. The infant's appearance coupled with his/her array of perceptual-cognitive abilities, and initial behavioral responses such as clinging, rooting, grasping, and orienting serve to derive warmth and attention from the mother (These behaviors will be discussed later in the chapter.). Pre- and perinatal research indicates that the neonate is innately prepared to interact and learn from his/her environment. Indeed, citing various studies, Laughlin suggests:

that perhaps by late intrauterine life, by birth, or certainly by four months of age the child is equipped with innate higher perceptual and cognitive structures that anticipate a three-dimensional and temporal-causal world that becomes fulfilled and refined in actual perceptual experience as it arises in the sensory system...This fulfillment may include a fundamental evaluation of the object as being positive or negative, pleasurable or unpleasurable... (Laughlin, 1989:151; 1991:188).

From birth on, the neonate is conscious of and learns from any perceptual novelty in the environment. Infants demonstrate individual differences in attention to novel, as opposed to previously seen visual objects. This as well as other attention-related factors are predictive of psychometric intelligence in later childhood. Long-term memory of visual objects (recognition of faces, visual patterns, objects, speech sounds) is present at birth and increases during the first few weeks postpartum (Laughlin, 1989:151; 1991:188). Moreover, not only is the neonate neurocognitively active, but he/she is also prepared to recognize significant social events in the environment¹². For instance, Laughlin states:

...not only is the world of physical objects "already there" to the neonatal perception at or before birth, so too is the world of socially significant objects, emotional expressions and faces, and especially the face, gestures, emotional expressions, smell, physical touch, breasts and voice of its mother...Furthermore, these socially relevant objects receive characteristic bivalent emotional responses by the infant, indicating an *innate proclivity to seek out social bonding and interaction*... (Laughlin, 1989:153) (italics added).

Thus from birth on the infant has inherent capacities of shutting out or tuning into the environment, and is an *active* rather than a passive agent in the bonding process. The infant's unique capacities will in turn affect how the mother will respond to her infant, both on a *behavioral* and a *physiological level*, and cause her to modify her intended behavior.

¹² Regarding the development and various capabilities of the pre- and perinatal child see Chamberlain (1983), or Laughlin (1989, 1991).

Reciprocal Interaction:

The infant's cry, for instance, will most likely encourage the mother to pick up her baby who will then stop crying, open his¹³ eyes and follow the mother's action. In the opposite direction, when the mother touches the infant's cheek, he is likely to turn his head, bringing him into contact with the mother's nipple, on which he will suck. His sucking is not only pleasurable to both partners, but also induces prolactin secretion and oxytocin release. Serum prolactin concentrations increase during pregnancy and decrease rapidly in the postpartum period. Whenever the mother's nipple is touched, there is a fourfold to sixfold increase in her prolactin level, and then a decrease after breastfeeding starts. Oxytocin causes the mother's uterus to contract thereby reducing postpartum bleeding. The infant's sucking also permits the transfer of the mother's antibodies (i.e. IgA and T and B lymphocytes) found in the breastmilk, particularly in the colostrum, and possibly staphylococcus and other bacterial to the infant. This gives the infant a certain amount of early immunity against various infections such as Shigella, typhoid, other salmonellas, and pathogenic Escherichia coli (Klaus and Kennell, 1976:11-12,75-76).

In order to avoid confusion with the mother's action, the male pronoun will be used to refer to the infant.

Hormonal Correlates of Maternal Responsiveness:

Only recently have researchers begun a concentrated effort to study the correlates between maternal responsiveness and increases in certain hormones, such as adrenocorticotrophic hormone (ACTH), adrenal corticoids, estrogen, and prolactin that occur during human parturition. The role of hormones in this process is still unclear. Preliminary studies indicate no direct evidence that changes in maternal responsiveness are associated directly with ongoing hormonal changes. However, changes in maternal responsiveness may result from cumulative hormonal changes that sensitize (through receptor induction) the relevant underlying substrate (Fleming, 1990:193, 201). In fact, there is some evidence that hormones acting at parturition may be associated with the early expression of affectionate maternal behaviors. These hormonal effects, if causal, are believed to be nonspecific. their effect dependent on the attitudes and experiences the mother possesses at time of hormone stimulation. For instance, Fleming et al. (1987 cited in Fleming, 1990:189-191) reported a significant correlation ($r=.53; p<.05$) between concentrations of plasma cortisol both before and after periods of breastfeeding and mothers' affectionate and vocal interactions with their infants on days 3-4 postpartum. Mothers who had high plasma levels of cortisol spent more time being physically affectionate and talking to their infants than did mothers with lower levels of this hormone. Moreover,

this association was strengthened if mothers also had positive feelings and attitudes during pregnancy. A hierarchical regression analysis in which pregnancy maternal attitude scores were first entered, followed by cortisol levels, showed that the hormones made a significant contribution to the mothers' approach behavior over and above that made by the mother's attitudes. The two variables together accounted for 42% of the variance in the mother's approach behaviors. Neither maternal attitudes nor cortisol concentrations significantly predicted the amount of time mothers spent on caretaking activities.

However, Fleming (1990:190) cautions that without replication it is not known if the correlation reflects a real association or is simply a chance effect. Nor is there any evidence that cortisol directly influences maternal behavior. It may be associated with personality variables or pregnancy or childbirth events that more directly influence behavior. Moreover, the hormonal effects were limited to the early postpartum period and there was no association between the concentrations of earlier pregnancy hormones and maternal behavior at 2 months postpartum.

Fleming (1990:191) postulates that cortisol (and possibly other pregnancy hormones) released in response to the 'stress' of parturition does not directly activate positive maternal behaviors but may do so indirectly by increasing the mother's general state of arousal, her

responsivity to infant-related cues, and the extent to which she is influenced by interactions with her infant. There is some evidence to support this conclusion.

For instance, at times outside the puerperium cortisol does have arousal-inducing effects. Moreover, studies by Cutrona (1982) and Hopkins et al., (1984) indicate that new mothers are in a heightened state of arousal and tend to be labile in their moods. Some are hypomanic, while others experience periods of depression (Fleming, 1990:191). Similarly, Discover magazine, December 1995:20, reports on a study conducted by George Chrousos of National Institutes of Health who monitored the levels of corticotropin-releasing hormone (CRH) in 17 women from the last trimester to a year after they gave birth. The secretion of CRH triggers a cascade of hormones that ultimately increases the amount of cortisol in the blood. All women had low levels of CRH —as low as seen in some forms of depression — in the 6 weeks following birth. The 7 women with the lowest levels had postpartum depression. Chrousos suspects that CRH levels are temporarily low in new mothers because CRH from the placenta disrupts the feedback system that regulates normal production of the hormone. During pregnancy when CRH levels in the bloodstream are high, the hypothalamus releases less CRH. After birth, however, when the

supplementary CRH is gone, it takes a while for the hypothalamus to get the signal that it needs to start producing CRH again.

Although there is no direct evidence to support an arousal interpretation, Fleming (1990:191-192) speculates that one could predict that the mother's heightened arousal state would energize her to be more responsive to her infant. Such responsivity would translate into approach in mothers with positive maternal attitudes. On the other hand, the same heightened arousal could be translated into a more negative response to the infant — either indifference or active rejection — for mothers with highly negative attitudes or 'at-risk' situations.

Other preliminary evidence supports the hypothesis that cortisol could increase the mother's responsivity to infant-related cues. For example, numerous studies show that new mothers with as little as 2 hours of prior contact with their infants are able to distinguish, at better than chance levels, their own infant's odours from those of other same age infants (Fleming, 1990:192). In turn, breastfeeding infants by the fifth day postpartum can distinguish their mother's own breastpad from those of other mothers (MacFarlane, 1975 in Klaus and Kennell, 1976:76). Dunn (1984) speculates that a possible role for cortisol (or, more likely, ACTH) in the postpartum period may be to facilitate the mother's ability to recognize the distinctive odour, vocal, and other characteristic of their infants that would promote subsequent

interactions with their child. Mothers would require less exposure to infant-related cues than would fathers or nonparturient women to produce the same level of recognition at a later time. It is important to determine whether new mothers exhibit more rapid learning of infant cues than do fathers or even non-parents, whether the learning is easier to infant than to non-infant related cues, and whether periparturitional hormones exert an effect on this learning (Fleming, 1990:192).

Odent (1984:77) suggests that endogenous opiates, which reduce pain sensitivity and enhance a sense of well-being, may also be implicated in the bonding process because of their unusually high levels in mothers and infants during and immediately after delivery. β -endorphins have been found in amniotic fluid at term and during labor. Maternal plasma levels of β -endorphins rise at delivery, and are at high levels in infants during the first few days postpartum (Tevathan, 1987:204). According to Kimball (1979) studies of the effects of β -endorphins suggest the following:

1. They are associated with the release of prolactin and hence are important in mediating nursing behavior.
2. They have been found to suppress hostility, anxiety, and irritability, and to increase affectionate behavior.
3. Their effects are far stronger than those of morphine but produce similar dependency behavior and addictive responses.
4. Production increases during difficult and lengthy deliveries.
5. Levels at the time of elective cesarean deliveries are much lower than those vaginal deliveries.

6. High levels in fetuses at term are associated with high levels of corticosteroids, prolactin, and lung surfactants, which are, also associated with low incidence of respiratory distress syndrome and haline membrane disease.

It may be that β -endorphins, as they produce a sense of well-being and affectionate behavior at delivery, would have a selective advantage in any species. A sense of well being leads the mother to interact with her newborn and eventually nursing starts. The reward of milk induces the infant to continue nursing; in turn, the pleasure the mother receives induces her to continue nursing. Whittleston (1978) states that the pleasurable sensations that many mothers derive from nursing reinforce the mother-infant bond and further increase levels of oxytocin and prolactin which he terms 'maternal solicitude' hormones.

Although human mothers show elevated responsiveness that may be hormonally induced and can rapidly learn to recognize their own infants, there are other factors which can inhibit normal hormone production and negatively affect maternal behavior. For instance, fear and anxiety during labor, inhibit contractions and intensify the pain the woman feels. Anxiety also inhibits the production of prolactin and oxytocin which interferes with lactation and makes breastfeeding difficult for both mother and infant (Trevathan, 1987:205). Also mothers who experienced a forewater amniotomy or have been given more than 125 mg. of pethidine were reported to spend less time engaging in various

attachment behaviors (Herbert et al., 1982:211). Moreover, bonding studies show that effects of early contact are extremely short-lived and are easily masked by subsequent interactive experiences.

Thus, as Fleming (1990:202) summarizes, there is no evidence of a postpartum sensitive period in human mothers. One does not have to give birth to become attached to an infant or to experience heightened maternal responsiveness. Mothers who have had cesarean deliveries, adoptive parents, and biological fathers clearly become attached to their child. Whether events of pregnancy and the early postpartum period facilitate the bonding process cannot be determined by the data we now have. However, the current data does indicate that maternal responsiveness in humans is multiply determined and may be differentially related to hormones and experience at different time points.

Behavioral Synchronization Between Mother and Infant:

The extent of interaction with people and objects that the neonate exhibits is tied to the amount of wakefulness or sleepiness the infant experiences in the first postpartum hours or days. Six behavior patterns were observed in the first 5 days of life. Two sleep patterns were identified: 1) 'regular' sleep with a few spontaneous startles and smooth, even breathing; 2) 'irregular' sleep with more body movements and irregular breathing. A third state, 'drowsiness', was described as one in which the infant showed a startle response, and gross motor activity

intermediate between the 2 sleep states. The final 3 stages were described as 'alert inactivity' (wide awake, looking around), 'alert activity' (noises, kicking, mouthing), and 'crying'. Alert inactivity is often referred to as the 'quiet, alert state'. This state is the one in which most learning takes place, as the infant is awake, searching with its eyes, fixing eye contact on objects and people, and following voices and faces. The 'quiet, alert state' is short and fleeting in the first few days and weeks after birth (Trevathan, 1987:127-128).

According to John Bowlby (1958, 1969) there are 5 patterns of species-specific behaviors in human infants that serve to promote attachment to mothers: clinging, crying, smiling, following with eyes, and sucking. These behaviors elicit caregiving responses from the mother, serve to maintain proximity to her, and thus ensures the infant's survival. These behaviors and the infant's attachment are part of, and result of, the human 'environment of evolutionary adaptedness' (Bowlby, 1969). The following is a brief overview of these 5 infant behaviors.

1. Clinging: is found almost universally in nonhuman primates. Harlow and other researchers have shown that although this behavior is related to food acquisition, its main function seems to be in serving emotional needs. In primates there is a continuum in the infant's ability to cling: strepsirrhine infants can cling to their mothers with no assistance; apes need assistance for 2-3 months; human infants cannot support their

weight at all. For strepsirhines, proximity is infant controlled; for apes it is bidirectional; and for humans, it is the mother who maintains proximity (Trevethan, 1987:130).

2. Crying: The infant, according to Bowlby (1969), can control his mother by its crying response. Mothers learn to distinguish her infant's hunger cry from its other types of crying, and in almost all cases any kind of cry will receive a response from the mother. Research also indicates that the infant's cry can elicit a physiological change in the mother. For instance, studies show that simply hearing any baby cry can cause an immediate release of milk in some women. Lind et al., (1973) noted that mothers demonstrate a significant increase in the amount of blood flow to their breasts. This increased blood flow precedes the let-down that drives the milk from the mammary ducts to the nipple, inducing the mother to nurse her infant (Trevathan, 1987:131).

The hunger cry, however, is not universal. Konner (1972) notes that !Kung women rarely let their infants get so hungry that they cry for food. Their infants are constantly in skin-to-skin contact with their mothers who can anticipate hunger by reading the infant's cues such as moving, fretting and change of breathing rhythm. At first the mother assists the infant to nurse; later the infant can nurse on its own.

3. Smiling: Although a smile in direct response to social stimulus is said to emerge in the infant's 5th week of life, smiling has been observed

in infants less than 1 hour old. Neonatal smiles are more readily elicited by vocalization than by presentation of a face or other visual stimuli and serves to focus the mother's attention on her newborn (Trevathan, 1987:133).

Newborn infants have fully functioning muscles for facial expressions, such as smiling, and this system is developed by 3- weeks gestation. The differences between the smiles of neonates and older infants are due to other facial differences and the less developed brains. For instance, our perception of facial expressions in infants is affected by other features such as buccal fat pads, lack of teeth and facial hair, and undeveloped cranial bones. The smiles of older infants are coordinated with vision and hearing, while neonatal smiles are not. This ties the development of the social smile to cerebral development (Trevathan, 1987:133).

4. Vision: At birth the infant is able to focus clearly on objects approximately 12 inches away. This is roughly the distance from the mother's eyes to her breasts when she looks at her infant during breastfeeding (Brazleton et al., 1966). The newborn infant prefers to look at a human face over other stimulus and this preference is also exhibited in infants less than 10 minutes old (Chamberlain, 1983:11).

Newborns have both foveal and peripheral vision, saccadic movements, as well as the internal visual pathways and cortical

association areas necessary for learning. In the quiet-alert state, infants are active lookers, moving their eyes about every half-second. Haith (1976, 1980) identified routines of scanning including 'ambient scanning' and a more detailed 'inspection scanning' routine. Even in the darkness infants open their eyes more widely, seem to have better control, move more smoothly, and make more small eye movements than they do in light. All of this activity is self initiated and is probably done to keep neurons of the visual cortex firing at a maximal level for development. According to Haith (1980:124) "The organization of the *information-acquisition* routines are innately given, but the neural tuning for all but the simplest visual patterns...is acquired through experience" (italics in original).

Some researchers suggest that the infant at or near birth has an already mature 'object concept' and can thus explore the surfaces and movements of any object in its environment. In addition, at least from the time of birth, infants are believed to discriminate colours and sounds on the basis of perceptual categories mediated by innate neural structures that mature during gestation (Laughlin, 1989:150; 191:187).

5. Sucking: Rooting and searching for the nipple are common neonatal responses in all mammals. Soon after birth, human infants, in response to tactile sensations, direct their head movements towards the mother's breast and begin nursing. Wolff (1968) described two patterns of

sucking, one which he states is unique to humans. The first pattern, nutritive sucking, is continuous, simultaneous, sucking-swallowing-breathing, and is found in all mammals. The second unique pattern, nonnutritive sucking, is characterized by alternating bursts and pauses.

According to Kaye's (1977) observations mothers interact with their infants in precise synchrony with burst-pause pattern of sucking. During infant's feeding bursts, mothers are usually inactive and quiet, whereas during pauses mothers stroke, jiggle and talk to the baby. In this way the mother takes turns with her baby in being principal actor. Thus a mother allows herself to be paced by her baby. She fits in with his natural sucking pattern, responds to his/her signals such as ceasing to nurse, accepts the opportunity to intervene offered by his pauses and by this means sets up a dialogue between them.

The infant's 'quiet-alert state' after birth coincides with a period of high emotional arousal in the mother. Interactions that occur during this period include touching and massaging of infant, smiling, kissing, eye contact, and breastfeeding. In an early study, Reva Rubin (1963:829) noted that "there is a definite progression and an orderly sequence in the nature and amount of contact a mother makes with her child". Most mothers she observed began with fingertip contact over the small areas of the infant's body and moved through palmar contact to whole arm contact or encompassing.

MOTHER**INFANT**

Cutaneous Stimulation $\Rightarrow$

Vision/Olfaction $\Rightarrow$

$\Leftarrow$ Vision/Olfaction

Vocalizations $\Rightarrow$

$\Leftarrow$ Vocalizations

Nutrients $\Rightarrow$

$\Leftarrow$ Sucking

Heartbeat $\Rightarrow$

$\Leftarrow$ Cling/Following

Antibodies $\Rightarrow$

Warmth $\Rightarrow$

Figure 3. Mother-infant interactions immediately after birth as conceptualized by Tevathan (1987:150).

Some of the maternal behaviors have been called species-specific, and are interpreted as contributing to the formation of a strong mother-infant bond: preference for left-sided holding of the infant, an orderly progression from fingertip touch of the infant's extremities to palmar massaging of the infant's trunk, eye-to-eye contact, speaking to the infant in a high-pitched voice, and initiating breastfeeding within an hour after birth (Klaus and Kennell, 1976:68-72). These maternal behaviors complement those already described for the infant. They not only enhance the infant's survival, but also result in reciprocal interaction (See Figure 3).

However, studies by Enriquez (1982) and Trevathan (1987) suggest that although these behaviors may be within the behavioral repertoire of all women, which responses are exhibited and the actual percentage of time spent in en-face presentation and other behaviors varies with the cultural background of the mother, infant characteristics, and the birth environment. In particular, Trevathan's study tested the hypothesis of a species-specific pattern of touch in 66 mothers immediately following birth. These mothers were observed for the first 10 minutes of contact with their infants. In this study, Anglo-American women spent less time holding their infants than did Hispanic women, but spent more time engaged in visual or en-face behavior than did Hispanic women. Moreover, more Anglo women expressed joy at first sight of their infants,

whereas two-thirds of the Hispanic women were judged to be indifferent or disgusted. Mothers were more likely not to touch their male infants at all for longer periods of time than were mothers of female infants, although this behavior had a low frequency overall. Mothers of males did more slightly active exploring than did mothers of females. Primiparous mothers spent more time in not touching their infants than did multiparas. The primiparas also showed a slight increase in active exploratory behavior compared to multiparas (Trevathan, 1987:156).

Trevathan summarizes her study stating that maternal:

behaviors vary systematically with gender of the infant, parity, and sociocultural or socioeconomic background of the mother. In sum, they provide no evidence of an invariant pattern of tactile behavior during the first 10 minutes of mother-infant interaction following birth. I would suggest that the behaviors previously observed (Klaus et al, 1970; Rubin, 1963) may actually be the response to the specialized situation of the hospital birth followed by a brief separation of the mother and infant (Trevathan, 1987:156).

Based on her evidence, Trevathan (1987:157-158) suggests that the more typical pattern of mother-infant interaction may be that of cradling or encompassing the infant for the first few minutes after birth accompanied by palmar massaging for warmth and respiration. Finger exploration of face, hands and extremities then follows when the mother is not otherwise distracted.

Trevathan's study does support the conclusion that tactile contact, including all other behaviors described, are common responses of mothers to their newborns and are within the behavioral repertoire of all

women. However which responses are exhibited and the percentage of time spent in these behaviors varies with the background of the mother, infant characteristics and the birth environment. Moreover, Trevathan (1987:186) states that she observed similar tactile responses in an adoptive mother who received her infant 3 minutes after birth, suggesting that parturition and its associated hormonal changes are not necessary to explain maternal behavior.

Frequency and Patterning of Mother-Infant Interactions:

As noted, mother-infant interactions have a 'conversation-like' pattern in which each partner appears to be responsive to the other. Two types of organization of infant's behavior, periodic and stochastic, allows the mother to create the semblance of bidirectional influence. Periodic events cycle on and off at regular, precise intervals permitting accurate prediction of the timing of future behavior. A periodic cycle is deterministic in that the frequency, phase and amplitude do not vary over time. In contrast, stochastic events are autocorrelated over short intervals; that is sequences occur non-randomly. Depending on the type of autocorrelation sequences may be cyclic, but not periodic (Cohn and Tronick, 1988:386). For example, Cohn and Tronick (1983) showed that during normal interactions infants display cycles of neutral and positive expressions. Because the cycles varied in frequency, phase, and

amplitude (i.e. stochastic) they would not accurately predict the infant's expression over a long period.

These two types of behavioral organizations — periodic and stochastic — have different implications for how bidirectional influence could occur. In an early hypothesis, Schaffer (1977) postulates that periodic cycles occur in both the infant's and mother's behavior and that these cycles become synchronized through a process of mutual entrainment. Indeed, various microanalytic studies of babies and their mothers reveal a number of mutualities. For instance, Stern (1971) observed that 3 month old infants and their mothers, looking at one another face-to-face, move their heads in time with one another. Film analysis revealed a pattern of mutual approach and withdrawal, according to which the infant turns his/her head away from the mother for a second, mainly when she approaches the infant. The infant then turns towards the mother as she withdraws from the infant's visual field. Stern compares this pattern to a waltz, where certain steps and turns will be cued by one partner who leads and in between both partners know the other partner well enough to move together.

Just how the regularity of this interaction manifests itself depends not only on inherent processes in the infant but also on the kind of stimulation the mother provides. According to Stern (1974) 3 month old infants do not stare continuously at the mother's face but alternate

between gazing at and gazing away from. This alteration shows intrinsically determined patterning, but the precise duration of gazes at and gazes away depends primarily on the interest aroused by the mother, particularly whether or not she is looking at her baby. If she is, the likelihood of the infant gazing at the mother is increased, thus maximizing the occurrence of mutual gaze. Jaffe et al., (1973) propose that the time patterns of infant-adult gazes are the same as those found in adult verbal exchanges and so reveal some universal characteristics of human communication.

However, Fogel (1988:393) argues that the periodic entrainment hypothesis leaves mother and infant dependent on the speeding up or slowing down of presumed internal clocks. Even for the relatively content free mother-infant face-to-face interaction, this hypothesis oversimplifies and rigidifies the process of mutual adaptation.

A second hypothesis is that expressive behaviors are autocorrelated (sequences occur nonrandomly) over short intervals, but that they are contingent on the preceding behavior of the partner. Cohn and Tronick's (1988) study found that bidirectional influence was achieved through the stochastic (occurring non-randomly) organization of behavior rather than through mutual entrainment at 3, 6 and 9 months. Cohn and Tronick (1988:389) argue that if periodicity were a biologically based fundamental property of face-to-face mother-infant interactions,

they would have found a higher proportion of truly periodic cycles. Periodic cycles were found in the time series of only 6 babies and 2 mothers in their study and then periodicity accounted for little variance. Also no more than half of the babies showed any evidence of cycles, periodic or nonperiodic at any age. The same was true for mothers. Proponents of periodicity in infants' expressive behavior claim that it is always present. Cohn and Tronick (1988:389) state that their results do not support this claim. Periodic cycles accounted for some variance in infant's behavior at 3 months. Nonperiodic cycles were found in some mothers' and infant behavior at each age. However, at no age was the occurrence of cycles in mothers' or infant's behavior related to the achievement of bidirectional influence.

These two hypothesis are not mutually exclusive. Hence a third hypothesis is that bidirectional influence occurs in both of these ways. All three hypotheses posit active processing of social signals by infants and are consistent with the view that infants respond in specific and appropriate ways to their mother's communicative displays. They differ in regard to how this responsiveness occurs.

ALTERNATE VARIABLES AFFECTING MOTHER-INFANT INTERACTION

As our ethological perspective would predict, and as various studies such as Trevathan's indicate, maternal bonding is influenced by a variety of factors other than just short and long-term postpartum contact. In fact, early human studies were inconclusive because other variables were inadequately considered, if at all, or instead research was biased in favour of a specific variable(s). Thus this section will discuss some of the main variables such as maternal and infant characteristics, demographic factors, social and environmental context, and cross-cultural data which have been found to influence the mother-infant bond.

Infant Characteristics:

In studies of bonding and attachment, there is an implicit assumption that the infant's attachment to the mother, whether secure or insecure, is primarily based on maternal behavior, when it may be that insecurely attached infants may be temperamentally inhibited and vulnerable to fear. Therefore, it is important to examine the infant's individual patterns of reactivity to events and interactions. Parents are also individuals with their own idiosyncratic ways of responding to their infant's behavior. In fact, as Chess (1982:99) points out "perhaps it is not a question of a 'good' or 'bad' mother, but a matter of goodness or

poorness of fit between the temperaments of mother and child". "Goodness of fit" results when the environment and its expectations and demands are in accordance with the person's capacities, temperamental characteristics, and style of behaving. When consonance is present, optimal development is present. "Poorness of fit" involves dissonance among environmental opportunities, demands, capacities, and characteristics of the person so that distorted development and maladaptive functioning occurs (Thomas et al., 1968:72-74).

The data pertinent to the "goodness of fit" concept come from several longitudinal studies. The central and longest study is the New York Longitudinal Study (NYLS) conducted by Thomas, Chess and Birch, (1968). The study followed 133 middle-class subjects from the early months of infancy to young adulthood. Mothers were interviewed every 3 months during the children's first years of life and then less frequently as the children grew up. The children were also observed and tested as young adults.

The NYLS was designed to test the hypothesis that personality is shaped by the constant interplay of temperament and environment. It was not assumed that a child's temperamental traits were immutable; rather it was suggested that the environment in which a child develops could heighten or diminish his/her reactive style, and that a given environment would not have the same meaning for different children.

Nine temperamental qualities were studied: biological rhythmicity, activity level, mood (positive-negative) intensity of mood expression, threshold to stimuli, approach/withdrawal with regard to new stimuli, adaptability (swift-slow), distractibility, and attention span and persistence¹⁴. Each of the nine behavioral traits, identified from previous interview data, was rated on a 3-point scale. It was found that certain characteristics clustered together and the researchers derived three general types of temperament (Thomas, et al., 1968:12-28).

First, an 'easy' group (40% of the sample) was characterized by positive mood, regularity of bodily functions, and adaptability. These children quickly developed sleeping and feeding schedules, accepted new foods, easily adapted to a new schedule and learned the rules quickly, and accepted frustration with a minimum of fuss (Thomas et al., 1968:85-86). The second cluster (10% of the sample) was described as 'difficult' children. This group exhibited irregularity in bodily functions, were slow to adapt to change, and had predominately negative moods. They did not conform easily to feeding, bathing or routines; exposures to strangers and new activities or new places produced protests or crying, frustration often precipitated tantrums. These children were variously characterized by their parents, the interviewers, and other members of the research team by a series of pejorative labels, ranging from "difficult

¹⁴Adaptability and attention span are related to the child's IQ

children" to "mother killers" (Thomas et al., 1968:75-79). A third group was termed 'slow to warm up'. These infants were low in activity level, and tended to withdraw and to be slow to adapt to new stimulus, be it people, place food, toys, with slow adaptability following repeated contact (Thomas et al., 1968:92).

In this study 70% of the children who were categorized as 'difficult' later developed quite serious behavior problems. There was no evidence that the parents of the "difficult" child were essentially different as a group from other parents or that the difficulty of the child led to behavior problems. Rather the parent-infant interaction was crucial. The "difficult" infants required unusually consistent, firm, patient and tolerant handling if they were to adapt to new demands with a minimum of stress. Inconsistent, impatient or punitive approaches to these children intensified stress and made effective behavioral change impossible (Thomas et al., 1968:79-84).

The "easy" children usually adapted to the demands of socialization with very little stress. As a group they tended to develop fewer behavioral problems than "difficult" children. During the first few years of life, the "easy" child adapted quickly to the standards and behavioral expectations of the parents. Stress and malfunctioning developed, if the child moved into peer groups or school situations and

demands conflicted sharply with what had been learned at home (Thomas et al., 1968:87-91).

Children who were described as "slow to warm up" experienced stress between intrafamilial demands and expectations. These children found it difficult to adapt to new situations. However, if these children were offered patient encouragement, positive involvement slowly occurred. If the child's "slowness to warm up" was seen as timidity or lack of interest, the child often felt pressured to adapt more quickly and a destructive child-environment interactive process was set in motion (Thomas et al., 1968:93-99).

Although more research is needed, several studies have delineated the psychological problems that differentiate parents of "difficult" children from their counterparts with easier children. The most consistent finding appears to be an increased incidence of depression and anxiety in mothers of "difficult" children (Sheeber and Johnson, 1992:173). Decreased maternal satisfaction was also noted by Wolkind and De Salis (1982). Stevenson-Hinde and Simpson (1982) found that the temperament of children was related to both anxiety and irritability in the mother, but not to depression.

A study by Sheeber and Johnson (1992) found that in conjunction with mood and intensity, predictably in biological functions was significantly related to the child's impact on the family functioning,

perceived maternal competence, and perceived parental role restrictions. Mothers were more prone to anxiety and depression and to experience doubts about their competence as parents. These mothers also reported that they felt less emotionally close to their children and parenting to be more restrictive.

In addition, Sheeber and Johnson (1992:183) reported that the child's temperament was also related to family functioning. The strongest correlate of a child's difficult temperament was changes in the family's life style and daily routines. To a lesser extent, mothers of "difficult" children also reported greater difficulties in their relationships with their husbands. This dimension reflects an absence of emotional and active support in the area of child management. The quality and intensity of the child's moods emerged as the characteristics of temperament that were most predictive of maternal and familial difficulties, although the child's activity level, distractibility, and rhythmicity were also operative. With the exception of activity level, these dimensions are consistent with those found in earlier studies (i.e. Stevenson-Hinde and Simpson, 1982; Wolkind and De Salis, 1982) to be related to maternal adjustment. These results with children older than those included in most earlier studies suggests that the relationship between children's temperament and maternal depression is not limited to infancy.

"Difficult" temperamental characteristics appear to be strong indicators of infant behaviors that elicit negative responses from parents who, in turn, may strengthen the infant's difficult behavior, leading to a potentially abusive situation. Parental attitudes and practices, and environmental stress interact with the temperament of the child. Indeed, both the hyperactive child (Herbert and Iwaniec, 1977) and the failure-to-thrive infant (Iwaniec et al., 1985a) have negative temperamental attributes which fits the "difficult" patterns described by Thomas et al., (1968). It is these children who may either add or detract from the parent's ability to attach.

Moss (1967) suggests that an irritable infant temperament may come to elicit unresponsive or insensitive caregiving only after a period of time. Initially, temperament may have either a negligible effect on maternal behavior, or, alternately, the greater expressed needs of the irritable baby may elicit greater maternal involvement and responsiveness. Over time, the effort involved in caring for an irritable baby might undermine the mother's capacity to remain responsive.

Association between the infant's temperament and the mother's behavior may also be dependent on some third variable such as mother's attitudes or characteristics, or balance of stress and family support. Crockenberg and McCluskey (1986:747) predict that the same temperament attributes will be associated with either negative or positive

parent-child interactions depending on the parent's orientation to that attribute. Hence mothers of irritable babies might provide more responsive caregiving if her personal beliefs predispose her to view irritability as an indication of the baby's special need rather than evidence of spoiling or of her own incompetence. Moreover, the following study suggests that parental orientation to their infant's temperamental attributes can be culturally variable. Harwood and Miller (1991) studied sociocultural values and perceptions of infant attachment behavior among middle and lower-class Anglo-American and Puerto Rican mothers. Anglo-American mothers placed more emphasis on their infants attaining self confidence, independence and the ability to function autonomously. In contrast, Puerto Rican mothers focused more on obedience, the capacity for relatedness, and the maintenance of proper demeanor. Anglo-American mothers also rated infants described as resistant to forming attachments as significantly less desirable than did the Puerto Rican mothers. Harwood and Miller (1991:595) emphasize that a mother's cultural meaning systems affects her descriptions and assessments of her infant's attachment behavior, her vulnerability to bias in judging toddler behavior and their values regarding childhood socialization. These differences emerge beyond differences in socioeconomic status; they cannot be explained either by reference to demographic characteristics. Thus sociocultural values also need to be

taken into account in evaluating both the meaning and the long-term significance of individual differences in attachment

However, even if the child is not especially difficult and does not have an unpredictable temperament, there still may be a disparity between characteristics of the infant and the parent's capability and capacity to parent that type of child. Small asynchronies, multiplied over time, can become deviant, dangerous patterns of interactive behavior (Roberts, 1979:388).

Maternal Characteristics:

Most of the data on the correlation between 'sensitive' parenting and parental personality and attitudinal variables originates from research concerning the etiology of child abuse. For instance, Brunnequell et al.'s (1981) longitudinal and prospective study of a large group of 'high-risk' parent-infant pairs found that while no specific personality pattern or characteristic was associated with abuse and neglect, certain maternal characteristics were related to the quality of caretaking. 'Excellent Care' mothers were of higher intelligence, reacted positively to pregnancy, had more positive explanations regarding children and the ease of caring for them, and, most importantly, had a better understanding of their relationship with their children. In contrast, 'Inadequate Care' mothers lacked such an understanding. They

reacted negatively to pregnancy, were more aggressive and suspicious, and were more likely to describe themselves negatively.

However, broadly defined characteristics such as 'psychological complexity' and 'level of personal integration' were found to be better predictors of excellent or inadequate childcare than were measures of individual personality traits such as impulsivity (Brunnquell et al., 1981:680-681,687).

'Psychological complexity' reflects the extent to which the mother has the psychological maturity and sophistication necessary for adequate parent-child relations. A high score implies a certain integrity of ego functioning that subsumes many aspects of personality, including intellectual ability, general comprehension, and the ability to deal effectively with ambivalent and stressful affect inherent in a first pregnancy (Brunnquell et al., 1981:688).

Brunnquell et al.'s study (1981:688-690) found that the mother at risk for abuse or neglect is characterized during pregnancy by a lack of understanding and knowledge concerning parent-child relationships and a negative reaction to pregnancy. After the baby arrived, the mother's anxiety and fear increased in response to the difficulty presented by the baby. The mother is unable to understand the ambivalence she experiences and responds to her anxiety and fear by becoming more hostile and suspicious. Her increased hostility and suspiciousness

interfere with her ability to related to the baby and cope with the demands of her new situation.

'Inadequate Care' mothers were not identified by constructs such as anxiety or impulsiveness but rather by the level of 'personal integration' construct. This factor emphasized the integration of the mother's experience of pregnancy and child rearing into her overall life experiences and her personality organization. It is composed of an amalgam of affective and intellectual elements, each of which contributes to the overall conception of the mother's recognition of her own psychological needs and processes, her ability to perceive those needs and processes in others, and her ability to integrate the two sets of needs and processes. The measures that underlie this construct tap into such variables as intellectual ability, locus of control, ability to give help, dependence, and appropriateness of mother's attitude towards encouraging reciprocity. Central to the 'personal integration' construct are maturity and self concept that enables a person to understand not only their own feelings but the feelings of other people as well. The inadequate mothers were all intellectually capable of childcare; but they were unable to perceive and integrate their own feelings about themselves, others, and the world around them (Brunnquell, 1981:689-690). As Brunnquell et al., state:

This finding has strong implications for intervention; clearly a complex variable such as the one tapped by the Personal Integration factor cannot be changed by providing information,

skills training, or therapy aimed at specific behavioral patterns such as impulsivity. Rather, such change can only occur through integration of the experiences of child-rearing and relations with others, such as might be provided by a concerned worker with adequate time to offer care to both the mother and child (Brunnquell et al., 1981:690).

Nevertheless, Brunnquell et al., (1981:690) caution that none of these specific maternal variables or constructs, alone nor all together can constitute an adequate predictor of abuse and neglect. They are not the only or even the major determinants of disturbed child-rearing.

Similarly, other studies have demonstrated that a complex interaction of parent, infant and family contextual variables underlie 'sensitive' parenting (Belsky, 1984; Fish et al., 1993). In their longitudinal study of 76 mother-infant dyads, Fish et al., (1993) assessed the general positive (extroversion, self-esteem) and negative (neuroticism) personality traits shown to relate to the sensitivity of mothering (Mangelsdorf et al., 1990) and child outcomes theoretically linked to the quality of maternal interaction. The study also assessed specific maternal attitudes (responsivity) found to predict more involved contact with infants and greater maternal responsiveness to crying (Crockenberg and Smith, 1982). As well the influence of the mother's relationship with a spouse/partner was examined. Support from intimate relationships was found to relate to more synchronous reciprocal mother-infant interaction (Crnic et al., 1983), and higher marital quality to infant-mother attachment security (Fish et al., 1993:3).

Fish et al., (1993:13) found that mothers with: a) more positive personalities, b) a higher level of education, and c) a supportive husband or partner were more likely to be in mother-infant dyads with responsive, positive interaction. In dyads where mothers and infants were rated as interacting less frequently and with less affect, the mothers had the lowest score for both positive and negative aspects of the marriage/relationship and for responsive attitude toward infants, all suggesting low affect. These mothers were also most likely to be unmarried. A third group of mothers were distinguished by intrusive behavior and by markedly reduced sensitivity. Possible origins of this behavior are suggested by the mother's low score on the positive personality factor and high score on the negative marital/relationship index.

The results of this study not surprisingly indicate more influence of maternal characteristics than of infant characteristics in these dyadic interactions. Two variables, which might have been expected to distinguish more harmonious from less harmonious dyads, but did not were birth order and maternal responsiveness. The infant characteristics that distinguished more and less responsive and positive dyads were less predictable than the mother and family characteristics. Although infant gender effects are frequently not found, when they are, the tendency is for male infants to appear more irritable and less amenable to positive

environmental influence (Moss, 1967), which is consistent with the study's findings that positive, harmonious dyads were less likely to include male infants (Fish, et al., 1993:14).

Two pieces of research document the association between pre-birth parental characteristics and the quality of the mother's development as a parent after the birth of her infant. Moss (1967) found that the variability in maternal responsiveness at infant age 3 months could be predicted from measures of the mother's attitude assessed 2 years before the birth of the infant. The mother's acceptance of the nurturant role and the degree to which she saw babies in a positive way were correlated with the actual responsiveness to her infant at 3 months. Similarly, other studies have demonstrated that variations in parental assessments of parental personality characteristics predicted maternal adaptation after birth. Women high in nurturance and ego strength and those who could visualize themselves as mothers early in the pregnancy adapted well to the actual experience of parenting and to potential stresses in their marriage (Heincke et al., 1983:194).

Maternal mental illness is suspected of producing change in dyadic interaction, but there are few studies during the infant's first year of life. A series of studies by McNeil and Persson-Blennow and colleagues (1984, 1985, 1986) found many differences among mental illness groups (schizophrenia, affective disorders, controls) in mother infant interaction

(attention, physical contact, vocalization, affective expression, involvement, and prohibitions) at 3 days, 3 weeks, 6 weeks, 3 months, 6 months, and 12 months. Generally interactions of all ill dyads were less frequent and positive in nature. However, as these studies have a very large number of significance tests that are not adjusted for error rates, the findings are difficult to assess. Goodman and Brumley (1990) found schizophrenic mothers to be less involved and responsive, but also less angry and hostile. The depressed mothers could not be distinguished from the well mothers. In studies of interaction with depressed mothers, infants during the first year also exhibited depressed behaviors, whether with their own mother or with another adult (Cohn et al., 1990; Field et al., 1988). The mother's affective vocalizations were also reduced (Cohn et al., 1990).

Demographic Factors:

Other family factors affect parent-infant interaction. It is well documented that mothers with firstborns are more directive and intrusive, more attentive, more consistent, less indulgent, and more persistent and less effective at feeding than are mothers of later born children (Dunn, Plomin, and Nettles, 1985; Jacobs and Moss, 1977; Lewis and Kreitzberg, 1979). However, the consistency of mother-infant interaction within families is more striking than differences attributable to interaction with different siblings at the same age. In other words

variation across families is larger than within-family differences between first and later born children examined at the same age (Seifer et al., 1992:407).

The sex of the child may be a less important variable. Several studies of mother-infant interaction demonstrated sex differences in their results (Bakeman and Brown, 1977; Moss, 1967; Yarrow et al., 1972). For example, Moss (1967:67) found that at 3 weeks of age mothers held male infants about 27 minutes more per 8 hours than they held females and at 3 months males were held 14 minutes longer. By the time the infants were 3 months of age there was a decrease of over 30% for both sexes in total time they were held by their mothers. Moss (1967:29) also noted that irritable male babies "were responded to *less* by the mothers". He explains that mothers of the more irritable boys may have learned that they could not be successful in quieting boys whereas girls were more uniformly responsive (quieted by) to maternal handling. Similarly various studies also show that parents, particularly fathers, play more roughly with boys than with girls and that this differential treatment begins in the first year of life; also parents tend to use harsher punishment with boys and find it more difficult to punish girls (Rutter, 1981:205-206). Nevertheless, other studies of early interaction that have reported analysis of sex differences have almost universally found none during the first year of life (Seifer et al., 1992:408).

To demonstrate the importance of parental preconceptions regarding the infant's gender, Rutter (1981:206) cites a study where 32 primiparous mothers of 5 to 10 month old infants were asked to play with 1 of 4 "actor" babies dressed and named as either a boy or girl. Maternal behavior was significantly associated with the perceived sex of the infant but not with the biological sex of the actor baby or of the mother's own baby. Similarly, Campos et al., (1983:879) report that even in the newborn period, parents perceive their sons to have masculine characteristics and their daughters to have feminine ones; these differences in perception are most extreme among fathers who have seen but not held their babies. Moreover, fathers and mothers did not differ merely in their perceptions, but in their treatment of newborn boys and girls as well. Fathers of boys responded to their sons' vocalizations more often than do the fathers of girls. Fathers also vocalize to and touch their firstborn sons more than other infants.

On the other hand, it is likely that there are also effects on parenting which stem from sex differences in the infants' behavior, in that differential treatment of male and female youngsters have also been reported among primates. Thus, socially isolated monkeys tend to become generally rejecting and indifferent mothers but they are much more likely to physically abuse male infants (Rutter, 1981:206).

Many studies conducted during the 1960s and 1970s reveal the effects of socioeconomic status (SES) and/or race on mother-infant interaction. Kilbride et al., (1977), Messer and Lewis (1972), and Tulkin and Kagan (1972) found that low-SES mothers engaged in less vocal and verbal interaction with their infants than did middle-class mothers. Other aspects of maternal behavior did not reveal social class differences. For instance, there was no class differences in amount of time mother spent in close proximity to their infants, or in frequencies of kissing, holding, as well as active physical contact. Also no class differences were found in frequency of maternal prohibitions, even when controls were introduced for the amount of time infants were free to crawl around and explore.

Moreover, these studies found that working class infants grew up in environments with greater levels of background stimulation. That is these infants lived in more crowded homes, had more interaction with adults other than their mothers, and spent more time in front of television sets than their middle-class counterparts. In contrast, middle-class mothers more often entertained their infants and gave them things to play with. They also responded to a higher percentage of infants' spontaneous frets and responded more quickly.

However, Tulkin and Kagan (1972:38) caution that although their study found differences in maternal behavior between two social class

groups, large *within-class* differences were also observed. Class differences appear to be attributable to a subgroup of middle-class mothers who were highly verbal with their infants rather than to a "deprivation" which is uniquely characteristic of working-class families. In a similar study, Lewis and Wilson (1972:121) conclude that "...the middle SES mother does not do more for her infant than the lower SES mother, but rather has a different style of responding". For example, middle SES mothers were found to vocalize when their infants vocalize, touch and hold them when they fret or cry or show large physical movement, and watch them while they play. Lower SES mothers tend to touch their infants when they vocalize, and to vocalize to them when they fret or cry, show large physical movements when they are at play.

Tulkin and Kagan (1972:39) suggest that one source of variance in maternal behavior was the mother's concept of her infant. They found that many working-class mothers did not believe that their infants possess the ability to express adult-like emotions or to communicate with other people. Hence these mothers felt it was futile to interact with their infants. Often working-class mothers felt that it was only important for a mother to speak to her infant after the child began to speak. Moreover, these mothers reported that they could not influence their children's development because they felt powerless to effect changes in their environment. Hence a mother's attitudes towards her children are not

independent of social and economic conditions. Indeed, as Tulkin and Kagan (1972:39) state "interventionists must realize that attempts to change maternal behaviors without regard to the source of these behaviors, or to the relation between the behaviors and other aspects of the social system, may not succeed".

A study by Moss and Jones (1977) of 121 middle class primiparous mothers and infants demonstrated differences in maternal behavior between upper-middle and lower-middle class mothers. Results show that significant correlations between pregnancy ratings and maternal behavior for the upper but not for the lower-middle class mothers. For instance, the pregnancy ratings on "degree infant is seen in a positive sense" for upper-middle class mothers was associated with their social, nurturant, and affectionate behavior toward their infants. These correlations were comparable for both female and male infants. In contrast, there is a complete dearth of significant findings for the lower-middle class mothers. On theoretical grounds it seems plausible to expect the same patterns of results to emerge for both groups. As Moss and Jones (1977:463-464) state their study suggests that even in seemingly homogeneous samples, there may be subgroups that differ as to family values, social structure, and style of functioning. Thus the consequence of pooling groups that are dissimilar in family background factors is that findings characteristics of the respective groups in the

total sample might become diluted or marked, because of different patterns of results for the various subgroups. Also results obtained from separate studies dealing with the same subject matter, but where the samples were drawn from somewhat different sectors of a middle-class population, would be less likely to support or replicate one another.

The effects of social class differences on the development of infants have met with mixed success. Bayley (1965) reported no social class differences in infants of 1-15 months on the revised forms of her scales of motor and mental development. Golden and Birns (1968) found no class differences in black infants of 1-2 years of age on the Cattell Infant Intelligence Scale and on the Piaget Object Scale. Levine et al., (1967) reported no class differences in the 4 month old infant when observed at home. Messer and Lewis (1972) in a study of attachment and play behavior in 1 year old infants of different social classes, failed, in general, to find any class differences, save that middle-class infants vocalized 7 times more frequently in the presence of their mothers than did lower-class infants. Lewis and Wilson (1972) found that lower SES infants appear to show somewhat superior cognitive functioning on the Bayley Scale of Mental Development. Also lower SES infants showed superior performance at 12 weeks on two measures of attention, recovery to novelty and decrement to redundancy. Lewis and Wilson (1972:125) attribute the infant's superior performance to the fact that lower SES

infants receive more proximal interaction such as touching, rocking, and so forth than vocalization, which facilitates early pre-representational thought. This would agree, Lewis and Wilson add, with previous findings that infants receiving great amounts of proximal interaction are precocious for the first two years and retarded thereafter, as compared to infants with less initial proximal interaction.

In contrast, research indicates language, problem-solving and conceptualization weakness in children of lower class backgrounds (Lewis and Wilson, 1972:113). For example, Wachs et al., (1971) have reported social class differences in tasks involving motor imitation and verbal facility, as well as on subtests of the Infant Psychological Development Scale based on Piaget's model of intellectual development. Their study indicates that later differences between lower SES and middle-class children are based on earlier differences in intellectual functioning, differences that may appear as early as 7 months of age, and that seem to increase after 18 months of age. Evidence suggest that intellectual impairment, as well as impairment of verbal intelligence, is environmental rather than genetic in origin. Rutter (1981:92-93) reports that intellectual impairment, apparently increasing with age, has been noted in canal-boat children in England and in children from relatively isolated mountain areas of the United States. In view of their close family life, social privation appears an improbable explanation as does

deficiency of sensory stimulation. On the other hand the *quality* of the social contact and the range and quality of sensory stimulation were probably restricted. Similarly, verbal impairment is found in children reared in large families. Again, it appears unlikely that these children experience diminished social or sensory stimulation as measured in quantitative terms. Rather, it has been suggested that because their contacts are more with other children than with adults, their language environment is less rich and less complex. However, it may be the *clarity* of the language environment rather than the complexity, which is the key variables. Moreover, verbal stimulation most likely has to be meaningful to the child. Mere repetition of words or sounds is not enough (Rutter, 1981:93).

Social and Environmental Context:

In addition, mother-infant interaction is influenced both by the immediate social context and also the wider social environment (Rutter, 1981:207; Seifer et al., 1992:406). For example, in free play versus face-to-face interactions, large differences were found in the number of behavioral matches (imitation) made, particularly for the mothers, who made over 20 times more matches during face-to-face interactions. Differences in ratings of involvement, joint attention, vocalization, and affect among face-to-face in the lab, face-to-face at home, and free play at home were also strong. Three month old infants vocalized most when

mothers were near (but not holding them), next most when mothers were absent, and least when they were being held (perhaps confounded with nursing). Their mothers vocalized most in two proximal conditions (holds and near) and least in the absent condition (Seifer, et al., 1992:406). Clarke-Stewart (1978) found that mothers behaved differently with their 15 to 30 month old children according to whether or not the father was also in the room.

Various studies show that children's turn taking, communication acts, and attachment behaviors varied when the interaction was with parent, stranger, peer, or grandparents. In addition, their level of attention, emotional expression, and social referencing were affected when mothers systematically varied their interactive behavior. Longitudinal relationships among mother-infant interaction, social support, and infant birth status varied among proximal, distal, and affect interaction (Seifer et al., 1992:406).

The impact of the broader social environment was indicated in Rutter and Quinton's (1977) general population studies of families of 10 year old children. Marital discord and maternal depression were much more evident among working-class women living in inner city areas. In addition, cross cultural data appear to suggest that mothers who are home alone all day with their children, without other adults who can share the tasks of child care, are more likely to become rejecting in their

attitudes and behavior. Causal inferences from such comparisons must necessarily be tentative but there are still good grounds for supposing that the ecological context does matter and that the wider social environment does have an impact on parenting behavior, even if the details of these effects at present are obscure (Rutter, 1981:207-208).

Cross-Cultural Data:

A review of the pertinent anthropological and cross-cultural literature on child development reveals that the human mother-infant relationship varies to a considerable extent between cultures and between individuals within cultures. Indeed according to an ethological perspective diversity in cultural practices is to be expected. Yet there are some near-universal features, and ethologically trained researchers seek to understand how far aspects of maternal behavior, of infant behavior, and of mother-infant relationship found in the majority of cultures make sense as a co-adapted complex. We can also ask whether variants in the mother-infant relationship correlates with the circumstances of one or both partners in a manner that appears to be adaptive (Hinde, 1987:112).

Lozoff (1983) surveyed 186 non-industrial societies to determine whether mother-infant body contact immediately after birth is universal, and second to determine whether infant care is different among societies which foster such contact. Results indicate that in 94% of the 126

societies for which information was available, the mother and baby *were not* in immediate body contact because of the almost universal practice of bathing or rubbing the neonate. Body contact after bathing, with the neonate placed in the mother's bed, was encouraged in less than half (46% of 87) of the non-industrial societies; in the majority the infant was placed in a cradle or basket. The possibility of skin-to-skin contact was rare, the nude infant being placed next to the mother in only 14 % of these societies. Thus many cultures made no effort to encourage mothers to hold their infants skin-to-skin immediately after birth, the time which has been considered to be a sensitive period of maternal bonding. Yet, virtually all societies encouraged *extended contact*. In 120 of 123 societies, the mother and her infant rested together (for a week or more in 65 % of them). Lozoff did not ask the next inevitable question: Do these societies promote extended mother-infant contact because they believe it facilitates mother-infant bonding and subsequent attachment? What were the culture's reasons, if any, for the practice of extended contact?

There were no significant differences between 'body contact' and 'cradle' societies in the proportions in which the mother was the primary caregiver, infant crying received a nurturant response, or infants were given generally affectional care. Thus, global measures of maternal affectionate behavior did not differentiate societies which fostered

postpartum mother-infant body contact from those which did not (Lozoff, 1983:597). Information on the fathers' participation in childbirth was available for 120 cultures. Only 27% permitted fathers to be present, and even then the parental role was rarely other than that of observer.

Although North American hospitals encourage breastfeeding within the first few hours after birth, and ease of breastfeeding is an indicator of successful maternal bonding, as Lozoff's survey shows the time of initial breastfeeding varies. The time of initial breast-feeding was available from ethnographies of only 81 societies. Approximately half (48%) permitted nursing within one to two hours after childbirth, but the first breast-feeding was delayed for 24 hours or more in 52% of the societies. In fact, colostrum often was felt to be of no nutritional value, or even harmful, and nursing did not start for two days or more in 41% of the sample. Breastfeeding lasted for 2 years or more in 81% of non-industrial societies. Contrary to the expectation of a prolonged period of breast-feeding, solid foods were introduced before 1 month of age in 1/3 of the cultures, at between 1 and 6 months in another 1/3, and was postponed for more than 6 months for only 1/3. Societies which delayed the first breast-feeding were not more likely to wean before 24 months nor to introduce solid food before 6 months (Lozoff, 1983:598).

Thus results of Lozoff's survey indicate that few human cultures emphasize immediate postpartum skin-to-skin body contact and

breastfeeding, but almost all provide the equivalent of around-the-clock 'rooming-in'. Were the hours after birth truly a sensitive period for establishing optimal parenting behavior among the human species, it is unlikely that so few cultures would not foster such contact. In contrast extended contact is an almost universal phenomenon. However, as argued previously, studies are inconclusive about the beneficial effects of long-term contact in establishing maternal bonding. The meaning and value behind the practice of extended contact has to first be understood within the custom's specific cultural context before universal benefits can be generalized. For example, in maternity hospitals in industrial societies, separation of mothers and babies immediately after birth is followed by a routine of intermittent, brief contacts and by an infant-care pattern in the home of frequent separation of mother and infant in different rooms, minimal body contact, and spaced artificial feeding. Within the context of this pattern of infant care which separates mothers and infants, body contact in the immediate postpartum period may assume disproportionate significance for enhancing maternal bonding. Postpartum convalescence of mother and infant together is virtually universal, and is usually followed by extensive mother-infant contact and prolonged and frequent breast-feeding during the baby's early months. Cultural context may also explain why some societies delay breastfeeding. Girls' exposure to breastfeeding throughout their lives,

the assumption of success, the supportive environment, and the frequent nursing and extensive mother-infant contact are all likely to decrease the importance of nursing in the first hour after birth.

Several studies suggest that industrial societies focus on distal forms of communication between mother and infant such as looking, smiling, and vocalizing, while non-technological societies focus on proximal modes such as holding, touching and stroking (Brazleton, 1977; Goldberg, 1977; Kilbride and Kilbride, 1983; Konner, 1977, 1981; Leiderman et al., 1977). In a comparison of mother-infant interaction in Boston with that in a rural Guatemala village, it was demonstrated that the total number of interactions was about the same, but that in Guatemala about 80% of the interactions were physical whereas in Boston about 80% were verbal or vocal (Konner, 1981:23). However, Konner felt that this distinction between industrial and non-industrial societies was not always applicable. Hence he (1977) compared the Guatemalan data with his data on the !Kung. The Boston data showed that the professional class infants had somewhat more verbal interaction than did the working class infants (Tulkin and Kagan, 1977), but the cross-cultural comparison showed that the Guatemalan infants indeed received much less verbal stimulation than did those of the Boston working class (4% as opposed to 10% of observed 5-sec. blocks contained a caretaker vocalization). In contrast, the !Kung data showed

levels of infant vocalization, caretaker vocalization, and reciprocal vocalization equal to those of the Boston working class (Konner, 1977:300). Thus a cross-cultural understanding of mother-infant interaction will only be achieved after careful consideration of both similarities and differences in behavior, attitudes, and cultural values even among seemingly homogeneous populations. Moreover, the data indicates that distal and proximal modes of mother-infant interaction are not reciprocals of one another, the one declining as the other rises during the course of cultural change. !Kung infants receive levels of distal stimulation comparable to those of the Boston infants while getting much higher levels of physical contact, more indulgent weaning, and a higher percentage of responsiveness to crying.

Similarly other studies indicate that the maternal style of childcare in North America is not as responsive as compared to other types of societies. Lozoff and Brittenham (1979) compared the Barry and Paxson codes of child care practices for intermediate-level societies with research on the United States. Whether measured by body contact, sleeping distance, response to crying, or weaning age, mother-infant contact and maternal indulgence of infants appear to be lower in the United States than in the sample of 176 intermediate-level societies. In an earlier study, Whiting and Child (1953) reported that patterns of infant and child care and training in Chicago during the 1940s were substantially

above the median of their ratings for the comparable customs of a large representative sample of non-industrial societies (including hunter-gathers), except in the area of aggressiveness training, where the Chichagoans were more indulgent. In oral socialization, and socialization, sex and modesty training, and independence training they were considered very strict or at least more strict than average for the non-industrial societies.

Synthesis of Nature and Nurture:

In order to demonstrate that biological and cultural variables are inextricably intertwined in child development and in the kind and amount of mother-infant interaction, Freedman and DeBoer (1979) reviewed approximately 91 studies which found ethnic differences in newborn behavior. Only a few of these studies will be cited here. For instance, a study by Caudill and Weinstein (1969) is one of the first comparative studies of Japanese and American maternal care and infant behavior. They found basic similarities in biologically rooted behavior among infants of both countries. Beyond these similarities, American infants are said to have greater amounts of gross bodily activity, play, and vocalization. In contrast, Japanese infants were more passive, and easier to habituate to various stimuli. Caudill and Frost (1975) found that fourth generation Japanese-American infants were vocalizing at almost the same rates as were the American Caucasian infants.

However, the Japanese-American mothers were stimulating them at *twice* the Caucasian rates. In several other respects, the fourth generation Japanese-American infants were more like Japanese infants; they were less playful and sucked their fingers more than did the Caucasian infants.

Caudill (1976) notes that there is much greater emphasis on vocal contact and deemphasis on physical contact by mothers in the United States; the reverse is the case among Japanese mothers. He seeks to understand these differences by placing them in the context of differences in the concept that mothers have, both of their babies and of themselves. Caudill (1972:43) suggests that for American mothers "the baby is from birth a distinct personality with his own needs and desires which she must learn to recognize and to care for". By contrast, the Japanese mother "views the baby much more as an extension of herself, and psychologically the boundaries between the two are blurred...She knows what is best for the baby, and there is no particular need for him to tell her what he wants, because after all, they are virtually one". Because the American mother views her child as a separate person, she stresses "vocal communication, so that he can tell her what he wants and she can respond appropriately. She deemphasizes physical contact...and encourages the infant through her voice to explore and to deal with his environment by himself" (Caudill, 1972:43). On the other

hand, the Japanese mother, who knows what the child wants, stresses physical contact between herself and the infant, and deemphasizes vocal communication. Instead of the interdependence that is emphasized in the United States, the Japanese mother emphasizes interdependence in childhood and adulthood. Thus differences in basic maternal caretaking behavior are expressive of basic cultural values and expressive of mothers' personalities also.

Freedman and DeBoer (1979:582-583) cite a study which compares Navajo, Hopi, and Anglo-American mothers interacting with their 3 to 6 month old infants. This study demonstrates the necessity of considering differences in maternal caretaking behavior and cultural values within different ethnic groups living within the same geographic area. Caucasian mothers vocalized at twice the Navajo rates, with the Hopi falling in between. Caucasian mothers spoke to their infants in full sentences; Hopi mothers made the culture-specific noises one makes only to babies and animals; while Navajo women, if they vocalized at all, made low-keyed whispering sounds. Caucasian mothers kept re-adjusting their infants' position, while Navajos maintained a steady, preferred position. Again the Hopi fell in between. These differences were statistically significant, and the Navajo comparisons paralleled closely the Japanese-Caucasian differences found by Caudill. In the amount of mutual gazing between mothers and infants, all mothers were

equally successful. However, Caucasian infants kept actively turning toward and away from their mothers as if regulating excessive input. By contrast, Navajo infants maintained significantly longer periods of gazing toward and away. Like the Japanese infants studied by Caudill, the Navajo infants were also less motorically active tending not to move their limbs as much.

SUMMARY

In this chapter, I argue that maternal attachment develops from the *interactive* behavior between the mother and her infant that takes place *over time*. A model for understanding the process of mother-infant interaction is proposed which emphasizes that the behavior of each partner in the dyad is influenced by: 1) the past, present and/or expected behavior of the other partner; 2) the inherent 'predisposition' and motivations of each partner; 3) the cultural values, beliefs, norms and other characteristics of the sociocultural environment. In attempting to understand the dynamics of an interaction or relationship it is necessary to move between successive levels of social complexity — interactions, relationships, social groups and sociocultural structure — in both directions.

This model assumes that the infant is an *active* rather than a passive agent in the bonding process. For infants to be active agents they must possess certain capacities for interaction at birth. That the infant

has the capacity to be an active agent has not always been universally accepted, and currently much practice and research in social work and medicine either ignores or downplays the contribution that the infant makes in controlling his/her own environment (parents and other caregivers).

Research shows that mother-infant interaction takes place on a number of sensory levels. Indeed as Hinde (1987:26) argues "individuals have no separate biological and cultural characteristics. For instance, immediately after birth, the physiological needs of the mother and infant provide almost a 'feedback' system regulating the timing, amount and type of interaction that occurs. While the infant's nursing permits the transfer of various antibodies and Vitamin K, the release of oxytocin into the mother's bloodstream results in uterine contractions, expulsion of the placenta and inhibition of postpartum bleeding. Although increases in various pregnancy hormones are implicated in the mother's responses to her newborn, research suggests that their net effect is dependent on the attitudes and experiences the mother possesses at time of hormonal stimulation. More research is needed to determine 1) the exact nature, timing, and correlation of these pregnancy hormones, 2) the role they play in the mother's early recognition and learning of infant cues, and 3) how hormonal effects are enhanced or depressed by maternal attitudes , experiences, and so forth.

It is also clear from various studies cited that behavior cannot be viewed in isolation, such as the number of times a mother touches her infant. First, the infant actively processes and responds to the mother's communicative signals, and, therefore, helps to determine the frequency, patterning, and even quality of their interactions. Micro-analysis suggests that the frequency and patterning of mother-infant behavior may be the result of either periodic or stochastic cycles or a combination of both. Initially the infant's responses are under strong genetic control. However, as the infant's cognitive capabilities increase and more and more learning takes place, its behavioral pattern may move from periodic (cycling on and off at precise intervals) to stochastic cycles that are contingent on the preceding behavior of the mother or other caregiver. This confirms Hinde's assertion that "interaction measures may be less revealing than relations between interactions...And where the relations between different types of interaction within the relationship are important, the comparisons are at the relationship level. This type of approach has been more successful than those involving simple aspects of independent actions.

In addition, studies cited confirm that the patterning, content, and quality of mother-infant interactions, as well as the relationship with other family members, is influenced by the temperaments of both mother and infant, demographic factors, and the wider social and environmental

context. Again this supports the assertion that behavior cannot be viewed in isolation. Rather we must look at the context in which the behavior occurs. We may find, as we do with social class comparisons that mothers differ not in how many times they touch the child, but in how many times they touch when the child cries. Studies of infant characteristics, especially those on the 'difficult' child, show that from birth onwards the child can control and modify his/her environment. In other words, the infant is born with certain biological, mental and social capacities or reactive styles which are then either heightened or diminished depending on the social, physical and psychological parameters of the child's environment. In fact, various studies indicate that the processes of development, socialization and acculturation proceed hand-in-hand.

The cross-cultural data do not confirm Klaus and Kennell's sensitive period hypothesis, including their claims for species-specific maternal behaviors. While most cultures make no effort to encourage immediate physical contact between mother and infant immediately after birth, virtually all societies encouraged extended contact. Generally, non-industrial societies focus mainly on proximal modes of behavior (holding, touching, stroking), while industrial societies focus on distal forms of behavior (looking, smiling, and vocalizing). Global measures of maternal affectionate behavior did not differentiate those societies which encouraged immediate mother-infant contact from those that did not.

Moreover, in most societies the first breastfeeding is delayed for 24 hours or more and prolonged breastfeeding lasted for approximately only 2 years. Yet most hospitals in North American promote breastfeeding within the first hour after birth, and early mother-infant skin-to-skin contact. For many nurses, social workers, and even parents, eye-to-eye contact, the orderly progress of tactile contact as well other maternal behaviors are the outward manifestation of good mothering and affectionate behavior.

CHAPTER FOUR

MATERNAL DEPRIVATION AND ATTACHMENT THEORY

The ready acceptance of mother-infant bonding, and especially the sensitive period hypothesis, in pediatrics, child psychiatry and social work was made possible in part by earlier research on maternal deprivation and John Bowlby's ethological attachment theory (Birns and Ben-Ner, Chess, 1982; Eyer, 1992:47). In psychology, the concept of the decisive importance of the mother for the child's development gradually took hold starting in the 1920s with Freud's emphasis on the vital importance of the first years of life. Subsequent studies in the 1930s and 1940s purported to show that maternal separation caused the pathology of institutionalized infants and juvenile delinquency. These studies supported Freud's thesis and were climaxed by Bowlby's 1951 report on maternal deprivation. In the following years, studies with animals and children enumerated the damage caused by disturbed mothering and by separation from mothers.

The alleged importance of the mother-child relationship was based on an instinctual rationale which was first espoused by Freud and later modified by Bowlby and others at the Tavistock Clinic in London. During the 1950s Bowlby started to formulate his ecological attachment theory: the infant's behavior that promotes proximity to the mother is adaptive,

rooted in the survival of the species, and is similar to imprinting in birds. The professional ideology of "mother blaming" that crystallized in the 1950s and 1960s under Bowlby's influence laid the theoretical foundation for the ready acceptance in the 1970s of mother-infant bonding. Earlier formulations had placed the critical period in the first years of life, the new hypothesis placed it in the immediate postpartum interval. Again, the relationship between mothers and infants was indicted as the cause of everything from retarded development to child battering.

MATERNAL DEPRIVATION THEORY

As a result of the economic and social dislocations that swept Europe during and after the two world wars (1914-1918, 1939-1945), numerous children were orphaned, accidentally lost by their parents, or intentionally separated from their families in order to protect them from the privations of war. Many of these children were placed in large and impersonal orphanages. In addition, children with infectious diseases such as tuberculosis were often removed from their families and placed in isolation sanitariums. During this era, in the United States orphanages were also being established for children who were abandoned, illegitimate, maltreated, and/or the young of teenage mothers (Lamb et al., 1985:9-10). Although their physical and medical

needs were met in many of these institutions, the children suffered serious psychological impairment. The specific effects varied depending on the ages of the children concerned, but children of all ages seem to suffer. The World Health Organization grew increasingly alarmed about the adverse effects of maternal deprivation, and in 1948, commissioned John Bowlby to report on the state of these children. Bowlby, Director of the Children's Department at the Tavistock Clinic in London, was working in the area of child depression and the effects of separation on children. As a result of this early work, he was already deeply committed to the belief that maternal separation was the primary cause of lasting psychic damage to the child (Riley, 1983:96).

In his monograph, *Maternal Care and Mental Health* (1951) Bowlby claims that separation of the infant from the mother leads to various conditions such as mental retardation, depression, dwarfism, acute distress, delinquency, and 'affectionless psychopathy'¹⁵. For optimal development, "the infant and the young child should experience a warm, intimate and continuous relationship with his mother (or permanent mother substitute)" (Bowlby, 1951:11). To support these conclusions, Bowlby reviews a number of studies published in the 1930s and 1940s that demonstrate inferior development of infants in hospitals, nurseries and other institutions, like orphanages. In their research, Rheingold

¹⁵ Lack of ability to form enduring relationships

(1943), Levy (1947), Spitz and Wolf (1946), Goldfarb (1943-49), and others found cognitive and emotional deficits in children institutionalized in the first three years of their lives (cited in Bowlby, 1951:15-20). Most important, Bowlby (1951:46) concludes that "the prolonged deprivation of the young child of maternal care may have grave and far-reaching effects on his character and on the whole of his/her future life". He compares maternal deprivation with the storage of vitamin D in infancy. Just as the lack of vitamin D results in rickets, similarly, maternal deprivation results in delinquency. "This is a discovery comparable in magnitude to that of the role of vitamins in physical health, and of far-reaching significance for programmes of preventive mental hygiene" (Bowlby, 1951:13-14).

Bowlby's monograph focused on two major areas of research: the experience of institutionalized children, and the experience of the problem child. Spitz (1945, 1946) described in detail the emotional conditions of infants who had been separated from their mothers and placed in foundling homes. Infants who had appeared normal developed weepy behavior which eventually gave way to complete withdrawal. During this period, if the infants were approached, they would cry and scream. Spitz called this condition "anaclitic depression"—depression resulting from the loss of the mother or mother figure. In extreme cases these infants progressed to stuporous catatonia and agitated idiocy.

Over a period of 2 years, 34 of the 91 children in the foundling home died from respiratory infections, intestinal problems, measles, and a general wasting away of the body (cachexia). The idea that infants could actually die from lack of an emotional relationship even though their physical needs were met was startling. Moreover, during this period children's poor development was seen as constitutional — a reflection of the morally inferior nature of their mothers who conceived out of wedlock (Eyer, 1992:52). Spitz's studies, however, demonstrated that it was children's early experiences and not their constitution that led to their poor development and depression. In turn early experiences could produce delinquency, mental retardation, and psychosis.

Bowlby also reviewed retrospective studies of juvenile delinquents and patients suffering from affectionless psychopathy. His study of emotionally disturbed boys, published as *Forty-Four Juvenile Thieves: Their Characters and Home-Life* (1944), further supports the maternal deprivation studies. The biographies of many of these juvenile boys reveals that they had experienced a significantly higher proportion of maternal separations compared to a control groups of 44 problem children—whose problems did not include stealing or as many maternal separations. It was these maternal separations, Bowlby contends, that were the primary cause of delinquency and "affectionless psychopathy". The sudden loss of their family environment, or a being placed in a

succession of foster homes could throw the child into despair and depression.

However, Bowlby extends his conclusions far beyond juvenile delinquents and institutionalized infants. Maternal deprivation, he contends, can also occur in a normal and loving home environment:

...a child is deprived even though living at home if his mother (or permanent mother-substitute) is unable to give him the loving care small children need. [or].. if for any reason he is removed from his mother's care. This deprivation will be relatively mild if he is then looked after by someone whom he has already learned to know and trust (Bowlby, 1951:12)

In addition, "partial deprivation" can also occur as a result of :

...(a) an unconsciously rejecting attitude underlying a loving one, (b) an excessive demand for love and reassurance on the part of the parent, and (c) a parent obtaining unconscious and vicarious satisfaction from the child's behavior, despite conscious condemnation of it (Bowlby, 1951:12)

Like other psychiatrists of his era¹⁶, Bowlby emphasizes the emotional aspects of the mother's relationship with her child. Being a good mother means adopting a positive and loving attitude towards one's infant. All a mother has to do to achieve this is just to act naturally and "rely on the prompting of her instincts in the happy knowledge that the tenderness they prompt is what her baby wants" (Bowlby, 1953:20). Moreover, a good mother is one who not only "derives satisfaction from seeing her child grow from babyhood through the many phases of

¹⁶ He actually emphasized the importance of the mother's role in the child's development. See, for example, Bowlby (1951:12) and Bowlby (1953:20).

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childhood", but is also able to provide "constant attention day and night, seven days a week and 365 in the year..."(Bowlby, 1951:67). "Partial deprivation" results when the mother cannot meet all these criteria. In contrast, the father is assigned to a remote and instrumental role. It is his duty to "support her [the mother] emotionally and help her maintain that harmonious contented mood in the aura of which the infant survives" (Bowlby, 1951:13).

Bowlby claims that even bad parents are preferable to the care of institutions. Child-guidance counselors should search out cases of partial deprivation and give as much time to the therapy of the parents as to that of the children. He also recommends a public health campaign to detect causes of deprivation on a mass scale because:

Deprived children, whether in their own homes or out of them, are a source of social infection as real or serious as are the carriers of diphtheria and typhoid (Bowlby, 1951:157).

During the 1950s a popular assumption was that problem families embody the 'cycle of deprivation'—disadvantages are transmitted down the generations—and "this vicious circle is the most serious aspect of the problem" (Bowlby, 1953:69).

Bowlby's monograph was successful in focusing international attention on the deprivation children suffered when separated from their families¹⁷. The World Health Organization set up a European study to

¹⁷ Bowlby's influence in England was extended through the Curtis Committee, set up

specific institutional remedies and sponsored further research (Eyer, 1992:50). Bowlby's work also encouraged new research into the nature of the child's attachment to its mother, experiments with human subjects, liberalizing regimes in pediatric wards, encouraged fostering, and the treatment of children in residential homes in small groups (Eyer, 1992:50; Riley, 1983:99).

A simplified Penguin version of the monograph was published in 1953, as *Child Care and the Growth of Love*, emphasizing that the young child needs the mother "...as an ever-present companion: this continues until about his third birthday" (Bowlby, 1953:61). This book ran into many editions and reprints, and is largely responsible for defining what some historians and critics have called "Bowlbyism"—the emphasis of keeping mothers in the home¹⁸ (Eyer, 1992:50; Riley, 1983:100; Richardson, 1993:45-46).

During the 1950s child welfare movements, which were growing very rapidly, focused on the social consequences of "bad mothering", especially working mothers. Bowlby's (1951:73) claims that "full-time employment of [a] mother" is equivalent to the "death of a parent, imprisonment of a parent, war, famine", as "reasons for failure" was

at the end of the year. This government committee, on the care of children out of the home, needed a theoretical foundation for its policy. Bowlby's report supported arguments for expansion of child therapy services (Eyer, 1992:104; Riley, 1983:99-100).

The CIPFS argues that the belief that post-war government in Britain used Bowlby's ideas to drive women out of their jobs and back into their homes is both inaccurate and over-simplified.

often cited to discourage mothers from working or even using day care centers (Birns and Ben-Ner, 1988: 55-56; Eyer, 1992:50; Richardson, 1993:46-47). In addition, maternal deprivation provided a theoretical basis for psychiatric, pediatric and social work policies and practices. In particular, the majority of social workers accepted the importance of the mother-infant bond and the need for a secure and consistent attachment figure in infancy. In turn this led to an ideology of mother blaming—or “*Mal de Mère*”—in which the causation of all psychopathology, from simple behavior problems to juvenile delinquency to schizophrenia was laid on the mother” (Chess, 1982; Chess and Thomas, 1982; Birns and Ben-Ner, 1988:58-59). This is a situation which has not really changed. Despite serious criticisms¹⁹ and Bowlby’s own revisions, maternal deprivation theory still exerts an important influence on the thinking of social policy makers and the childcare professions (Richardson, 1993:47).

Freudian Influences:

Freudian psychology with its emphasis on the role of instincts in behavior, and as elaborated and altered by his followers, has been influential in shaping 20th Century thinking about all human relations, particularly the mother-child relationship (Birns and Ben-Ner, 1988:48). Freud’s theories about the early mother-child relationship were very

¹⁹for example, see Potter (1981; Yarrow, 1992); Chess (1993).

rudimentary, but provide the theoretical background crucial for comprehending maternal deprivation as well as the later concept of maternal bonding.

In his last book, *An outline of psychoanalysis*, Freud (1949:45) claims that the mother-infant relationship is "unique, without parallel, established unalterably for a whole lifetime as the first and strongest love-object and as the prototype of all later love-objects—for both sexes". Freud did not elaborate on the nature of this early relationship because he felt that at birth the infant's behavior is solely governed by potent instincts or drives. These instinctual drives develop from our physiological needs for food, water, warmth, sexual gratification, and avoidance of pain, and hence govern all human behavior. The mother's initial importance is as the person who can gratify these demanding instincts. By satisfying the infant's hunger and alleviating distress and pain, the mother increases the infant's pleasure, a fundamental principle in psychic life²⁰. The infant slowly develops an attachment to the mother as she becomes increasingly identified with need gratification. Although Freud believed that the mother is important for the infant's development, he did not believe that either the mother's behavior or her personality are crucial variables to normal or pathological development. Moreover,

Freud described 2 basic tenants of mental functioning: the pleasure principle and the reality principle. The pleasure principle is defined as an inherent tendency of the organism to avoid pain and to seek pleasure through the discharge of tension. The reality principle, a learned function, modifies the pleasure principle and requires the delay or postponement of immediate gratification (Kaplan et al., 1994: 247).

during the early years both parents also set limits to the child's need gratification. Thus the child's early development gradually becomes more conflictual as both parents give, withhold, gratify and constrain. (Birns, and Ben-Ner, 1988:49).

Freud's essential emphasis was on the Oedipal experiences --on the actual and fantasized events occurring around the ages of 3 to 5 (Lamb et al., 1985:8). The resolution of this conflict is crucial to a boy's future development. The Oedipal conflict involves an intense desire to take the place of the father in the affections of the mother. Freud saw this desire as explicitly sexual, and stated that:

when the little boy shows the most open sexual curiosity about his mother, wants to sleep with her at night, or even attempts physical acts of seduction, the erotic nature of his attachment to her is established without a doubt (Freud, 1935:342).

The father represents society and its constraints, and is perceived as a rival for the mother's love. The child fears the father's retaliation and is therefore plagued by conflict—drawn toward his mother, yet fearful of being punished. In normal development, the boy renounces his Oedipal love for the mother, and strives to adopt the attitudes, behavior and values of the father. In contrast, girls identify with their mothers and hence remain immature and imperfect. Freud believed that the basis of this inferiority, and of female psychology in general, is the fact that women lack a penis. When little girls notice this absence, they "feel themselves heavily handicapped...and envy the boy's possession of it"

(Freud, 1935:37). This is the start of the females' sense of inferiority. According to Freud, because a girl lacks a penis she cannot experience as intense an Oedipus conflict as a boy does. The proper resolution for female's complex is substituting a baby for the penis which females feel deprived of (Wortman, 1988:351).

Although many of Freud's ideas are controversial, particularly those pertaining to women, he did make substantial contributions to our understanding of human development. Freud's legacy includes an emphasis on personality development from the child's early relationship with the parents, the importance of emotions in child development, and a belief in unconscious factors as determinants of attitudes and behavior. Although the infant's love for the mother acts as the foundation for other relationships, Freud believed that it was the Oedipal crisis rather than infancy that was the crux of psychological development. During the second half of the 20th Century, his adherents and students extended the study of the origins of behavior to the period of early infancy (Birns and Ben-Ner, 1988:49).

Many practitioners in the child guidance clinics found the attribution of sexual impulses to young children disquieting, so they revised Freud's theory. At the Tavistock Clinic in London, Ian Suttie countered that the child's need for love and companionship, not basic biological instincts, was the driving force in early development (Eyer,

1992:55). This need was at least equal in importance to the sexual instinct, and, due to its evolutionary adaptation, was innately present in infants. Anxiety and other mental disorders stemmed from a person's unfulfilled need for love. For example, separation anxiety in the child can lead to a variety of ailments such as psychosomatic illness, neurosis, hate, as well as grief.

Other equally influential strands of psychoanalytic thought in Britain during this era include ego psychology, championed by Anna Freud, and the object relations school led by Melanie Klein. For Sigmund Freud, gratification of instincts (the pleasure principle) was the central force determining human behavior. Therefore, it was the strength of the original instincts and the conflicts they engendered that were primary. In contrast, the object relations theorists emphasized the importance of the person to whom an infant becomes attached, especially the mother. Early attachments are important to the development of the child's ego, the child's feelings about itself, and later interpersonal relationships (Birns and Ben-Ner, 1988:52; Wortman et al., 1988:353). For example, Klein felt that the infant's terrible impulses such as aggression and subsequent guilt are innate and inevitable. A child's psychic foundations are established in the first few months of life when the mother and infant are the principal actors. It is at this point that later psychoses are fixed. In Kleinian theory, there is no sexual differentiation in the child, and the

father is present only in the infant's fantasy of the mother-with-a-phallus (Riley, 1983:73). The child possesses impulses which exert a vigorous force irrespective of the way the child is treated. In her later years, Klein believed that only to a limited degree could psychoanalysis help modify such inborn instincts. Moreover, the mother was the focus of this innate hostility. Emotional separation from the mother is an inevitable and central conflict in infancy. Hence mourning this separation became the dominant focus in the child's emotional development. (Birns and Ben-Ner, 1988:52; Riley, 1983:74-76; Wortman et al., 1988:353). While Bowlby was greatly influenced by Klein, his work did not center on this inevitable emotional separation, but instead focused on the preventable harm of actual separation from the mother.

Objections relations theorists expanded the boundaries of psychoanalytic thought by proposing that "gratifying and nurturing interactions with adults, as well as frustrating and depriving ones, could affect the child and its future style of interaction with people" (Eyer, 1992:56, 65; Birns and Ben-Nir, 1988:52-53).

The approach adopted by Anna Freud and other early ego psychologists was quite different. Anna Freud studied both nursery school children as well as children who were in psychonalysis at her Hampstead clinic. Unlike Klein's psychoanalytic theory of neuroses and psychoses, Anna Freud's work emphasized normal development and

preventive therapy. She proposed that each child should be evaluated along several developmental lines from dependence and self orientation to self mastery and healthy relations with others. Freud adapted her father's original concept of defense mechanisms by which the ego is defended from unacceptable unconscious material. The ego develops independently from the id and has its own autonomous functions. It does not just mediate conflicts between the id and the superego or the id and reality. Instead, the ego has its own conflict free domain, including cognitive processes such as memory, perception, and learning. Freud not only expanded the number of defenses but related them to developmental levels stating that some were adaptive and enabled the child to develop a strong healthy ego vital for psychic survival (Eyer, 1992:56,64).

Anna Freud's ego psychology concerned itself with the family: the mother, the father and the child (Riley, 1983:64). A child's ego deficiencies stemmed from poor mothering. Either the mother's overprotectiveness or her mechanical way of handling the child led to ego failure and psychosis. However, Freud believed that the complete removal of the child from a toxic environment was not acceptable. The premature separation of a child from its family could cause damage to the insufficiently established superego, and Freud cited the evacuation of children as evidence of this (Riley, 1983:72).

Along with Dorothy Burlington, Anna Freud established the Hampstead Wartime Nursery for children who were separated from their parents or who were orphaned. The nursery provided these children with continuity and a family atmosphere by ensuring that each group of four or five children had a staff mother. Freud felt that it is the manner in which the children were separated rather than simply being separated from their parents that traumatized children. For this reason Freud encouraged mothers to visit their children as often as possible, and when the children returned home, she continued to stay in touch with them by visits and letters. Freud concluded that spending the first 2 years of life in a nursery is advantageous for "all those spheres of life which are independent of the emotional side of his nature; [it puts the child] at a disadvantage wherever the emotional tie to the mother or to the family is the mainspring of development" (Freud, 1944:558).

Freudian Psychoanalysis and Child Guidance Clinics:

While Kleinianism captured psychoanalytic psychology in Britain, in the United States, ego psychology was the decisive tool used to examine the child's relationships within the family. American psychology had already been influenced by Sigmund Freud's lecture in 1909 at Clark University on the significance of childhood experiences in the origin of mental illness. Freudianism, which stressed that sound

childrearing practices might save trouble and expense later on, came to influence the sphere of preventive mental hygiene. To a greater extent than in Britain, child psychology and psychonalysis, as aspects of mental hygiene, became attractions for neuropsychiatry, philanthropy, child protection movements and public health theories (Riley, 1983:63). For instance, in the United States one of the first pediatric departments to develop a family centered curriculum and clinic inspired by Anna Freud was at Case Western Reserve University in the early 1950s. Here Klaus and Kennell developed their theories of mother infant bonding (Eyer, 1992:69)

During the 1950s and 1960s, both American and British child guidance clinics attributed a child's psychological problems to disturbed family relations. The focus of intervention now was to preserve the family, to enhance the family's emotional relations by having family members acting out their inner feelings. Social workers would talk to the parents looking for unconscious beliefs, and feelings of guilt and disappointment that may pathologically affect the child. As the mother was the principal caretaker, it was her desires, wishes, and conflicts that increasingly were seen to be the cause of the child's psychological problems (Birns and Ben-Ner, 1988:58-59; Chess 1982 a,b; Eyer, 1992:56-57).

The Tavistock Clinic in London was especially concerned with problems of family resettlement after World War II, the changing status of women and mothers, and the significance of child development. Bowlby, who was now Director of the Children's Department, established a special research unit to examine young children's responses to separation from the mother (Eyer, 1992:57). Emphasis was no longer on family relations but rested instead on the specific relations between the mother and child. According to this emphasis, the proper sex role for women rested on the desire to be a wife and mother and any deviation from this role was seen as "penis envy", a form of gender maladjustment. Children who experienced faulty mothering or who experienced separation from their mothers were found to be deprived (Birns and Ben-Ner, 1988; Chess, 1982; Eyer, 1992:58).

Harlows' Monkeys And Maternal Deprivation:

Further evidence concerning the devastating effects of maternal deprivation came from the experiments with rhesus monkeys carried out by an experimental psychologist, Harry Harlow, in the 1950's. In the mid-1940's, Harlow found that rhesus monkeys, which were placed in isolation to keep them disease free for his learning experiments, became socially abnormal as a result (Harlow, 1958). After 6 months of isolation in an environment that provided sensory stimulation but lacked an animal caretaker, the monkeys were maladjusted, frightened, and unable

to mate. Harlow found that the critical period in infancy for rhesus monkeys was one year in isolation. Beyond this time limit recovery seemed impossible. For example, deprived monkeys could not interact socially with their peers, could not copulate normally, and mothers were very abusive to their offspring. Harlow's early studies demonstrate that mothering is essential for normal development in some primates, such as the rhesus and pigtail monkeys.

What are the caregiver's attributes that encourages the infant's attachment? Is it the fact that the caregiver provides food and other necessities? Or instead, is it the emotional security and comfort offered by a caregiver?. According to Freud's drive reduction theory, as mothers satisfy their infant's need for food, the infants associate their mothers with need gratification and eventually come to love them. Harlow and his colleagues set out to answer these questions with an ingenious experiment.

Newborn monkeys were separated from their natural mothers and provided with various kinds of surrogate mothers. In one set of experiments, Harlow raised each infant in a cage that contained two surrogate mothers, one made of wire mesh that provided milk, and the other covered with soft terry cloth that did not provide milk. It merely offered tactile comfort. The infants preferred the terry cloth mother. When Harlow scared the infants with a wind-up toy, they sought refuge

and comfort in the terry cloth mother. Infants raised only with the wire mesh mother clutched themselves, rocked back and forth, and threw themselves on the floor. Harlow's studies illustrate that not only do infants need an attachment figure, equally important for attachment formation in monkeys are the tactile sensations provided by the mother²² (Kaplan et al., 1994:182; Lamb et al., 1985:12; Wortman, 1988:240-241).

The results of human maternal deprivation studies seem to support this conclusion. The infants in most orphanages and hospitals had their physical and nutritional needs met. However, like the monkeys raised in isolation, they also suffered from emotional deprivation. Taken together Harlow's early studies and the human maternal deprivation studies led theorists to conclude that: (a) in addition to food, contact comfort was important; (2) Freud's secondary drive interpretation of early relationship formation was inadequate; and (3) the young infant needs to receive continuous care and stimulation from one or a small number of caregivers for optimal psychological development (Lamb et al., 1985:12).

Nevertheless, during the early 1970s, Harlow and his colleagues (i.e. Sumoi and Harlow 1972; Sumoi, Harlow and Novak, 1974; Novak and Harlow, 1975) demonstrated that 'isolate' monkeys can be rehabilitated if they are exposed to young monkeys that promote physical contact without threatening the 'isolates' with aggression or overly

²² In human infants, attachment to the caregiver seems not to grow simply from tactile sensation, but from many hours of social interaction as well (Wortman, 1988:241)

complex play interaction. For example, 'isolates' were exposed to young 'therapist' monkeys who would play gently with them and approach and cling to them. Within 2 weeks, the 'isolates' were reciprocating the social contact, and their incidence of abnormal self directed behaviors began to decline significantly. By the end of the 6 month therapy period, the 'isolates' were initiating play periods with the therapist monkeys and with each other. The 'isolates' were observed closely over the next two years, and their improved behavioral repertoires did not deteriorate over time. The results of these monkey-therapist studies underscore the potential reversibility of early cognitive and social deficits at the human level.

CRITICISMS OF MATERNAL DEPRIVATION STUDIES

By the late 1970s it was almost universally agreed that the conclusions drawn from the maternal deprivation research were inappropriate, with far too much emphasis placed on the pathogenic importance of the mother-child separations in the early years while ignoring the significance of general social deprivation. Moreover, Bowlby's use of retrospective studies led him and others to overestimate the frequency with which deprivation was associated with adverse child development (Eyer, 1992:66; Lamb et al., 1985:11; Rutter, 1981).

Michael Rutter's book, *Maternal Deprivation Reassessed* (1981), is the seminal work which re-evaluates the evidence for and against the concept of maternal deprivation. Rutter re-emphasizes the point made earlier by Leon Yarrow (1961) that maternal deprivation incorporates several disparate phenomena. Separation and deprivation are not equal terms. Separation refers to the physical loss of the mother figure, but not necessarily of mothering. In contrast, deprivation refers to the loss of maternal care but not necessarily of the mother figure (Rutter, 1981:45-50). Yarrow emphasized the need to distinguish between perceptual, social, biological and psychological types of deprivation, although these types often accompany each other (Rutter, 1981:15-16).

Rutter (1981) argues that although maternal separation can be a potent source of short-term distress, it is not a particularly important factor in the development of serious long-term disturbances of any kind. Instead evidence suggests that most of the long-term consequences are due to "privation" or lack of some kind rather than to any type of loss or deprivation (Rutter, 1981:124). Developmental retardation and intellectual impairment are both a consequence of "privation" of perceptual and linguistic stimulation. Similarly, delinquency and antisocial disorders in children are usually due to the discord, tension, and lack of affection in families that leads to separation. According to Rutter, although the presence of a deviant parental model and inefficient

discipline may be contributing factors, the lack of a stable, persistent, harmonious relationship with a parent appears to be the crucial variable. While less is known about the syndrome of "affectionless psychopathy", available evidence suggests that "the most tenable hypothesis is that a failure to develop attachments (or bonds) in early childhood is the main factor" (Rutter, 1981:120-121). Whether the infant's attachment is to the mother seems irrelevant and it is also doubtful whether it even has to be to an adult.⁴³ Most likely for optimal psychosexual development bonds with both males and females are necessary.

It remains to be determined which type of deprivation has which long-term consequences. Nevertheless, the consequences of 'deprivation' and/or 'privation' are modified by various factors such as length of separation from parents, types of child care, duration of privation, presence of other good relationships, opportunity to develop attachments with parents, and the child's age, sex and temperament. Studies have shown that children are not passive recipients of environmental stimuli. Rather they respond selectively to stimuli in terms of their idiosyncratic and developmental characteristics. The importance of individual differences in response to deprivation has been widely underestimated and neglected (Rutter, 1981:59).

⁴³ See Freud and Dann's (1951) classic study of six pre-school children who lost their parents through Nazi persecution. Although these children were placed in a series of concentration camps and English nurseries, they were able to develop strong ties with each other. While they showed various emotional problems, they did not show serious disturbances associated with total loss of mothering experiences and gross rejection.

Research shows that "*single* isolated chronic stresses" carry no appreciable risk. Rutter cites a population study of families with 10 year old children that demonstrates when any two risks occur together the psychiatric risk for the child goes up no less than *fourfold*. With three or four concurrent stresses, the risk goes up several times further still. It is clear, Rutter (1981:209) states, that the combination of chronic stresses provides much more than an additive effect. There is an *interactive* effect such that the risk which attends several concurrent stresses was much more than the sum of the effects of the stresses considered individually.

Rutter emphasizes that extreme deprivation was experienced in institutions. Most of the effects of maternal deprivation were due to dysfunctional practices of the institutions and not merely due to the lack of a primary caregiver or to a poorly functioning caregiver. Most of the institutionalized infants studied often had between 15 and 50 caretakers in the first 2 years of life. An institutional upbringing frequently involves both disruption and stimulus deprivation. For example, in the foundling homes Spitz described, the children lived in cubicles enclosed on 3 sides so that they were not able to see what was going on in the ward. The only objects the infants played with were their own hands and feet and they were left alone for most of the day. Similarly Harlow's infant monkeys were not only deprived of mothering but of all animal contact and stimulation.

Bowlby's (1951) initial conclusion that mothering is useless if delayed until after 2 1/2 years and useless for most children if delayed until after 12 months has not been supported by later research. According to Rutter (1981:77) "the question is not whether the effects are reversible, but rather how readily and how completely reversible are the effects with respect to each function impaired by deprivation". Evidence on these points is limited. Nevertheless, research has demonstrated that "considerable reversal of cognitive ill effects is possible with a *complete and permanent change of environment*, provided that this occurs in infancy" (Rutter, 1981:79). On the other hand, "*partial and temporary changes of environment*" have demonstrated only modest and short-term benefits²⁴. In addition, Rutter states (1981:190-191) that evidence points to the possibility of a 'sensitive period' in infancy for the development of initial social attachments. With appropriate social conditions, bonds may develop for the first time after early infancy, and a considerable degree of later social recovery is possible. For example, studies of later adopted children²⁵ demonstrate marked social and behavioral improvements although these children were not placed in improved environments until middle or later childhood. This result was the same for children who had not been closely attached to a caregiver while they were in the institution. The later adopted children did display the same

This has implications in various areas of social welfare policy and practice and for various compensatory education programmes.

See for example Tizard (1977), Tizard and Hodges (1978).

social and attentional problems in school as did those children who remained in institutions. However, this research did not extend far enough into the subject's future to confirm the existence of later effects.

Rutter best summarizes early research on maternal deprivation and attachment :

...theories of mothering have frequently been too mechanical in equating separation with bond disruption, too restricted in regarding the mother as the only person important in a child's life and too narrow in considering love as the only important element in maternal care.... It is vital not to overlook the important evidence that children vary greatly in their response to separation and deprivation. Parent-child interaction is an active ongoing two-way process with the child's own attributes being an important determinant of how the interaction develops.... (Rutter, 1981:53)

BOWLBY'S ETHOLOGICAL ATTACHMENT THEORY

Inspired by Harlow's studies and the maternal deprivation research, Bowlby began in the 1950s to develop a theory of attachment. He postulated (1958:350-72) that there is an innate, or biologically based, need for social interaction in human infants that becomes focused on one caregiver, usually the mother. Separations from the mother are disastrous developmentally because they thwart an instinctual need. In order to explain the dynamics of this process, Bowlby replaced Freud's model of intrapsychic functioning with a model more consistent with the evolutionary biological model then gaining recognition (Lamb et al., 1985:12-13). The new evolutionary model stressed the importance of natural selection in shaping the behaviors of any species. Behavioral

patterns that did not promote species' survival would be eliminated. Bowlby suggested that in the savannah grasslands in which humans most likely evolved, the infant's proximity-promoting behaviors such as crying, gazing, cooing, smile, and gesturing are essential to its physical survival and later emotional development. As the functional efficacy of such proximity/contact promoting signals depends on the promptness and appropriateness of the adult's response, mutual responses are critical. Therefore, infants become attached to any individual who consistently and appropriately responds to the infant's signals and behaviors. Adults are also equipped with caregiving responses that complement the infant's responses. Both the infant and the caregiver are adapted to respond in a mutually complementary and reinforcing pattern which functions to ensure the infant's survival. The infant's attachment to its primary caregiver is the foundation upon which all other relationships are formed.

Bowlby also formulated a series of stages in the development of attachment. In the first, 'Orientation and signals without discrimination of figure', (birth through 8-12 weeks), infants appear content as long as someone satisfies their needs and responds to their signals. The limiting factor appears to be the infant's inability to perceptually discriminate among individuals. Once they develop this capacity, they direct

attachment behaviors preferentially to individuals to whom they have the greatest exposure during the following weeks.

The next phase, 'Orientation and signals directed towards one (or more) discriminated figures' (to 6-8 months of age) is marked by increasingly clear preferences for a small number of families people, such as parents and other caregivers. However, Bowlby states that the child's bonds do not form completely until around the middle of the first year of life when the third stage ('Maintenance of proximity to a discriminated figure by means of locomotion as well as signals') in attachment formation starts. The infant now displays a complete range of attachment behaviors: protesting the mother's departures, greeting her return, clinging when frightened, and following when able. These actions are instinctual and essential to the infant's survival.

The final transition occurs sometime during the third or fourth year, when the child acquires the capacity to recognize that others have desires and needs of their own which have to be taken into consideration when interacting with them. This transition marks the onset of the fourth stage which is characterized by 'Formation of a goal-corrected partnership'. The development and characteristics of these partnerships have been little studied (Lamb et al., 1985:20-21).

Bowlby's ethological model of attachment rests on various postulates of instincts. First, psychoanalysis was already committed to

a theory of instincts as central to its own axioms. However, in order to ground his theories concerning the gravity of disturbances in the 'instinctual' mother-child bond, Bowlby needed to get the ethological version of instincts into psychoanalysis. His purpose was to establish the centrality of the mother-child tie to mental health, and to plan for preventive action and interdisciplinary research (Riley, 1983:102; Wortis, 1971:737-739). Thus Bowlby turned to studies by Lorenz and Tinbergen on imprinting and following responses in young birds and animals. The infant's attachment, Bowlby theorized, can be compared to the process of imprinting in birds. Moreover, these theories of 'imprinting' could possibly serve as a key to the development of adult neuroses: if an instinctual progress was disturbed at a critical early stage, subsequent disaster may ensue. One possible explanation, Bowlby felt, may lie in the extraordinary fact that a response can be imprinted long before it becomes operative. For example, human sexual responses are imprinted in earlier childhood and not later. The study of mother-infant separation, Bowlby believed, could be advanced by the study of the 'following response' in birds (Riley, 1983:103).

Critics of instinct theory stress its neglect of the social and developmental history of the organism and its failure to view the organism as one that affects and is affected by the biosocial environment in which it develops (Wortis, 1971:738). Although Bowlby's theory of

attachment is an interactionist one, his approach is still conservative and has been labeled 'psychological determinism' (Riley, 1983:106). With this approach successful mothering is removed from the control of the child's mother, and instead the biological determination of psychological characteristics becomes more important. Once again this places the mother-infant pair firmly and squarely in the hands of Mother Nature, an external force that exerts distorting pressures. For example, in Bowlby's view instincts appeared to parallel the workings of the unconscious (Riley, 1983:103). In "*Nature of the Child's Tie to His Mother*", Bowlby (1958:361) writes "Once activated, the animal of which they form a part seems to be acting with all the blind impulsion with which, as analysts we are familiar". In the same article he elaborates further:

When the response is not free to reach termination...we experience tension, unease, and anxiety. As observers when these responses are activated in another, we commonly think and speak of the individual as the subject of conscious and unconscious wishes and feelings (Bowlby, 1958:364).

Instinctual responses, Bowlby believed, were equated with the more primitive: "There will be found active beneath the symbolic transformations and other trappings of humanity primeval dynamic structures which we share in common with lower species" (Bowlby, 1958: 365). Moreover, Bowlby argues the studies by Lorenz and Tinbergen proves the innateness of human aggression: "all recent research in psychology and biology has demonstrated unmistakably that behavior,

whether in the lower organisms or in man himself, is the result of almost continuous conflict of interacting impulses" (Bowlby, 1958:39). The responses dominant in early infancy exemplifies man's innate aggression:

Inevitably the presence of mother or father evokes primitive and turbulent feelings not evoked by other people. This is true even in the bird world. Young finches quite capable of feeding themselves will at once start begging for food in an infantile way if they catch sight of their parents...parents, then, especially mothers, are much maligned people: maligned, I fear, particularly by professional workers, medicine and non-medical alike (Bowlby, 1958:48)

Thus for psychoanalysis during this era, the child comes into the world with instincts that are both loving and aggressive. The mother is portrayed as the ideal of the child's love, satisfying the child's wishes and desires, and provides the controls for her child's aggressive drives until the child develops internal controls. The mother is no longer a person who molds the child the way a sculptor does, but rather the provider of nourishment, love, control, and the mediator between the child's instincts and the demands of reality (Birns, and Ben-Ner, 1988:59-60). Winnicott's assertion that "there is no infant without the mother" becomes "There is no problem child without a problem mother" (Chess, 1982).

Bowlby regarded his own work as a radical extension of psychoanalysis in Britain which became narrowly fixated on Freudian concepts. He firmly believed that his model of an 'attachment instinct' in humans combined evolutionary soundness with a comforting

obviousness. The attachment of children to their mothers as instinctual did not need further explanation (Riley, 1983:107). Bowlby was also well aware of the implications of his work as his 1968 BBC broadcast "*Security and Anxiety*" makes clear:

Studies of this sort raise practical questions about mothers going out to work, the age when a child should start nursery school, how children should be cared for when ill. As time goes on, the best solutions will become clear. Meanwhile, we are wise to be wary. Any move that separates young children from their mothers needs scrutiny, for we are dealing here with a deep and ancient part of human nature (cited in Riley, 1983:107-108).

CRITICISMS OF BOWLBY'S ETHOLOGICAL ATTACHMENT THEORY

Bowlby's juxtapositions of psychoanalytic theory with analogies pulled from zoology and with recommendations on child care drew criticisms from other psychoanalysts who felt it reduced complex human behavior to a simplistic formula. Anna Freud and Melanie Klein charged Bowlby with gross oversimplification in asserting that pathology results from disturbances of the infant-mother relationship. Both countered that a variety of other early trauma could be equally at fault. Also the infant might develop a negative concept of the mother if for any reason she is unable to relieve the infant's distress (Riley, 1983:105-6). D.W. Winnicott, a popular pediatrician and psychoanalyst who also emphasized the vital importance of the child's ties to its mother and the disastrous effects of separation, accused Bowlby of ignoring love and anguish, which are the real stuff of life (Eyer, 1992:63-64).

As Rajecki and Lamb (1978) point out, attachment theory cannot account for the fact that abused young and infant animals can still form social bonds. Moreover, animal infants form attachments to inanimate objects such as cloth surrogates, blankets and Styrofoam objects. In contrast, Bowlby's attachment theory predicts that infants form secure attachments to caretakers who emit appropriate and sensitive responses to the infant's signals.

Three studies question the importance of attachment. Reed and Leiderman's (1983) study of Gusii infants in Kenya reared polymatrically demonstrates that the infant's attachment is not tied to a sensitive period or to a consistent and primary attachment figure. Bowlby stipulates that the purpose of the attachment process is the protection of infants from predators while allowing them the ability to explore their environment—the secure base concept²⁰. However, Reed and Leiderman counter that it would be more adaptive if the infant:

forms more than one attachment; this would help maximize his chances to safely explore the environment.... An optimal attachment system would have the infants periodically susceptible to modifying old, less desirable attachments and to form new ones. (Reed and Leiderman, 1983:66-67)

Kemper (1977: 107) states that observations of the Kikuyu have revealed that no type of deaths occur through loss of protection and that the high mortality rate in the first year results from infectious disease. Therefore, to conclude that results in transmission of behaviors essential for subsistence activities, for social organization and activity.

In his article on monotropism, Peter Smith (1980:373-374) counters that from an inclusive fitness²⁷ perspective, it may be in the interest of several conspecifics, but not an unlimited number, to play a substantial part in caretaking for a particular infant. Not only parents, but also close relatives such as grandparents, aunts, uncles, older siblings, can increase their inclusive fitness by investing time in the care and protection of an infant. In turn, infants should normally direct attachment behaviors to those adults expected to behave nurturantly. In group-living primates a great deal of alloparenting behavior has been shown to take place.

Moreover, Smith's survey of the pertinent literature indicates that while in hunter-gatherer communities mothers may be the principal caretakers, this is not always so in settled communities or non-industrial societies. For instance, Weisner and Gallimore's study (1977) of 186 non-industrial societies found that the mother was the almost exclusive caretaker in infancy in only 5 of them. Others have important caretaking roles in 40% of these societies, during infancy, and in 80% during early childhood. Other studies indicate that the extent of shared care in urban societies varies with social background and the employment situation of women. For example, in the United States, Cohen and Campos (1974) reported that 90% of their sample babies were attached to more than one

²⁷ Inclusive fitness can be defined as the possession of characteristics leading to a high probability of the perpetuation of an organism's genes in future generations (Smith, 1980:374).

person at 16 months. Other early studies, for example by Willemsen et al. (1974) and Lamb and Stevenson (1978), reported that fathers, in the mother's absence, were the primary attachment figures²⁸.

From Smith's review of the pertinent literature three types of shared child care can be distinguished. In the first, the mother is the primary caretaker and is assisted by one or a few subsidiary caretakers. In the second type, child care is shared fairly equally amongst a few individuals. In the third, a fairly large number of caretakers are present. This type is associated with discontinuous relationships and inadequate interaction found in many children's homes and institutions. The fact that the first and second types of shared care have been predominant through most of human history carries the implication that no severe adverse effects are consequent upon such practices (Smith, 1980:377).

The primacy of the mother-infant attachment is also contradicted by Schaffer and Emerson's study (1964) study of infants in Scotland. They describe three different stages in the development of attachment behavior: (1) an 'asocial' stage during which the infant actively seeks optimal stimulation from *all* aspects of the environment; (2) a 'presocial' stage during which the infant indiscriminately seeks proximity to objects that give it comfort and satisfaction; finally (3) a 'social' stage during which they form attachment to specific individuals. In 65% of the cases,

²⁸ For a review of the current literature on father-infant interaction see Campos et al. (1983) or Lamb (1981, 1986).

the mother is the primary attachment figure, the father in 5%, simultaneously the mother and someone else in 30% of the cases. At 18 months, only 13% displayed attachment to only one person. Schaffer and Emerson (1964:71) conclude that whom the infant chooses as his attachment figure further depends "primarily on the nature of the social setting in which he is reared and not on some intrinsic characteristic of the attachment function itself".

In the 1950s many feminists accepted the emphasis on women's traditional role within the family, seeking to improve the welfare of mothers and their children and to raise the status of women as homemakers. Bowlby himself argued for greater support for mothers through improved child guidance services, increased family allowances and more trained psychiatric workers (Richardson, 1993:49). However, in the late 1960s and 1970s feminists rejected Bowlby's work, seeing it as an instrument for the confining and diminishing of women, especially women as mothers. As early as 1954, Margaret Mead called Bowlby's theory of maternal deprivation:

a new and subtle form of anti-feminism in which men—under the guise of exalting the importance of maternity—are tying women more tightly to their children than has been thought necessary since the intervention of bottle-feeding and baby carriages. Actually, anthropological evidences gives no support at present to the value of such an accentuation of the tie between mother and child...On the contrary, cross-cultural studies suggest that adjustment is most facilitated if the child is cared for by many warm friendly people (Mead, 1954:477)

Others like Barbara Wooton (1959) and Rochelle Wortis (1971), who perceived women's maternal function as the root of their oppression, saw the idealization of motherhood, which Bowlby helped to perpetuate, as problematic to women. First, it diverted attention away from the enormous range of sociocultural environments into which new born-infants are thrust and idealizes the mother-infant dyad. The reality of bringing up a child is then lost and women accept unrealistic expectations of themselves as mothers. Moreover, it also made it difficult for mothers to acknowledge their negative feelings about motherhood. This helped preserve the illusion of maternal love as instinctive, and the nuclear family with the mother as the primary caregiver as the optimal social unit. Equally important, it hampered the development of important economic and social reforms such as paid paternity leave, greater opportunities for the fathers to participate in infant and child care, universal day care and nursery schools, and alternative life styles.

ATTACHMENT RESEARCH

In the early 1970s research on attachment accelerated. Based on her own observations of infants in Uganda and on Bowlby's early work, Mary Ainsworth (1967a) refined the concept of attachment and designed a procedure, called the "Strange Situation", to measure it. For Ainsworth (1967b) the toddler's response to separation and reunion with the mother measures the quality of attachment between mother and

child. The 'Strange Situation' consists of a 20 minute laboratory procedure during which the mother and a stranger enter and leave the laboratory in a predetermined sequence. Based on its responses, the infant is classified as securely or insecurely attached. The child who accepts the mother's leaving and is happy at her return is considered to be securely attached. A baby who either cries loudly when the mother leaves and then is angry upon her return or is not responsive to her is classified as insecurely attached. Ainsworth concludes that sensitive, responsive mothers who respond appropriately to their infants had infants who develop secure attachments. Insensitive, unresponsive mothers tend to have infants who become insecurely attached. In addition, children also develop characteristics that correlate with the type of attachment they have formed. For instance, two year old children assessed as securely attached were enthusiastic and persistent in solving easy tasks, and were effective in using maternal assistance when the tasks became more difficult. In contrast, their anxiously attached counterparts tended to be frustrated and whining (Eyer, 1992:66). The "Strange Situation" test is the foundation of a host of studies that infer the type of parenting a particular group of children experience.

Critics of the Strange Situation have focused on its validity. The primary criticisms concern the 'ecological' validity of the Strange Situation. First, parents are directed to behave in an atypical manner,

and second, individual differences in temperament are confounded with performance in the Strange Situation (McCartney and Phillips, 1988:166). Moreover, this test may not be equally valid for all children. For example, separation and reunion may be perceived as different events for children in daycare who experience the absence of both parents during every workday, than for children at home with their mother. Also behavior in infancy is not completely predictive of later behavior (Clarke and Clarke, 1979,1976; Lamb et al., 1985).

Interest in attachment research reflects contemporary values. Developmental psychologist, Jerome Kagan claims that in the 1940s and 1950s children now labeled as 'securely attached' would have been called 'over-protected' (Eyer, 1992:68). He adds that many other differences seen in the attachment research may be partly due to the differing temperaments of the children. Kagan cites studies indicating that children assessed as irritable shortly after birth are likely to be classified as anxious a year later. Children labeled avoidant may be constitutionally less fearful and in less need of proximity to their mothers. These interpretations challenge the premise of attachment theory, that consistent proximity of the mother results in independent children.

Finally Birns and Ben-Ner (1988:51-52) argue that attachment classifications are similar to the concept of IQ that was prevalent in the

1950s. IQ was then believed to be a stable, reliable measure of the child's intellectual functioning. It was believed that a developmentally advanced infant would be a gifted child and that a baby with a below-average score on tests would be a retarded child. IQ scores were used when considering adoption and for placement in special classes for the retarded or gifted. However, research has demonstrated that IQ is best seen as a measure of a child's functioning on a series of tasks at one moment in time. It is only reliable over short intervals, but is also subject to change over time. Also normal children in unchanging environments change in IQ and for children born prematurely or fetally malnourished, who may be developmentally delayed, the test measures have little predictive value.

Despite various critiques, the existence of attachment is one of the major contemporary propositions about human development. Over the past three decades mother-infant interaction has been studied using videotapes and frame-by-frame analysis. This work has demonstrated a level of attunement and communication between mothers and infants not perceived before. Attachment research has demonstrated that there is great variability in the attachment process. Mothers need not be the primary attachment figure; babies successfully develop under the care of multiple caretakers—a situation originally thought to cause maternal

deprivation. Moreover, the child's affectional bonds to abusing parents often remain strong.

SUMMARY

Bowlby's work on maternal deprivation and his ethological attachment theory made the bonding research during the 1970s possible. It established a set of assumptions about the primacy of the mother-infant relationship and its vital importance for the child's physical, intellectual and emotional development. Second, it enhanced the legitimacy of claiming that research on non-human animal behavior can be generalized to human behavior. An equally important influence was Bowlby's suggestion that attachment behavior is 'biologically based', that is innate, for its survival value. An infant who maintains proximity with its mother is more likely to be cared for. In turn this naturally implied a biological basis for maternal attachment behaviors.

Research conducted by Bowlby and his colleagues who were concerned with the plight of children successfully altered various institutional practices. For example, it encouraged fostering and the treatment of children in residential homes in small groups instead of placing these children in large institutions, and allowed parents access to their babies who were previously sequestered in pediatric wards. However, it also extended the authority of pediatricians, child

psychiatrists, and social workers over the emotional lives of children and their families. The precedent set by child guidance clinics and by Anna Freud's attention to the importance of the family in treatment provided a rationale for extending pediatric care. In the United States one of the first pediatric departments to develop a family-centered curriculum and clinic inspired by Anna Freud was at Case Western Reserve University where Doctors Klaus and Kennell developed their theories (Eyer, 1992:69). At the same time, professionals involved either in the study of childrearing or with child welfare came to focus also exclusively on the mother-child relationship, especially on the social consequences of 'bad mothering'. This ideology of mother-blaming not only influenced child welfare and day care policies, but created guilt and anxiety in mothers whose children had even minor behavior deviations (Chess and Thomas, 1982:214). As Hilde Bruch, one of the few psychiatrists who viewed this development with alarm stated (1954:728) "the new teaching implies that parents are all-responsible and must assume the role of preventative Fate for their children".

CHAPTER FIVE

PRACTICAL CONSEQUENCES OF MOTHER-INFANT BONDING AND THE SENSITIVE PERIOD HYPOTHESIS

Although neither the ethological evidence nor the human experimental studies support the hypothesis of brief sensitive period, Klaus and Kennell's theory of mother-infant bonding was accorded scientific privilege. Why? Put simply, their bonding theory has proven to be a socially and politically useful tool (Arney, 1980; Eyer, 1992:163-196; Herbert et al., 1982; Sluckin et al., 1983). As Arney states:

Bonding theory is being used to reform various social institutions and social practices of long standing that have been objectified, reified, and have seemingly acquired a life of their own. Without reform these institutions would succumb to the challenges presently mounted against them (Arney, 1980:559).

Indeed, from the 1970s, the concept of bonding, including the sensitive period hypothesis, revolutionized obstetric practices in North America. With the development of the 'medical' model of disease and the increase use of obstetric technology, childbirth came to be treated merely as a surgical experience rather than an emotional one in which the pregnant woman has the right to decide what her childbearing experience will be. A movement to reform hospital births started quietly in the 1940s, picked up momentum in the 1950s and 1960s when parents, and child care educators united to establish alternatives to surgical births, and culminated in the movement for natural or 'family-

centered birth' that swept North America in the 1970s and early 1980s. With support from the feminist movement, consumer rights activists, and child protection activists, the natural childbirth movement became even more politicized and threatened to take routine childbirth out of hospitals altogether. For example, publicly recognized child care experts, such as Dr. Spock, Dr. Brazleton, and Dr. Garbarino, organized consumer groups, the media, local child abuse councils, and various medical associations to pressure hospitals into implementing family-centered birth and early mother-infant bonding as a means to prevent child maltreatment and to generally enhance family functioning.

Klaus and Kennell's sensitive period hypothesis did sensitize medical personnel to the social effects of medical intervention in the perinatal period. In North America and Britain more than 90% of all babies are separated after birth for at least brief periods (Herbert et al., 1982:217). More prolonged separations are likely if the newborn has to receive special care. In these cases the emphasis on early mother-infant bonding has mitigated the costs of improved physical care by pediatricians of ill and low-birth weight infants, that cost being the separation of babies in intensive care units. Mothers are now encouraged to interact with their ill or low birth weight babies. Early bonding has also given other parents much easier access to their healthy full-term

infants (just as Bowlby's initial claims of irreversible damage, which he later revised, brought about unrestricted visiting of children in hospitals).

Nevertheless, the emphasis on first establishing an early maternal bond and then on monitoring the quality of that bond has helped to keep childbirth in the hospital with the concomitant routine use of sophisticated obstetric technology although it is estimated that about 95% of births could be natural where labor is allowed to take its course without the intervention of drugs, instruments, or surgery. Almost one in four women experience surgical births (Wertz and Wertz, 1989:260). At a time when the role and authority of obstetrics was being challenged by the medical establishment and the consumer, the sensitive period hypothesis enabled obstetricians to keep and extend their control over their clients. As Arney (1980:561) argues "as pregnancy became natural once again, therefore, it was essential that there be new "diseases" for the doctor to "treat", potentially pathological processes in which she or he could intervene". Diseases of nonattachment filled the space left by the naturalization of childbirth. It is on the basis of this new set of diseases that the physicians right of intervention in childbirth is preserved. Klaus and Kennell state (1976:41) "by understanding the genesis of maternal and attachment behavior, perhaps we can better envision *interventions* that will foster change in those cases where such is desirable for mother and infant". Thus the doctor's job is no longer

simply to deliver a laboring mother, but now includes "Helping Mothers to Love Their Babies", the title of an editorial in the *British Medical Journal* of September 1977 (Arney, 1980:562). By expanding the medical domain to include the social relations of parents and infants, medicine preserved the institutionalized relationships between doctors and patients. The medical profession felt powerless to change the behavior of parents who failed to visit their ill or low birth weight infants in intensive care units or those parents who appeared not to care for their child. Early maternal bonding was viewed as an inoculation against child abuse and failure-to-thrive syndrome. This view was quickly adopted by social workers who were called upon to intervene in and repair cases of bonding failure

In this section, first the philosophy behind the natural childbirth movement as espoused by Dick-Read, and its evolution will be briefly reviewed. From the 1940s throughout the 1970s the movement gathered force as it coalesced with the feminist movement. During the 1950s and 1960s, the La Leche League and the International Childbirth Education Association helped to promote natural childbirth theories throughout the United States. Our discussion then examines the use of sensitive period hypothesis by various interest groups — the natural childbirth movement, the medical profession, and social workers — in their respective campaigns to reform hospital childbirth and in the prevention

of child abuse and neglect. The mass media and two of America's favorite childcare experts, Dr. Spock, and Dr. Brazleton, also publicized the need for reform. Next analysis of articles in the allied health sciences journals demonstrates that obstetric nurses readily embraced the sensitive period hypothesis as a means to enhance their authority, working it into the checklists by which they evaluated mothers for displays of affection or indifference and taught them how to care for their newborns. Evaluation of a number of nursing assessment tools reveals serious problems which jeopardizes their validity and effectiveness in the assessment of child abuse and neglect. Finally our discussion reveals while the emphasis on early mother-infant bonding has humanized hospital childbirth, the net gains for parents, especially women, have been minimal.

THE NATURAL CHILDBIRTH MOVEMENT

Wertz and Wertz, in their book *Lying-In: A History of Childbirth in America* (1989), document the transition at the turn of the century to hospital births, and 30 to 40 years later early rumblings of consumer discontent with hospital childbearing practices began to appear in the press. This discontent eventually led to the formation of the natural childbirth movement which gained impetus in 1944 with Grantly Dick-Read's book *Childbirth Without Fear*. His natural childbirth theory was based on the assumption that a woman's pain in childbirth was due to

fear. However, with childbirth education and learning to relax, a woman could have a painless delivery.

During this era a flood of books on psychoanalysis showed that motherhood was indeed a woman's fulfillment. As a woman's destiny was to bear and rear children, psychoanalysts claimed that the experience of pain would heighten her awareness of the birthing process. For instance, Freudian psychoanalyst Helene Deutsch claimed that when women who had been drugged for childbirth awaken, they do not feel any love for their infant, and sometimes claim that the infant is not theirs because they had not felt the birth (Wertz and Wertz, 1989:189).

Dick-Read's ideas were enthusiastically accepted by a small group of women, in part because he associated motherhood with essential piety, femininity, purity, and submissiveness. Such ideas were entirely consistent with post-war idealization of motherhood and with psychoanalytic assertions that femininity rested on women identifying with motherhood (Birns and Ben-Ner, 1988:58; Dally, 1983:92-94; Eyer, 1992:110,170). Dick-Read maintained that without good mothering, "a nation of gladiators" would arise and more wars would occur. He asserted "Give us back the Victorian mothers of seven and ten children and we shall again be swayed by the quiet irresistible goodness of true motherhood" (Dick-Read, 1959:346).

The natural childbirth movement was enhanced by a postwar religious revival, which fit perfectly with Dick-Read's teachings (Wertz and Wertz, 1989:188-90). He declared that:

In the Christian religion...childbirth is fundamentally a spiritual as well as a physical achievement...The birth of a child is the ultimate perfection of human love. In the Christian ethic we teach that God is love (Dick-Read, 1959:xvi).

A woman had to be a 'believer' as childbirth was both a spiritual and physical event (Dick-Read, 1959:6). Indeed Dick-Read affirms that (1959:24-25) "In motherhood the fearless woman advances to the dais of the Almighty to receive the prize of her accomplishment". Natural childbirth was also described as an athletic contest in which the woman either succeeds or fails and the obstetrician is the judge of success. As a consequence many women actually pretended not to feel any pain lest they should be judged inadequate (Wertz and Wertz, 1989:187-91).

Like many of his colleagues, Dick-Read believed (1959:244-247) that breastfeeding was better physiologically and emotionally for the mother and her infant. Infants who were breastfed were more placid and less colicky because the baby develops better on nature's natural food. The mother in turn develops a sense of achievement associated with the knowledge that she is giving herself to her beloved possession. However, unlike his colleagues, he advocated that the infant should be put to the mother's breast as soon as possible after the umbilical cord was cut.

Another of Dick-Read's tenants which had direct influence on the bonding doctrine, was his advocacy of 'rooming-in'. 'Rooming-in' had been a standard hospital procedure until at the turn of the century when epidemics of diarrhea and respiratory infections among newborns led to the isolation of babies in separate wards. Premature infants were also kept in special units. These procedures in turn reduced the mother's contact with her infant. "Rooming-in" was first used at Yale University in the mid-1940s through the efforts of Edith Jackson, a pediatrician and Kate Hyder, a nurse midwife. However, it was rarely practiced in North America until the mid-1970s when the practice was renamed — with the impetus of bonding — 'birthing' or 'bonding' rooms.

The late 1950s and 1960s saw the burgeoning of natural childbirth theories and methods, and a shift away from Dick-Read's methods to the coached breathing methods of Lamaze (Burst, 1983:45; Davis-Floyd, 1992:162-163; Rothman, 1981:166). According to Rothman, Dick-Read's approach:

failed in the United States because it did not prepare women for the social situation they would have to face in labor...He said that women needed continual comforting and emotional support throughout labor. While that may have been possible for his patients in the hospital, and was certainly possible for his home birth patients, it was not provided for the American women who "failed" at natural childbirth. The majority of women who attempted to follow Dick-Read's advice did so under hostile conditions. They shared labor rooms with women who were "scoped" and whose screams, combined with the repeated offering of pain relief medication by hospital staff, reinforced the fear of birth Dick-Read set out to remove. The results were generally perceived as failures of the method, or failures of the individual

woman, rather than the result of systematic interference by the institution (Rothman, 1981:166).

In contrast the Lamaze method was successful in American hospital because it presents no threat to the obstetrician (Davis-Floyd, 1992:163). In her book, *Thank You, Dr. Lamaze* (1965), Majorie Karmel described her experience of painless childbirth where the expectant mother receives training based on the methods of conditioning developed by Pavlov. Karmel and Elisabeth Bing, a new York childbirth educator, formed the American Society for Psychoprophylaxis in Obstetrics (ASPO) for the promotion of Lamaze method that would involve not only doctors and nurses but the public as well. In time the Lamaze method came to refer to any of the general aims of natural childbirth: consciousness while giving birth, a minimum of medication, spontaneous delivery, prenatal education of parents, and participation of the father. By the 1970s the Lamaze method was mushrooming across the United States (Davis-Floyd, 1992:164-165; Eyer, 1992:175-176).

The La Leche League was formed in 1956 to promote breastfeeding and to defend the value of family life. Its members claimed that because the breastfed infant is held more by its mother, it is therefore emotionally closer to her. At the time, few mothers who wanted to breastfeed had few sources of support or authority. Hence the League provided help to breastfeeding mothers (Burst, 1983:46; Eyer, 1992:175).

In the 1960s the International Childbirth Education Association (ICEA) was formed (Burst, 1983:46). This was a federation of parent groups advocating family-centered rather than hospital-centered birth. The ICEA believed that childbirth could be a profound experience for both the father and the mother. By the late 1960s ICEA began to merge with California's counterculture and advocated using encounter groups in childbirth education classes and midwives to deliver babies at home or in alternative birth centers. Parents were also urged to take responsibility for getting the kind of birth they wanted by actively demanding it (Eyer, 1992:176-177).

The Feminist Influence:

During the 1960s and 1970s the feminist movement was evolving ideologically and politically. The movement held out promise that collectively people could transform the structure of social relationships universally and the quality of everyday life. Feminists identified the family as a crucial institution of social relationships generally, and decisive for women's subordination. In theory and practice feminists adopted a critical stance toward family life.

The feminist analysis of motherhood centered around what Adrienne Rich (1976) called the institution of motherhood as opposed to the experience. The institution was patriarchy which controls women through a blend of legal and extralegal means (including violence) and

with women's consent by socialization. It was patriarchy that defined women according to their gender and the institution of motherhood. To break the bonds of her subordination, a woman had to make her own rules about her reproductive capacity and childbirth experience. According to feminist analysis, childbirth is a fragmented process determined by patriarchal norms and standards in which the birthing woman was viewed less as individuals than as the "raw material" from which the "product is extracted". In these circumstances, it is the physician rather than the mother who is viewed as having produced the baby (Jaggar, 1988:311).

In 1978, *Daedalus*, the journal of the American Academy of Arts and Science, decided to refute assertions that the family was a "weak organism, largely inert" by assembling articles defending the centrality of the nuclear family. An article by Alice Rossi, "A Biosocial Perspective on Parenting" (1977), placed the bonding process in the feminist arena. Rossi maintains that social scientists and political activists have mistakenly denied the social importance of human biological processes and women's nurturing roles. Rossi argues that the basic facts of any family systems are biological, that the universality of women's mothering and domestic chores are a product of an innate physiologically disposition supported by natural selection and a long evolutionary heritage. She justifies women's maternal instinct on the grounds that

the more critical a behavior is to species survival through reproduction, the more innate features are apt to be present. Rossi (1977:25) believes that the prolonged period of dependency in human infants results in "a great need for close bonding of the human infant to its mother than there is in other species".

Rossi cautions that feminist proposals concerning egalitarian parenting and sex roles which do not consider the biological distinctiveness of the mother-infant relationship are bound to fail. In order to create shared parental responsibilities, patience and "compensatory training" are required for genetically disadvantaged males. Many feminists countered that Rossi's article "roll[s] back one of the major intellectual gains of the women's movement that transferred the family and sex roles from the realm of biology to that of society and history" (Breines et al., 1987:50). Nevertheless Rossi's argument was consistent with the new direction that some feminists took in the late 1970s. For instance, Chodorow (1978), a sociologist, sought explanations for social roles and personality development in mother-child interaction. She claimed that girls learn nurturance by virtue of their identification with their mothers. Boys, however, must turn away from their mothers to establish their male identification. In western society fraught with violence and inequality, women's qualities of gentleness and nurturance were needed.

BONDING AS A SOCIAL AND POLITICAL TOOL FOR REFORM

By the 1970s the thrust for natural childbirth, which had been a loosely organized cultural movement among middle-class women, acquired a political cast and gathered force as women tried to change the institutional structures that exerted such control over childbirth (Wertz and Wertz, 1977:179). In a 1978 article, "Parent-Infant bonding sought in birthing centers", Annexton points out that as early as 1973 consumers adopted the idea of early maternal 'bonding' as a means of pressuring hospitals to develop 'birthing' rooms. In a committee of the American Medical Association (AMA) in concert with five organizations representing various health care professionals developed a national drive to promote family-centered birthing in hospitals. A statement by Dr. Butterfield, one of the leaders of the AMA's committee, not only reflects the consumer's demand that social and psychological factors be emphasized in childbirth, but also reveals the pressure obstetrics felt in face of falling hospital births: "Until this entire country gets back into the family business, we are on a headlong course for disaster in terms of family relationships and family interaction" (Annexton, 1978:823). In a *Wall Street Journal* article on the rise of birthing rooms and the relaxation of hospital birth practices, David Stewart, executive director of the National Association of Parents and Professionals for Safe Alternatives in Childbirth, states that: "Hospitals that don't set up a birthing room will

go out of business because of the competition. And there is no question that consumer pressure is bringing this about" (Lublin, 1979:1-22). Similarly, the Institute of Medicine and the National Research Council on Birth Settings reported that during the 1970s there was a growing concern among doctors that births were increasingly occurring in places other than hospitals. The number of freestanding alternative birth centers grew from 3 in 1975 to 130 in 1982 (Eyer, 1992:188). By 1988 there were an estimate 150 alternative birth centers, 28% of them owned and operated by doctors (Wertz and Wertz, 1989:25).

The natural childbirth movement gathered strength when Dr. Spock and Dr. Barry Brazleton, two of America's most popular and widely read pediatricians, began to advocate hospital reform by implementing early mother-infant bonding. From 1970 to 1987 both pediatricians contributed regular articles in *Redbook* and *Parents Magazine* encouraging parents to pressure hospitals to change their policies to allow family-centered childbirth for low-risk deliveries (Eyer, 1989:172-216). For example, in the May 1976 *Redbook*, Dr. Spock encourages parents to pressure hospitals to allow natural childbirth. He cites Klaus and Kennell's advice that since rooming-in is delayed for the first 12 hours after birth, all newborns should be brought to the parents for an hour after birth for touching and fondling. Mothers who receive this early contact are said to be better mothers. Dr. Spock vividly

illustrates the dire consequences of disturbing the maternal instinct in humans by extrapolating from animal models:

A new chimpanzee mother treats her first baby tenderly if she had a labor of normal duration. But if she has a sudden, precipitate delivery, she is frightened by the baby and climbs up out of the cage to get away from it. You can see why the psychologically minded obstetricians, pediatricians, psychiatrists and nurses who heard of these observations 30 years ago pushed natural childbirth and rooming-in so that mothers could be conscious as they went through the stages of labor to begin the initial care of the baby (Spock, 1976:22)

Dr. Spock also describes Klaus and Kennel's study in Guatemala where infants are carried next to their mother's bodies and experience constant motion which may keep babies from being colicky. To stress the vital importance of body contact, he mentions Harry Harlow's studies showed that isolated baby monkeys preferred cloth dummies to milk-giving wire dummies and exhibited bizarre behaviors due to isolation. Next he mentions that psychologist James Prescott has speculated as to whether the high rate of violent crimes may be related in part to the infrequency of close contact between mothers and babies (Spock, 1976:24). Despite these dire examples, Dr. Spock ends his article stating:

...we know that the majority of American children who have experienced the methods I've listed turned out to be bright and warmhearted. So don't rush—this minute—to pick up and hug and jiggle your baby to try to make up for lost opportunities. What I'd like to see is a gradual shift in our customs to more closeness and emotion (Spock, 1976:26).

The enthusiasm for natural childbirth is echoed by Dr. Brazleton in a series of his magazine articles. In the September *Redbook* (1979) Dr. Brazleton writes an article entitled "Welcoming Your Baby—Where do babies come from?" in which he notices the trend toward natural childbirth and the use of alternative birth centers. He "urge[s] that all hospitals be pressed to provide family centers for low-risk deliveries" and cites the recommendations of Klaus and Kennell that mothers be given their infants immediately after birth (Brazleton, 1979:184). When mothers are given this opportunity, Dr. Brazleton assures parents that "there tends to be better mother-infant bonding and significantly better developmental performance in the infants at one year and at two years" (Brazleton, 1979:184). Dr. Brazleton asks his readers:

What of parents who cannot pull off such a delivery? Will they miss an opportunity to give their babies a higher IQ? Will they miss out on bonding to their babies and endanger the baby's ultimate psychological development? (I will deal with these issues in detail in a future article) (Brazleton, 1979:184)²⁹

As Eyer (1989:202) states in her review of the articles from *Redbook* and *Parents Magazine* "while these articles may have been reflecting change, it is also quite clear that they were advocating it...". In fact, some of the articles even provided the address of the International Childbirth

²⁹ Research has shown that IQ is best seen as a measure of a child's functioning on a series of tasks at one moment in time. It is reliable over short intervals, but it is also subject to change over time. For children born prematurely or fetally malnourished children who may be developmentally delayed, the test measures may have little predictive value (Bans and Ben Net, 1988:52).

Education Association. By the mid-1970s both parents and doctors were advocating natural childbirth and the restoration of instinctually based processes in childbirth. Both the dire consequences of the sensitive period hypothesis as well as the benefits of early mother-infant contact were cited as a rationale for these reforms.

During this period, Klaus and Kennell had been spreading the message of 'bonding' at professional conferences in which they hailed a revolution in hospital childbirth. In 1977 a "Parent to Infant Attachment Conference" was sponsored by the Rainbow Babies' and Children's Hospital and the Department of Pediatrics at Case Western Reserve University, where Kennell and Klaus were on the faculty. The message given to conference members was that there is a revolution occurring in the way mothers and infants are cared for in hospitals, and that early mother-infant contact was fundamental to proper childbirth. Dr. Klaus also pleaded, one of the many that he and Dr. Kennell would later make, that the concept of bonding not be reduced to the period right after birth. This he labeled the "epoxy" bonding concept. Nevertheless, in 1978 the American Medical Association decided to make it part of its official policy that every mother should be accorded "at least 10 minutes" of postpartum bonding. Both Dr. Kennell and Klaus had not been consulted about the policy decision and were upset by the reductionism of the policy (Eyer, 1992:187).

Social workers and other professionals in field of child care and protection were also quick to adopt family-centered childbirth and the benefits of early bonding as a panacea for the ills of abuse and neglect as well as juvenile delinquency. In her argument for welfare reforms, especially for adequate financial support to poor mothers so that they would not have to work, Fraiberg, a clinical psychologist, cites various social ills that are attributable to lack of early maternal bonding:

These bondless men, women, and children constitute one of the largest aberrant populations in the world today, contributing far beyond their numbers to social disease and disorder. These are people who are unable to fulfill the most ordinary human obligations in work, in friendship, in marriage, and in childrearing ...Where there are no human attachments there can be no conscience. As a consequence, the hollow men and women contribute very largely to the criminal population. It is this group, too, that produces a particular kind of criminal, whose crimes, whether they be petty or atrocious, are always characterized by indifference. The potential for violence and destructive acts is far greater among these bondless men and women; the absence of human bonds leave a free 'unbounded' aggression to pursue its erratic course (Fraiberg, 1977:62)

Fraiberg (1977:76-77) argues that the proprietary rights of the parents have prevailed in custody disputes without regard for the nature of the child's real attachment. She (1977:76) suggests that every child have a personal court advocate because "the supporting staff of social workers and psychologists have neither the specialized professional training nor the vocational commitment to children which qualifies them as advisors to the court". Public welfare policy regarding children is indicted as it compels choices among bad alternatives. Klaus and Kennell's sensitive

period hypothesis provided social reformers with scientific justification to prescribe changes to eradicate "the diseases of nonattachment" (Arney, 1980:562).

In 1980, Dr. James Garbarino, from the Center for the Study of Youth Development, Boy's Town, Nebraska, headed a campaign to force hospitals to adopt family-centered childbirth and early mother-infant contact as the first step in the prevention of child maltreatment. Families, especially those that were deemed economically and socially improvised, were said to need a "psychological boost" towards initiating "more normal" family interactions.

As part of his campaign, Dr. Garbarino and his colleagues studied local hospital policies and practices affecting parent-infant bonding looking at topics such as prenatal concern with parent-infant attachment, the social psychology of the delivery room, the support systems in the first 5 days after delivery, and the involvement of fathers. From this information, a simple format for evaluating the degree to which hospitals adopted family-centered birth was developed (Garbarino, 1980:593). While early parent-infant interaction was found in most cases, Dr. Garbarino (1980:594) complains that "generally absent is a commitment to actively encourage preventive practices in the delivery room and newborn nursery". Thus he (1980:594) advocates that the entire community must be made aware of the deficiencies of current

hospital practices and adopt a "more activist stance" to ensure that "high-risk families who would now opt for routine 'medical-oriented' childbirth, may experience family-centered childbirth".

To promote his interventionist program, Garbarino disseminated his survey to professional groups, the general public, and the local mass media. The local newspaper covered the report as did a popular local television talk show. Summaries of the report were also distributed to hundreds of people who watched the television program and wrote the to station. Dr. Garbarino (1980:594-595) has no problem admitting that "the required changes go beyond "free choice" and eventually involve actively guiding people into desirable behavior patterns...In our efforts, we tread a fine line between seduction and coercion". Coercion is justified, according to Dr. Garbarino (1980:595), because most hospitals were initially reluctant to change their childbirth practices and policies. Together with the local child abuse council and other community groups such as Family Service Association, Dr. Garbarino's group provided "technical assistance" in educating local hospitals about the developmental benefits of family-centered childbirth, and were "active in promoting workshops on the need to involve high-risk parents in family-centered childbirth" (Garbarino, 1980:595).

MEDICAL APPLICATIONS OF THE BONDING THEORY

When the work of Klaus and Kennell became known, health care professionals in the 1970s and 1980s suddenly became zealots for intervening in the sensitive period so that mothers could 'bond properly' with their infants. Within a few hours after birth women were evaluated on criteria designed to distinguish the problem or 'high-risk' mother from the 'good' mother on the basis of whether or not she had bonded with her infant. 'Bonding rooms' were designed and built. Nursing and other health care literature also reflected the popular idea that early bonding would prevent subsequent problems in infant development and parent-infant relationships. Elliott (1983:29) states that "A flood of articles—practice, research, commentary—all appeared in the literature endorsing early newborn bonding practices holus-bolus and predicting dire consequences should this sensitive period be overlooked or badly handled". Hugh Jolly, an eminent British pediatrician writing in *Nursing Mirror* (1978) warns health care professionals that:

Animal studies of the effects of short periods of separation of mother and offspring have shown disastrous consequences—rejection and *even killing* the baby. It is the realization that similar feelings can be experienced by human mothers when a baby has to be separated because of the need for special care that has led to great emphasis to ensure that the mother visits and touches her baby as often as possible, even if he is in an incubator and on a ventilator (Jolly, 1978:19-21). (*italics added*)

This kind of statement reflects in its concern with the risks of early separation, the influence of the ethological model favored by Klaus and Kennell and, in the weight it gives to body contact, the work of Harlow (Sluckin et al., 1983:59). While such concern for the future well-being of mother and infant is understandable, the overstated imperatives of the sensitive period hypothesis inevitably caused problems.

In his commentary, "Of Human Bondage" (1976), Dr. Herbert Barrie angrily charges that the benefits of early mother-infant bonding "has been swallowed hook, line and sinker" by health care professionals and their colleagues:

Frankly, I am sick and tired of all the talk about bonding. Mothers and babies have to be bonded like sticking two bits of wood together we are told. The carpenters of mother-child attachment — doctors, midwives, health visitors and social workers — are not competent until they have been instructed in the bonding art by self-professed experts. Mothers who have or have not bonded are the topic of interminable discussions. Converts to the faith have a real feast day when someone who has got unstuck can be singled out for special treatment. According to the Gospel, bonding failure is the root of all evil. Battered babies are unbonded babies and separation the cause of deprivation stretching into generations. "At risk" scores of bonding failure are catching on and the unenlightened methods used in most of our maternity units whereby a mother may be separated from her baby for an hour or two are right at the top of the list (Barrie, 1976:182).

Barrie contends that the bonding concept suffers from several obvious defects. The first being the presumed participation of the infant: "Babies will readily go from mother to nurse, from nurse to nanny and from nanny to foster mother" (Barrie, 1976:182). Young infants are indifferent

to their natural mothers provided that their physical needs are satisfied. This is a blessing or adoptions would end in disaster. A baby's emotional attachment to its mother does not start until the second six months. Barrie (1976:183) also states that in his experience overwhelming maternal love at first sight is unusual and perhaps even abnormal. More evident are feelings of possession, pride, achievement and overwhelming concern with the baby countered with a sense of unreality, anti-climax, lack of confidence and inadequacy. Many parents, Barrie (1976:184) concludes, "have been brainwashed by the current welter of pseudo-scientific propaganda on the dire consequences of separation".

In the September 1980 issue of *Parents Magazine*, Dr. Robert McCall also voices his concern and writes:

A mother of a two-week-old infant reportedly burst into her pediatrician's office pleading "Doctor, bond me to my baby before it's too late!

This woman had missed the opportunity for early skin-to-skin contact with her baby, which helps to initiate "bonding", a close, loving attachment between parent and child. In one form or another, this practise has become widespread recently. While early contact is a good idea, this woman illustrates an undesirable side effect of this movement (McCall, 1980:92).

McCall states that not all studies have demonstrated that early contact improves parent-infant relationships, especially beyond the first few months of delivery. He cautions against taking the necessity of early contact too literally and advises parents to "...remember that your love and concern are just as important when your child is six or sixteen years

old as when he or she is six minutes old" (McCall, 1980:92). Clearly both Dr. Barrie and Dr. McCall are trying to redress the effects of the too-literal over-interpretation of the sensitive period hypothesis.

By the end of the 1980s, advocates of bonding and the sensitive period hypothesis had successfully pressured hospitals to institute considerable changes in their policies and practices. For instance, in the August 1982 edition of *Parents* magazine, the results of a survey on childbirth practices with 64,000 respondents provides some perspective. The survey reveals that husbands had finally gained admittance to the labor room, the delivery room, as well as the operating room. However, 77% of the respondents were allowed to remain with their babies for less than an hour after the birth; one-third were with their babies for less than 10 minutes after delivery; only 13% were allowed to remain with their babies for more than an hour; and 65% stated that they preferred to remain with the baby longer than they were permitted. Another survey conducted in the Philadelphia area in 1984 indicated that 65% of the area's hospitals had a birthing room; 100% of the hospitals allowed a support person to be present during a vaginal delivery; 88% permitted a support person during any birth, even a cesarean (Eyer, 1992:189). However, while the sensitive period hypothesis helped parents liberalize hospital childbirth practices, it also allowed greater intervention by a

host of professionals whose primary goal was to ensure and enhance the 'proper' bonding of mothers and their infants.

Nursing Assessments and Intervention:

A review of the allied health science literature reveals the readiness with which Klaus and Kennell's theory of bonding was accepted and adapted into the structure of hospital childbirth practices and nursing care (Eyer, 1992:41). The first articles on bonding in the allied health sciences journals discussed the rewards of increased mother-infant contact and generally treated bonding as an important extension of the infant-parent attachment paradigm. Early bonding was also seen as a prophylactic against child abuse for parents whose high-risk infants are kept in intensive care units. In 1975 in *JOGN Nursing*, Jeanne Hurd suggests that potential child abusers can be identified by assessing maternal attachment. Without evaluating the validity of the separation-child abuse argument, Hurd (1975:25) insists that "...the danger signals are very clearly present in those first few postpartum days—signals as plain as the retractions of the respiratory distress syndrome or the boggy fundus of possible postpartum hemorrhage". Hurd (1975:28) believes that obstetric nurses can play the key role in the early detection of potential abusers because "of the X-factor", or intuition, inherent in the makeup of the nurse. This factor defies scientific measure and cannot be employed in a strictly scientific sense. She (1975:27) states that "this

strange inherent quality is recognized by many of the nurse's professional colleagues", and as proof quotes a poem written by a resident physician working in a large intensive care unit. By careful observation of the mother-child interaction and skillful interviewing, the obstetric nurse will assess the process of bonding, and in cases of potential abuse make referrals to the appropriate staff. However, Hurd is not satisfied with mere identification of potential child abusers. She advocates that:

Rather than having nursing responsibility end once the referral is made, how much more logical it would be for the nurse to keep a careful record of each referral made and follow up with regular telephone calls to insure the continuation of care...If each family is regularly monitored until preventive treatment has been given and deemed successful, the nursing staff may take great pride in a new and needed job well done (Hurd, 1975:30).

Long-term monitoring of problem mother-infant pairs is the responsibility of child protective services or a public health nurse. Thus for many obstetric nurses the 'pathology of bonding' served as a rationale by which they could extend their professional importance and range of responsibilities both within and beyond the medical profession.

Nurses quickly accepted their new responsibility for assessing maternal care and developed various 'assessment instruments' aimed at identifying mother-infant pairs potentially 'at risk' for subsequent abuse. These bonding checklists were actually modifications of earlier assessment instruments used from the 1940s to the 1960s to assess

various caretaking skills such as breastfeeding. For instance Clark and Affonso (1976) based their model on Reva Rubin's checklists, which assesses the mother's perception of herself and her infant, the infant's behavior, and the mother-infant interaction. Clark and Affonso also (1976:98-99) encouraged nurses to familiarize new mothers with their newborn's capabilities and subtle responses to the environment. This they believed would increase the mother's confidence in her own caregiving skills. However, more recent studies where mothers and fathers are taught to administer the Brazleton Assessment Scale, which shows off the infant's best behavioral characteristics, found that reported levels of self confidence and affection for the baby were modest, and no behavioral differences were noted by researchers in observation periods (Myers, 1984:267).

The designers of assessment tools soon became less concerned with the self-concept of the mother, the responsiveness of the infant, or the interactional dyad (Eyer, 1992:43). Assessment was reduced to a minimum of behavioral factors said to indicate the quality of maternal bonding. In 1980, Margaret Rhone, for instance, developed a bonding inventory of 7 categories. A score of '0' was given to mothers who exhibited any of the following behaviors:

Verbalizes concern for self. Seeks support for self. No questions about the baby. Does not speak to the baby. Expresses anger or dissatisfaction at outcome of labour. Refuses to hold baby. Does not touch or look at baby (Rhone, 1980:38)

Consequently an exhausted or irritated mother would be at risk for child abuse. Although Rhone believes that bonding is an unfolding relationship in which the mother falls in love with her baby, none of this ongoing process is reflected in her assessment. Instead, maternal bonding is viewed as a "fragile and protracted process; while it is taking place it can be disturbed or even broken and it may take weeks, months or even years for the union to solidify" (Rhone, 1980:40).

Other assessment tools, such as Reiser's 'Mother-Infant Screening Tool' (MIST) (1981), or Louise Floyd's "Instrument for Systematic Assessment of Parent Attachment Behaviors' (1981), only evaluate 4 distinct categories: Touching or Body Contact, Eye-to-Eye Contact, Feeding or Tempo, and Communication. Mothers are evaluated on a score of 1 to 4 or A-B-C-D categories. Parental behaviors are identified and scaled in descending order from the most desirable to less desirable. The mother is scored on the basis of how close her behavior corresponds with the behavior listed in 1 of the 4 categories respective to the parental aspect being observed. To be specific, in Reiser's instrument (Table 1) behaviors that fall below a 'B' will need further screening and perhaps intervention. A mother or infant with 2 or more checks in 'C' or 'D' warrants re-evaluation. A mother or infant with 4 or more checks in 'C' or 'D' warrants re-evaluation and nursing intervention. Re-evaluation and possible intervention is warranted if there is an inconsistency, either

MOTHER-INFANT SCREENING TOOL (MIST)

TABLE 1

	A	B	C	D
T A C T I L E	Mother Holds infant close to her body	Holds infant on forearm	Holds infant away from body	Does not hold infant
	Infant Curls up close mother	Keeps some distance	Moves away when touched	Stiffens up when held
	Mother Comfortable touching infant	Looks comfortable, pats infant's back	Tentative when touching infant	Avoids touching infant
	Infant At ease, turns to mother's touch	Looks at ease	Looks tense	Cries when touched
V I S U L	Mother Establishes eye contact	Looks at infant's face	Does not look at infant's face	Does not look at infant
	Infant Establishes eye contact	Looks at mother's face	Does not look at mother's face	Does not look at mother
	Mother Smiles & makes faces in play	Smiles	No special facial expression	Looks unhappy
	Infant Laughs or big smile	Smiles	No special facial expression	Looks unhappy
A U D I T O R Y	Mother Talks to infant in soothing, playful way	Talks to infant in calm way	Talks but just gives direction	Does not talk to infant
	Infant Makes happy sounds, coos, goos	Makes ah-ah sounds	Cries	Does not talk
	Mother Understand meaning of infant's cries	Differentiates most of infant's cries	Seldom differentiates infant's cries	Never differentiates infant's cries
	Infant Exhibits different cries	Usually exhibits different cries	Seldom exhibits different cries	Never exhibits different cries
F E E D I N G	Mother Shows pleasure during feeding	Looks content during feeding	Acts unsure during feeding	Agitated or irritable
	Infant Shows pleasure during feeding	Looks content during feeding	Restless	Agitated
	Mother Looks pleased after feeding	Looks satisfied after feeding	Looks uneasy after feeding	Looks agitated after feeding
	Infant Looks happy after feeding	Looks satisfied after feeding	Looks restless after feeding	Looks agitated after feeding
	Total	Mother		
	Score	Infant		
	Date			(Reiser, 1981:297)

in the mother's or in the infant's results. Nursing intervention is necessary if there is more than a 3 point difference between the mother's score or infant's score in any area A-B-C-D (Reiser, 1981:295). Reiser argues that the benefits of using such assessment tools are that they:

1) provide a total picture of the interactions between a mother-infant dyad, 2) enables the nurse to identify strengths and weaknesses within a mother-infant relationship, 3) enables the nurse to identify mother-infant dyads in a high-risk area, 4) provides criteria for updating the nursing care plan, and 5) provides objective criteria for assessing the growth or decline of a mother-infant relationship (Reiser, 1981:295-296).

Nevertheless, considering that most mothers and their newborns stay in hospitals for only 2 days postpartum, the validity of such assessments is questionable. Moreover, the correlation between many of the behaviors cited and the degree of maternal bonding has not yet been proven (Arney, 1980; Herbert et al., 1982; Lamb, 1982, 1983; Myers, 1984; Sluckin et al., 1983). Third, assessment of the mother-infant interaction can be subjective and open to differing interpretations. For example, in Reiser's screening tool, the difference in meaning between "Mother: Shows pleasure during feeding" and "Looks content during feeding", or in "Mother: Talks to infant in soothing way" and "Talks to infant in calm way" is not clear and is open to different interpretations. Reiser has not operationalized what she means by "shows pleasure", "Looks content" or "soothing way" and "calm way". Similarly, in Floyd's instrument under section 1. Body Contact, item 4, 'appears gentle in

handling of infant', mothers are assessed using the following criteria: "Handling of infant shows mostly gentleness but some roughness", "Handles infant roughly", and "Handles infant without showing gentleness or roughness". While the latter criteria, "Handles, infant without showing gentleness or roughness", may be easy to assess, Amighi (1990:141) illustrates that even among movement therapists in the United States their evaluation of the former two categories is culture bound. The central message from various cross-cultural studies of mother-infant interaction is that we must not try to understand a behavior in isolation from its cultural and/or socioeconomic context. While many technological societies focus on distal forms of communication between mothers and infants, such as looking, smiling and vocalizing, many nontraditional societies focus mainly on proximal modes such as holding, touching and stroking (Amighi, 1990:140). Moreover, mother-infant behavior can also vary between the upper levels and the lower levels of the middle class, and between the middle and lower socio-economic classes within the same society.

Fourth, the validity of instruments, such as Reiser's and Floyd's, where the number of elements are added up and cases are identified as 'high', 'medium', or 'low' risk based on the number of negative factors present is questionable. Where the cut-off points should be has not yet been identified. Many of the variables are probably interconnected and

thus simply adding factors that are correlated with each other may result in predictions of higher levels of risk than are actually warranted. Also some factors may be more important than others; and the effects of some factors may be multiplicative, not additive (McDonald and Marks, 1991:118-119; Wald and Woolverton, 1990:495). Indeed as already discussed, research on psychiatric risks in child development has shown that the combination of chronic stresses provide much more than an additive effect [see pages 202-204]. There was an *interactive* effect such that the risk which attended several concurrent stresses was much more than the sum of the effects of the stresses considered individually (Rutter, 1981:209).

Still other nurses, like Jenkins and Westhus (1981), have reduced factors which index bonding still further. Echoing Klaus and Kennell (1976), Jenkins and Westhus (1981) claim that systematic assessment of the touching process [alone] can identify the quality of parent-infant bonding as certain species-specific touching sequences are a universal index of bonding: an orderly progression from the fingertip touch of the infant's extremities to palmar massaging of the infant's trunk at first contact. However, various studies fail to support the notion of a 'pattern touch of progression' (e.g. Enriquez, 1983; Trevathan, 1987). Although bonding behavior itself may be universally exhibited in women, the percentage of time spent in these behaviors appear to vary with the

infant's gender, parity and socioeconomic or sociocultural background of the mother. Obviously then an understanding of cultural practices and values are important as they define the meaning of the experience and designate appropriate behaviors for responding to certain events. Yet assessment tools are not designed to evaluate cultural and socioeconomic factors which do influence mother-infant interaction.

Eyer's (1988:156-167) review of over 43 journal articles introducing nurses to bonding — a process that they will assess and teach — reveals a deceptively uncritical acceptance of Klaus and Kennell's bonding theory as well as deficiencies or flaws with the data presented. In various teaching manuals⁴⁰ similar problems can be found in the chapters explaining family-centered childbirth and bonding to student nurses. Critics thus contend that the 'pseudoeplanatory' properties of the bonding process has inhibited painstaking thought and analysis concerning the mother-infant relationship (e.g. Arney, 1980; Herbert et al., 1982; Sluckin et al., 1983). Indeed almost no criticisms of Klaus and Kennell's bonding hypothesis appeared in nursing articles until the 1980s.

Articles by Elaine Ho, *"Mother and Child Bonding"* (1984), and by Sandra Reiser, *"A Tool To Facilitate Mother-Infant Attachment"* (1981) are typical of many articles in that bonding is presented out of the context of

for example see *Manual of Newborn Care* (1981) *Journal of Obstetrics and Gynecology* (1984) *Journal of the American Academy of Pediatrics* (1981) and *Journal of Obstetrics and Gynecology* (1981).

the research which established it as a legitimate factor in the prevention of dysfunctional mother-infant relationships. While the word 'bonding' is used and dire consequences of separation are referred to, no substantive explanation of bonding research or rationale is given. For instance, in Reiser's article the research of Klaus and Kennell is not even cited. Instead Reiser simply describes a dire scenario in which a young teenage mother does not bond with her newborn, and then goes on to explain that she developed the "Mother-Infant Screening Tool" (MIST) to evaluate maternal attachment. In one very brief sentence, Elaine Ho (1984:ii) mentions that the research by Klaus and Kennell has revealed the importance of establishing early mother-infant contact. However, the numerous early human studies on bonding are not cited to substantiate this claim, nor are any of the criticisms that these early studies generated. Ho (1984:iv) claims that "eminent psychologists and obstetricians are all convinced that a traumatic birth can retard the process of bonding". The validity of her assertion is questionable as once again she does not cite any specific references. Moreover, as with many other authors, Ho does not seem to be aware of the significant differences between the concept of critical and sensitive periods and uses these two terms interchangeably. Nor are any of the critical debates over the use of these two terms to describe human maternal attachment discussed.

While most articles do not describe the ethological studies conducted (Eyer, 1989:159), a few articles in one brief sentence acknowledge that animal studies have shown the importance of physical contact in establishing attachment. Ethological research was the foundation for Klaus and Kennell's claim that the immediate postpartum interval is critical to the development of maternal bonding in humans.

Although the terms 'bonding' and 'attachment' are used interchangeably in these articles, the rationale for assessing specific bonding behaviors is never fully explained (Elliott, 1983:30; Eyer, 1988:160). It is these behaviors that in later articles became crucial for nurses not only to assess, but also to 'teach'. Some of the rigidity with which bonding checklists were applied, may have had to do with a lack of understanding of the research on which the concept was based (Eyer, 1988:162-163). For instance, Swanson (1978:30) claims: "It is well documented that maternal attachment does not materialize instinctively with the birth of the child..." Nevertheless, she still advises nurses to make the following interventions in the delivery room:

...encourage the mother to inspect the infant's entire body; have skin-to-skin contact with her infant; have eye-to-eye contact...

Mothers need to inspect their infants from head to toe, and the activity seems to be crucial for unencumbered attachment to occur (Swanson, 1978: 36- 37).

Although Swanson mentions the early human studies, she does not cite the ethological research upon which Klaus and Kennell modeled their hypothesis of a biologically based sensitive period during which skin to skin contact aids to trigger maternal instincts. If Swanson had been familiar with the ethological research she would have been aware of the contradiction between her own assertion that 'maternal attachment does not materialize instinctively' and the 'biologically-based' bonding behaviors described in her nursing interventions (Eyer, 1988:161).

Evaluation of the bonding process soon extended beyond merely assessing specific 'bonding' behaviors immediately after birth to include assessment of parental values, attitudes, caregiving styles, and even the family's financial resources. For example, in the teaching manual, *Family Centered Neonatal Nursing Care* (1981) nurses are advised that during the two day hospital stay further observations are necessary. Nursing assessment includes the following normative questions:

Does the family choose a name in a reasonable period of time? Is there disappointment over the sex of the child? How does the mother refer to her baby, and if so what questions does she ask? What are the mother's responses to diapering needs? Does she express displeasure at dirty diapers? Does the mother use an affectionate name when talking to or about the baby? Has the mother obtained basic supplies for the infant's care, prior to discharge? Has the mother made plans or asks for assistance with plans for well baby care? Are the parents still touching the periphery of the infant? If the infant is hospitalized after mother is discharged, does she visit a minimum of twice a week, for not less than 30 minutes per visit? (1981:129-132).

Responses to these questions are tallied with a certain number of negative responses (not specified) taken as a sign of parental rejection. However, research has yet to substantiate the correlation between variables such as family financial status, parental attitudes and value systems and maternal bonding. Moreover, assessing parental values and attitudinal indicators of bonding is very subjective, and also problematic for such indicators are interconnected with a host of other variables in ways that research has to understand. Again many of these articles and teaching manuals can be criticized for the lack of any discussion of cultural or socioeconomic factors, and very superficial discussion of other variables, such as parity, infant's gender and temperament, mother's age, parity and own experience of being parented, that have been found to affect the bonding process.

Bonding and the sensitive period hypothesis was readily accepted and adapted by nurses because it simply enhanced what nurses were already doing. Nurses were already using inventories designed in previous decades to assess how well mothers were able to feed their babies. As Eyer (1988:166) states "all these inventories are actually the nursing vehicles for participating in the maternal-infant experience during and after childbirth. They constitute the legitimate knowledge that nurses are franchised to contribute". As Hurd's article (1975) indicates many nurses believed that due to their special abilities (intuition) and

daily contact with patients, they should play the key role in early detection of potential child abusers. Moreover, this key role was seen as an effective method in expanding the responsibilities and power of the nursing profession. Hurd (1975:29-30) states that "...the days when the nurse existed only to carry out the doctor's orders are over; increasingly, the professional nurse is the initiator of many new types of patient care" and "in the assessment of postpartum maternal attachment, the nurse is the clinician of choice". Nursing manuals also encourage nurses to act as 'models' for new parents and to instruct them on proper childcare and interaction with their newborns.

SUMMARY

Parents, childcare activists, feminists, and other reformers united to established alternatives to, as Floyd-Davis (1992) puts it, the 'technocractic' model of childbirth and threatened to take births out of hospitals. For both the natural childbirth movement and the American Medical Association the solution was relatively simple. Family-centered birth and at least 10 minutes of bonding time seemed a easy and inexpensive way to enhance family functioning and prevent child abuse and neglect. At the same time the sensitive period hypothesis provided the scientific basis for these reforms (Arney, 1980:560).

While early mother-infant bonding has humanized hospitals by giving parents easier access to their infants, the net gains for women in

attaining control has not been substantial. First, Sheila Kitzinger (1987:282) decries the fact that in most hospitals bonding has become just a ceremonial procedure: "Feeling you have to bond in 10 minutes flat or knowing that people are watching you to see if you are bonding correctly is unlikely to help you fall in love with your baby". Second, Eyer (1992:194-195) rightly points out that bonding has not reduced the rates of intervention in American hospitals. For instance, almost all technologies except cesareans, which take place in the operating room, are used in birthing rooms. Also one out of five women are transferred from birthing rooms to a traditional delivery room. Four out of five women receive medication, although in reduced amounts to the pre-1970s norms. About 90% of women having their first vaginal delivery receive episiotmies. While induced labor is still common (Wertz and Wertz, 1989:255), the use of forceps is no longer routine in many hospitals. This procedure is rapidly being replaced by the cesarean section, "the operation that is increasingly moving childbirth into the real O.R." (Davis-Floyd, 1992:130). Before 1970, the cesarean rate was no more than 5%. However, as of 1988 the cesarean rate nation wide stood at 24.7%. In many large teaching hospitals, it reaches 50% (Floyd-Davis, 1992:131). The official reason most frequently given for first cesareans is "dystocia", which means that the woman has spent more time in labor than hospital regulations allow. The rising cesarean rates are in large

part a creation of medical regulations and redefinitions of normalcy; the rate of maternal mortality in cesareans is four times that for vaginal birth (Wertz and Wertz, 1989:261).

Moreover, hospital births are moving even further from the possibility of natural birth because of the threat of acquired immunodeficiency syndrome (AIDS). Thus in many hospitals physicians and nurses are wearing gowns, masks, gloves, and eye protectors in case they should be splashed by the mother's blood during the birth process. If the mother is black and poor, the fear is greater and these precautions are more carefully observed (Wertz and Wertz, 1989:257).

As in the past, technology is often applied without medical justification (Eyer, 1992:195). A routine intervention in most American births is the use of the fetal heart monitor. Part of what makes the use of the monitor so questionable is that acceptable degrees of variation in the fetal heart rate has never been firmly established. Not uncommonly extreme fluctuations result even in perfectly healthy babies born without technological intervention. Several studies have shown that use of the monitor is no more effective at identifying those fluctuations that do in fact indicate fetal distress than periodic manual auscultation (Davies-Floyd, 1992:104-105). From 71 to 95 % of the babies delivered by cesarean section for presumed fetal distress shown on the fetal heart monitor were

not in distress at birth. Yet most doctors continue to use the monitor for fear of lawsuits (Wertz and Wertz, 1989:259-260).

Davis-Floyd (1992:2821) states that in her study of births in American hospitals fully 70% of births occurred in varying degrees of conceptual harmony with the 'technocratic model'. The majority of women either actively sought or accepted as appropriate technocratic childbirth. Only 15% actually desired and achieved natural childbirth in the hospital. Only 9% who desired but did not achieve natural childbirth were seriously disturbed about the result (the other 6% gave birth at home). As Davis-Floyd admits (1992:282) these results are in accord with Arney's (1982) conclusions about the collusion between women and obstetr ns in developing a system with which both groups are comfortable with. Moreover, women have increasingly accept technology because it has offered them a way out of the home and into participation in the wider social world. This trend has not slowed: "women's continued expansion beyond the 'natural order' that kept them in 'women's domain' is increasingly facilitated by technology, which women therefore have a special reason to value and seek" (Davis-Floyd, 1992:282-283).

CHAPTER SIX

BONDING AND DISTURBED MOTHER-CHILD RELATIONSHIPS

Similarly, in the fields of social work and child psychiatry, Klaus and Kennell's concept of mother-infant bonding, including the sensitive period hypothesis, are incorporated into the diagnosis, description, and prevention of childhood psychopathology, failure-to-thrive syndrome, and child abuse. In the pertinent literature a wide range of views exists about the nature and formation of bonds. Some professionals view bonding as an imprinting-like phenomenon emerging during a critical period in the first few hours and days after birth. Others maintain that mother-child relations can be facilitated during a foundational period in the first few days after birth, which is optimal for the formation of bonds, but that mothers can form bonds after this period (Sluckin et al., 1983:53). Regardless of the definition, bonding failures are said to be related etiologically to the quantity and quality of postpartum contact of the mother and her infant. Thus it is charged that the separation of the mother and infant for several days or weeks (in the event of prematurity or illness requiring intensive care) may irreversibly damage the subsequent mother-child relationship. The child is put at risk in a variety of ways, particularly in developing psychological disorders, failure-to-thrive, or by becoming a victim of abuse. Researchers and

practitioners differ in how much they see bonding failure as a cause of abuse. Argles (1980), for example, argues that in every case of child abuse there is evidence for the absence, weakness, or distortion of the parent-child bond. On the other hand, ten Benseel and Paxson (1977) believe that as few as 12 hours of postpartum bonding could reduce the likelihood of abuse.

The sensitive period hypothesis, Chess (1982), Chess and Thomas (1982), and Sluckin et al., (1983) argue, has become another form of 'mother blaming'. Maternal deprivation, the dominant ideology in social work and child psychology during the 1950s and 1960s, blamed the mother for much of childhood psychopathology, from simple behavior problems to juvenile delinquency to schizophrenia. However, in subsequent years, into the mid-1970s, this ideology of mother blaming was successfully challenged. With unanimity numerous clinical and research studies reported that the child's experiences in the first years of life, including the mother-infant relationship were unreliable predictors of later behavior (Chess and Thomas, 1982:214-215). Strong confirmation also came from the comprehensive reviews of the literature on early development by Sameroff (1975) and by the Clarkes (1976). Thus by the mid-1970s, a new consensus was reached. The mother was an important influence on the child's development, but other factors were also important — the father, siblings, family structure, school, peers, the

social environment, and the child's own personality. Development proceeds by sequences of interaction among all these variables at succeeding age periods. No one variable or age period could be considered all important by itself. Moreover, any errors parents made in caring for their children were not irreversible; a child's problems could stem from many causes (Chess and Thomas, 1982:214-215; Rutter, 1981). Nevertheless this consensus, developed by research psychiatrists and developmental psychologists over two decades, was swept aside by Klaus and Kennell's thesis of mother-infant bonding. Once again the mother is made accountable for her children's ability to experience depth in all future emotional relationships (Chess, 1982, Chess and Thomas, 1982, Herbert et al., 1982, Sluckin et al., 1983). Consequently, in social work and child psychology "much practice and research is based on a unidirectional model which emphasizes mother-to-infant influences, particularly the negative ones" (Sluckin et al., 1983:54). As Chess explains:

The standard procedure is to assume that the child's problem is reactive to maternal handling in a one-to-one relationship. Having come to this conclusion, the diagnostician turns her further investigations unidirectional toward negative maternal attitudes and the conflicts presumed to underlie these. Investigations in other directions is done in a most cursory fashion or not at all. At the diagnostic conference, speculations are made concerning the mother's relationship with her own parents, and her over-compensation for the rejection. Single bits of data fitting in with the speculations are quoted as typical of the child's feelings and the mother's attitudes are taken as proof of the thesis of noxious maternal attitudes as universal causation (Chess, 1964:613).

The following section will critically examine the clinical and research studies concerning the postulated link between poor maternal bonding and failure-to-thrive syndrome and child abuse and neglect. These studies indicate that the mother-infant relationship is but one of many variables that are implicated in the etiology of child abuse and failure-to-thrive syndrome. Moreover, more research is needed to determine the exact correlation between variables.

BONDING AND FAILURE-TO-THRIVE INFANTS

Failure-to-thrive syndrome (FTT) describes infants and children who fall below the third percentile in height and weight when no organic basis for this deviance is found. FTT is classified into 3 categories: non-organic or environmental (no diagnosable organic disease), organic (growth deficit directly attributable to disease), or mixed (interaction of organic and nonorganic influences) (Drotar, 1991:23; Kotelchuck and Newberger, 1983:322). Many researchers claim that the condition is caused by a dysfunctional mother-infant relationship in the neonatal period, and more specifically, the mother's psychological make-up. The mother apparently fails to provide an appropriate nurturing environment in which the infant can develop normally. However, how much maternal neglect has its precise effects is not identified in the research literature (Sluckin et al., 1983:57).

The hypothesis of a psychological aetiology for the non-organic failure-to-thrive syndrome has its roots in the extensive literature on the effects of institutions (hospitalism) and 'maternal deprivation' in infants. The disorder of hospitalism, according to Spitz (1945), occurred in institutional children in their first year of life, and the major manifestations involved emotional disturbances, failure to gain weight, and developmental retardation resulting in poor developmental test performance. Spitz believed that a significant aetiological factor was the quality of maternal love and nurturance available to the infants, as well as its continuity or discontinuity (Iwaniec et al., 1985a:244-245; Kotelchuck and Newberger, 1983:322).

Clinically FTT is thought to be the physical manifestation of maternal neglect or even abuse. Hence in many parts of the United States physicians are mandated to report FTT cases to child protective services with the result that the mother's custody is often terminated. Some of the clinical literature reports that these mothers are depressed, alcoholic, highly anxious, psychopathologically burdened, and have character disorders. Yet, Kotelchuck and Newberger argue (1983:322-323) that there is little direct evidence to support the hypothesized association between infant growth failure and maternal characteristics. For instance, the value of such studies are limited since they did not use control samples, and are based on a limited sample size. Second,

retrospective studies of hospital care records are restricted in range and quality of data which can be evaluate. Third, critical topics such as type of pregnancy experienced, family problems, parent-child separations, and the child's behavioral problems are not mentioned systematically in these records. Thus a clear picture of ecological and demographic factors have yet to be established. Nor has the child's contribution been properly evaluated.

Controlled studies investigating the personality characteristics of mothers with FTT children are now appearing in psychiatric and pediatric literature. Pollitt et al.'s study (1975), cited as one of the most methodologically sound studies, and a unusually large-scale prospective study of 1,400 women conducted by Vietze, et al., (1980), found almost no distinguishing ecological or psychopathological differences between the mothers of FTT children and mothers of normal children. Moreover, the finding that the mothers of FTT children do not seem to differ from their peers in the control group suggests that differences in birth condition may set up a chain of events resulting in poor growing infants. As a significant number of FTT children are early birth or low birth-weight infants (Sluckin, et al., 1983:58), biological/genetic factors inherent in both the infant and mother requires in-depth research.

Similarly, Iwaniec et al., (19885 a) reported that in their study the mothers with FTT children did not display signs of personality disorders.

While many of these mothers expressed negative feelings about their own disadvantaged childhood, they also expressed a desire to be good mothers. Unfortunately they tended to have little knowledge of what that meant in a practical way (e.g. what food is nutritional, the need for regularity and a variety of food, the need to play and provide the infant with stimulation). On the other hand, a significantly large number of FTT mothers had nurturing relationships with other children in the family. Also some of the 'normal' contrast group mothers experienced severely disadvantaged upbringings but their children did not fail-to-thrive (Iwaniec et al., 1985a:256).

Most important, Iwaniec et al., (1985a:258) reported that a significant portion of the FTT children had difficult temperaments. These children were resistant to new routines and other social lessons, and had volatile mood swings. Feeding and other training tasks were difficult for the parents. In fact, 62% of the mothers felt that their child had rejected them because they repudiated the very basic symbol of maternal care—food (Iwaniec et al., 1985a:257). Because children with these attributes are so unrewarding and difficult to raise, they may arouse more irritation, and in turn the parents come to expect problems because they have occurred before. Parents become increasingly unrewarding and the child becomes increasingly attention seeking and demanding. A vicious circle is created. Thus this study, like previous studies mentioned,

indicates that failure-to-thrive is a complex condition with varied antecedents affecting both mother and child which develops over a lengthy period. Iwaniec et al., (1985b) instituted a program which helped mothers to modify their behaviors to make feedings more positive and enjoyable for both partners and to increase the frequency of mother-infant interactions.

Focus on maternal influences has lead to an underestimation of the importance of family members in the etiology and treatment of failure-to-thrive syndrome. However, Drotar (1991:24) points out that family contextual influences, such as poverty and family conflict, may contribute to maladaptive caregiving patterns among family members. In turn poor childcare patterns may disrupt the child's response to food and result in poor growth. The impact of such problems on the development of FTT children has not been clearly documented in empirical studies. However, research with several other populations indicates that parental relationships influence the quality of mother-child interaction. For instance, Pedersen et al. (1980) noted that conflict between mothers and fathers was associated with less optimal mother-child interactions during feeding. Based on research and clinical interventions, Wahler and Duman (1989) proposed that the mothers' participation in stressful interactions with family members or other members of their social

network can seriously disrupt their ability to attend to their child and respond effectively to its needs (Drotar, 1991:28).

Kotelchuck and Newberger (1983) studied 42 families of children with failure-to-thrive syndrome and 42 families of matched control children in order to determine which familial and ecological factors increase the child's risk for FTT. Two major ecological factors were found to distinguish FTT families from the controls: the characterization of FTT children as problematic and sickly, and the lack of support from family and neighbors. FTT children were perceived by their mothers as sickly and clinically these were not robust, active children. However, exactly how sickly the children actually were was difficult to assess as the amount of medical intervention prior to the period of hospitalization studied could not be ascertained (Kotelchuck and Newberger, 1983:326).

As in previous studies, these FTT children presented their mothers with more child-rearing problems and the majority of these problems centered around feeding. Kotelchuck and Newberger (1983:326) suggest that perhaps it is the child's characteristics which causes the mother's perception and not vice versa. The direct role of the child, they state, in the etiology of the syndrome must be more seriously considered. Maternal behavior may be a consequence not a cause of FTT.

In addition, FTT mothers were found to be isolated from family and neighbors. This situation might have been further exacerbated by

the fact that these mothers had much less education than their husbands. This suggests the possibility of different parental expectations within the immediate family itself, perhaps making the mother more isolated and ambivalent about her mothering role (Kotelchuck and Newberger, 1983:327).

Demographic, poverty, pregnancy, and contemporaneous stress factors did not differentiate FTT family from their controls. According to Kotelchuck and Newberger (1983:327) environmental stresses on the FTT mothers did not appear to be so overwhelming that they would be unable to give proper attention to their child. Also FTT is not simply due to maternal youth or inexperience, since FTT mothers studied were not younger than control mothers.

BONDING FAILURE AND CHILD ABUSE

According to theorists, child abuse—emotional and physical—is also linked causally with the mother's failure to become bonded with her neonate, and in turn this is traced to the early separation of mother and infant. This claim was initially supported by retrospective studies into child abuse files that found abuse was high among premature and low birth-weight babies who spent long periods in intensive care units. For instance, Margaret Lynch et al., (1976), from their retrospective study of 50 referrals to the Park Hospital Service for Children in Oxford, concludes that at least 3% of all mothers who delivered at a large modern

maternity hospital have identifiable problems which lead to bonding failure or child abuse. The abused group was more likely to have been in the Special Care Nursery 59% compared with 24% of children from a contrast group referred to the hospital social work department over the same period of time (Lynch, et al., 1976:765). Similarly, Sluckin et al., (1983:60) cite a study by Patton et al., (1962) which found that 24% of abused children in a sample of 134 had been premature—four times Britain's national average. However, these studies did not assess the quality of the mother-infant bond during early infancy. The later abuse is taken as evidence that either a bond never formed in infancy or that it had broken down. Egeland and Vaughn (1981) argue that in these retrospective studies there is no evidence that 1) a bonding problem ever existed or 2) that such potential bonding problems are the cause of later abuse and neglect.

Moreover, many early retrospective studies used relatively small research samples (Sluckin et al., 1983:61). In contrast, relatively large-scaled investigations do not support the hypothesized relationship between mother-infant bonding and abuse and neglect. Gaines et al., (1978) studied 240 mothers, drawn from known abuse, neglect and normal control populations. Their multivariate analysis included 12 variables of which 6 discriminated the abusing, neglecting and normal mothers at a high level of significance. Infant risk, determined on the

basis of neonatal complications requiring hospitalization, was not a successful discriminator. According to the researchers "...therefore, the hypothesized relationship between mother-neonate bonding and maltreatment was not supported" (Gaines, 1978:537).

On the other hand, results indicate that the maltreating group had more difficulty meeting the child's emotional needs (neglecters primarily) and had a strong sense of coping failure (abusers). Although family stress was relatively ubiquitous, it was highest in the neglecting group, distinguishing those women from abusers and controls. Poverty related factors — unemployment, illness, eviction and arrest — were particularly common among neglecting families. The fact that stress was appreciably lower in the abuse group, casts doubt on the theory that posits environmental pressures as a child abuse catalyst. That maltreatment can be primarily attributed to child-rearing attitudes or abuse-prone personality is also seriously challenged because of the relatively trivial contribution of these variables in this study. Thus Gaines et al., (1978:538) conclude that "although stress and personality variables are indeed relevant to the maltreatment syndrome, they leave 88% of the phenomenon unexplained and predict parent category only 15% better than chance". The researchers also explain that in their study the extent of capitalization on chance due to particular samples is indeterminate; any claims for accuracy must be qualified in the absence of cross

validation. This militates against using these instruments for screening a phenomenon whose incidence in the general population is low. The "hit" percentage was not improved by using all 12 variables for classification (Gaines et al., 1978:538).

A study by O'Connor et al., (1980) experimentally assigned families to different contact conditions at birth and followed them for subsequent parenting failure. The random assignment to groups qualifies this project as an experimental study making it methodologically much stronger than previous retrospective reports. Infants born in a hospital setting serving low-income families were assigned over a 9 month period to 'rooming-in', or to routine postpartum contact. There was no early contact for either group. The control mothers held their newborns at approximately 12 hours after birth and rooming-in mothers at 7 to 21 hours postpartum. Control mothers had their babies only for 2 hours at feeding time. The rooming-in mothers averaged 11 ½ hours of contact per day (O'Connor et al., 1980:176-177).

When the babies were 17 months old outcome data concerning abuse and neglect were obtained from hospital and state records. Evidence of abuse and neglect was found in 10 control and 2 'rooming-in' families. As both groups were comparable at time of delivery (mother's age, infant birthweight, married and single status, black and white ratio, mother's education, welfare status, employment) rooming-in was likely

related to the lower incidence of parenting failure (O'Connor, et al., 1980:180-181). However, the researchers caution that their study did not include a condition of early contact, but of extended contact. Moreover, the rooming-in mothers had almost unlimited visits by the baby's father or grandmother. Control mothers did not have this privilege. Treatment effect may have helped to solidify the family unit with resulting benefit to the mother's parenting skills. This cannot be separated from the mother-infant contact effects. The researchers also caution that over 90% of the separated control mothers showed no signs of parenting failure. This indicates that, although rooming-in may enhance the mother-infant relationship to some degree, its absence is usually not associated with demonstrable harmful effects (O' Connor et al., 1980:182).

Premature and unhealthy children may be overrepresented in groups of abused children in that they contributed to their own abuse by being particularly difficult children to raise and care for. Green et al. (1974) regard poor response to nurturing, major physical defects, congenital abnormalities, mental retardation, and brain damage as characteristics of the child that may stress parents and eventually lead to battering. Pasamanick's longitudinal study (1975) of 500 full term control infants, suggests that premature children are more disorganized and unstable and have lower thresholds of stress. The child's

temperament and personality may also precipitate parental stress which in turn increases the child's difficult behavior. This could set up a spiral effect contributing to child abuse. As Chess and Thomas (1982:99) state both parents and children have individual patterns of reactivity that enter into their daily interactions. It is not a question of a 'good' or 'bad' mother, but a matter of 'goodness' or 'poorness' of fit between the temperaments of mother and child.

The correlation between early mother-infant separation and child abuse is often linked to socioeconomic status. Myers (1984:257-258) cites studies which found that prematurity is more common among low-class mothers, teenage mothers, as well as poorly educated parents. Thus the cause of abuse may not be the separation per se, but the multitude of factors (unemployment or underemployment, crowded housing, too many children, etc.) often associated with poverty.

Carter and Easton (1980) investigated 80 cases of child abuse with particular reference the separation of abusing parents from their newborns. Although early separation of parents and infants was found to be common in families under study, combination of other stresses and conflicts were in evidence. It is the latter that is believed to predispose mothers towards abuse and neglect. Carter and Easton do not claim that the lack of early mother-infant contact has nothing to do with subsequent abuse, but they strongly advise that other stress factors,

such as unstable domestic arrangements, psychiatric disturbances, and parental immaturity, may impair the parent-child relationship. Careful attention must also be given these variables. The significance of postpartum separation would be easier to evaluate with evidence from epidemiological surveys of large populations which indicates the proportion of postpartum separations in which no case of child abuse occurred (Sluckin et al., 1983:62).

To gain a more accurate picture of the probability of abuse after separation, prospective, rather than retrospective studies are required. In one such study, Egeland and Vaughn's (1981) kept longitudinal data on 267 lower-income women in Minneapolis from the time of their pregnancy through to 9 months after delivery. Two groups of women were selected from this sample for comparison: 33 mothers who provided the best quality of childcare and 32 mothers who abused, neglected or mistreated their child in some fashion. The researchers (1981:82) state that "no differences were found between the adequate and inadequate care groups in the proportions of infants born prematurely, delivery complications, born with medical problems requiring separation from the mother, or number of newborns with physical anomalies". Moreover the adequate and inadequate groups were indistinguishable from the larger sample of 267 as well.

However, one must weigh carefully how seriously to take findings of 'no difference'. Such a finding can never establish absolutely that a difference does not exist. This is true on logical grounds, but is further underlined because if a study is poorly done it is easy to obtain a no difference finding. If measures are unreliable, the treatment is too weak, or the groupings are produced by ambiguous criteria, a finding of no difference is more of a commentary on the research method than on the hypothesis that the study is testing (Myers, 1984:258).

Clearly the study by Egeland and Vaughn cannot establish with certainty that postnatal events are unrelated to abuse. The results can be taken seriously for their study was methodologically sound and the study demonstrated that at least for this large sample, abuse groups were not different on a set of postnatal indices (Myers, 1984:258). Egeland and Vaughn (1983:84) suggest rather than accepting the simple conclusion that abuse is 'caused by' a lack of bonding which is 'caused by early separation, researchers should look for multiple cause of abuse. Indeed, as the authors remind us — "past experiences with single causes (anoxia in the 1950s) should keep us wary of assigning "blame" for the failure of bonds to early separation" (Egeland and Vaughn, 1983:84).

SUMMARY

According to Herbert et al., (1982:215-216) an attitude of "therapeutic nihilism" has been created in the minds of many child care

professionals by the concept of fixed and irreversible attributes (e.g. the postulated link between early separation and bonding failure). For example, Tredinnick and Fairburn (1980 a,b), two British social workers, conducted a national survey examining the practice of compulsory removal of children from their mothers before or after birth. The practice is on the increase where other children in the family have been battered or killed. The local authorities can apply for a place-of-safety order, but a care order must be applied for within 6 weeks of birth. Yet, in some cases there has been a failure to get a care order granted on a baby removed at birth. Tredinnick and Fairburn (1980a:23) are perturbed that in these cases the bonding process between mother and infant has been disallowed and claim that parents have been placed into a position of disadvantage "by denying the chance of bonding and attachment experience, (now that we see more clearly how this starts off the good parenting sequence)".

In this study the assumption is that once a separation at birth has occurred, rehabilitation of the mother-infant relationship can only be undertaken with difficulty. One social worker quoted contends that once the infant has been removed from the mother and the bonding process is disrupted adoption should take place as a matter of course (Tredinnick and Fairburn, 1980:24).

Thus preventive child care action and the rehabilitation of parent-child relationships are hindered rather than helped by introducing the bonding concept in so far as it is tied to the presumed sensitive period immediately after birth (Chess, 1982; Herbert et al., 1982:216; Sluckin et al., 1983:63). Also mother-baby units are suggested as the only viable method of rehabilitation, although it has been found that many referred mothers are unable or unwilling to cooperate within such settings. As Herbert et al. state:

What we do know about the interactions of mothers and their babies in the early post-partum days is that there is an immense range of individual differences in their co-ordination and smoothness. We still lack evidence about the long-term implications of these early differences—for the mother and baby who remain together from birth onwards, as well as for pairs separated for varying periods of time. Without hard evidence about the former group it is not possible to be sure whether qualitative differences in early adjustment and interaction may have significant consequences for the evolving relationship, even when mother and infant are not separated (Herbert et al., 1982:218).

Therefore, in order to understand an interactive situation such as child abuse or failure-to-thrive researchers need to examine the correlation of various factors such as quality of interaction, the personality and temperament of both the child and parents, the developmental level of the child, the father, sibs, socioeconomic class and cultural group, family stress, social support systems, and so forth. If social workers and child psychologists are to begin to frame intervention procedures, they need both a framework noting baseline interactive

styles as well as the ability to pinpoint behavioral targets which are worth changing (Wasserman et al., 1983:245). What is clear is that child abuse and neglect cannot simply be ascribed to lack of maternal bonding during a relatively short period after birth.

Over the last few years, child welfare agencies throughout North America have been adopting risk assessment instruments in an effort to predict child abuse as early as possible. However, Montgomery (1982), McDonald and Marks (1991) and Wald and Woolverton (1990) have reviewed various risk assessment instruments, and have concluded that is currently it is not possible to make highly accurate predictions of risk with existing instruments. Various problems identified as limiting the accuracy of these assessment instruments include: 1) diversity and ambiguity in how variables believed to be related to abuse and neglect are conceptualized and measured, 3) diversity in assessing risk (risk is assessed on a scale from high to low, or using a descriptive account of parenting practices with assessment of these practices as positive, negative or traumatic), 4) effect of variables are interactive and not additive, and 5) low interrater reliability of such instruments. Many agencies are adopting risk assessment methodologies in lieu of addressing fundamental problems in existing child protective services, such as the excessive number of inexperienced or incompetent social workers, and the lack of adequate resources. Use of inadequately

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designed or researched instruments may only result in poorer decisions, because social workers will rely on mechanical rules and procedures instead of developing greater clinical expertise. Social workers are warned by Montgomery (1982) to temper with skepticism their enthusiasm for attempts to predict child abuse on the basis of early behavior of the mother towards her young infant.

CHAPTER SEVEN

PRAXIS VERSUS THEORY

One of the key questions that inspired this researcher was how closely do nurse practitioners and social workers, who identify and counsel mother-infant pairs believed to be at risk for poor maternal bonding, adhere to the bonding thesis as outlined in the allied sciences journals and social working journals? In other words, does practice support theory as outlined in the literature? Key informant interviews were conducted with a social worker from the Children's Aid Society as well as a nurse practitioner, who is working on the maternity ward at one of Ottawa's local hospitals and the ward's social worker. In general, the interview questions focused on the following three areas: a) the informant's primary role and responsibility in the childbirth process or in child services and protection, and any changes that may have occurred; b) the nature of the informant's education about the development of the mother-infant relationship, and their perception about the ideas of other professionals; and c) how the informant's ideas about mother-infant bonding are used in their work, and how these ideas affect hospital and social work practices and policies.

METHODOLOGY USED AND PROBLEMS ENCOUNTERED IN OBTAINING INTERVIEWS

Both the methodology used and the difficulty in getting these interviews must be pointed out. Originally it was planned to conduct at least 10-15 interviews with social workers and medical professionals (doctors, nurses) involved in assessing mothers and infants for the quality of the maternal bond in the immediate postpartum period. Due to the time constraints inherent in an M.A. thesis, it was felt that 10-15 interviews would yield qualitative data on the extent that mother-infant bonding, and the sensitive period hypothesis have been adopted and affect current practice. However, plans to conduct 10-15 interviews had to be modified. During the time that this researcher was contacting informants to set up appointments for interviews, one of the local hospitals became entangled in a police investigation due to the death of a neonate during childbirth in their maternity ward. This created a general atmosphere of mistrust and unease with 'outsiders' seeking information on hospital policies and practices. Hence, most nurses and doctors who had originally agreed to be interviewed suddenly declined or became extremely busy.

Rather than abandoning this project altogether, the researcher decided to interview (using the same questions) a few key informants who would be selected for their knowledge of social work and hospital practices and policies, and for their immediate involvement in assessing

mother-infant interaction. Key informant interviews are good for acquiring descriptive and explanatory data, and for a preliminary exploration of the research question/problem involved. Indeed, the aim of these interviews was basically exploratory — to acquire data on how the bonding concept was incorporated into hospital and social work practices and policies, and on the meaning of the concept to each informant. Thus it was felt that such data could still be obtained from selective key informant interviews. Moreover, key informant interviews can often highlight other issues or questions which require further in-depth study.

In order to obtain the most knowledgeable 'front-line' key informants, the researcher approached the Administrative Section for the Children's Aid Society and the hospital concerned. The purpose of the interviews, types of questions to be asked, and the type of knowledge and experience in assessing mother-infant interaction required in key informants were explained in detail. It was decided that a nurse practitioner currently working on the maternity ward, the maternity ward's social worker, as well as a social worker from the Children's Aid Society directly involved in prenatal counselling would have both the knowledge and work experience required.

Every interview was conducted in person by the researcher and lasted from one and half to two hours. The researcher was most

interested in capturing the answers in the subjects own words and in getting their unique viewpoints and experience. See Appendix A for the structured interview questions asked, and Appendix B for the consent form given to each key informant. With the permission of each key informant, the interviews were tape recorded, and at the same time, the researcher also took interview notes. All interviews were transcribed immediately upon completion; transcription was verbatim and cross-checked with interview notes. Any points of uncertainty or discrepancy were immediately verified with the specific key informant involved.

Both the nurse practitioner and the maternity ward's social worker agreed to be interviewed as long as they remained anonymous and that the hospital would not be named. The social worker from the Children's Aid Society did not make a similar request. All key informants were assured that their request to remain anonymous would be respected and that the data collected would be held in strictest confidence. It was also pointed out that they could refuse to answer any specific question, and any request that their interview not be used in the study would be respected.

It must also be pointed out that although two of the key informants requested anonymity, these informants did not hesitate to participate in these interviews. All key informants expressed an interest in the aim of this study and stated that it was the researcher's affiliation with Carleton

University that was a factor in helping them to decide to participate in these interviews.

With only three key informant interviews, the generalizability of the data obtained is, of course, the most obvious limitation. It is acknowledged that some of the data obtained is not representative of the viewpoints of the entire medical and social work profession either at the Children's Aid Society or at the hospital concerned. Ideally doctors working on the maternity ward would also have been interviewed, and their statements compared with those of maternity nurses and social workers to discern similarities and differences in their understanding and beliefs concerning the bonding process, and their involvement (if any) in the evaluation of mother-infant pairs. Second, the researcher would have like to supplemented her interviews with 'observation' of the daily duties of the maternity nurses and the ward's social worker, especially their interactions with, and assessments of, mothers with their newborns. For instance, this data could then be compared with the interview data to discern patterns and/or discrepancies between 'what is actually done' and 'what is said to be done'. Unfortunately, permission for the researcher to do these observations was not granted.

Third, the researcher was unsuccessful in obtaining an interview with the child psychologist employed by the Children's Aid Society to evaluate the mothers and children in their care. Ideally this interview

would have given an additional perspective on the bonding process, that of a development psychologist actually working in the field of child development and abuse and neglect. Moreover, the interview would have given more in-depth data about the agency's Infant Stimulation Program and their evaluation of mother-infant pairs. Again the researcher would have like to supplement these interviews with 'observation' of actual mother-infant evaluations, and with observations conducted at the Infant Stimulation program. However, requirements to protect the confidentiality of the families receiving care from the agency as well as the researcher's inability to contact the child psychologist concerned precluded these observations.

In order to contextualize the interview data, the following is a brief outline of the role of the Children's Aid Society and the use of bonding by hospital staff in the identification and referral of potentially high risk mother-infant pairs to the agency.

BACKGROUND VIGNETTE

In early 1970s childbirth took place in a room designed for surgery and medical interventions were routine. It was standard policy when a woman came in to give birth that she be put immediately into the labor room and prepped for surgery with general anesthesia usually administered. Husbands were not permitted to attend the birth and

newborns were kept in central nurseries to be given to mothers according to strict schedules. However, by the 1980s many hospitals established alternative birth centers (ABCs) — usually a room or two in the maternity ward that was decorated to resemble a bedroom at home equipped with curtains, plants, music, a standard double bed, or sometimes a specially made bed in which the woman, labors, delivers and recovers, as well as electronic fetal monitors, IVs, and a set of stirrups hidden away in a trunk at the end of a bed¹¹. Often the entire family — husband, grandparents, siblings and “significant others” — is now present at the birth. However, ABCs are limited to low-risk women in which a normal, spontaneous vaginal delivery is expected. The gravida is closely attended by a nurse, nurse-midwife, or a physician. After the delivery all mothers, except those whose infants require immediate intensive care, are offered the opportunity to hold their infants skin-to-skin for approximately for 30 to 45 minutes. This is usually done on the delivery table after the placenta is delivered. Neonates are kept covered in a baby blanket and a prewarmed sheet because mothers and infants are skin-to-skin. Mothers are also assisted to breastfeed their infant either on the delivery table or stretcher after leaving the table. The medical staff feel that it is important

¹¹ the description of alternate birth centers is a composite portrait from articles and observations conducted while on tour of three maternity wards at local hospitals. These tours are open to any pregnant women who will give birth at the hospital and to other interested parties.

for the mother and infant to spend as much time together as possible. Therefore, after recovery mothers and infants enjoy 24 hour rooming-in.

At the hospital I looked at, assessment of mother-infant pairs is an interactive process between maternity nurses and the ward's social worker¹². First, nurses assess and chart either the total amount of time mother-and infant spend bonding or any difficulties that mothers are apparently experiencing in bonding. After nurses identify a mother as having problems bonding with her newborn, the social worker will re-assess the mother and infant to determine if the child is in need of protection as outlined by the Family and Children Services Act. If the social worker has any doubts, she often consults with Children's Aid Society and gives them a scenario without giving them any names. Only mother-infant pairs deemed to be "high-risk" for abuse and neglect will be referred to Children's Aid Society.

Until approximately a year and a half ago all first-time mothers would be referred to a public health nurse for follow-up and information on proper child care practices. However, due to provincial financial cutbacks, only woman suffering from postpartum depression, psychosis, breastfeeding problems, or any problems that are deemed to put the infant at risk for abuse or neglect will be referred to the provincial Home

¹² Due to financial restraints not all local hospitals with maternity wards have social workers on their staff. When suspected cases of poor maternal bonding are reported either to the woman's doctor or to the head of the maternity ward, who if they feel circumstances warrant it will contact the Children's Aid Society.

Care Program. Under this program, which is funded by the Ontario Hospital Insurance Plan, a public health nurse, as well as a physician, will carefully monitor the mother and her infant over a period of time. Home making services are also available if the mother is unable to look after her infant.

The maternity ward's social worker also works with families who have sick babies or with parents who have experienced a perinatal loss. As parents of sick babies are afraid of losing their child, the social worker helps them work through any issues and emotions they may have surrounding their circumstances. Parents also receive help with many of their more basic problems such as getting back into the hospital on a daily basis, or every second day, to visit the baby in order to keep up their relationship. This type of help is believed to be essential especially if there are other children at home, or if the family has financial problems, or do not have a convenient mode of transportation. Mothers with sick infants are in the intensive care unit also receive a Polaroid picture of their child. Similarly, mothers, who are recovering from a cesarean section, on the first opportunity, are wheeled to the nursery to visit with their infants. Or if this is not possible they are given a Polaroid picture of their infants to keep by their bedside. These pictures are believed to help in the bonding process by providing a link between mother and infant during their period of separation.

Parents who have lost their infant are helped through the grieving process to say 'goodby' to the fantasized child that they were expecting and have become attached to. With a perinatal loss all memorabilia of the baby —a Polaroid picture, footprints if possible, and a lock of hair -- are given to the grieving parents. This is done in order to help parents recognize that they did have a child, and serves as an affirmation of the bonding process the parents have been going through prenatally although it was short lived.

The maternity ward's social worker refers all potentially high risk mother-infant pairs to the Children's Aid Society for further evaluation and counselling by a team of social workers and/or a child psychologist. The agency does both "voluntary" and "non-voluntary" protection work where the infants are taken from their birth parents and placed in foster homes. However, only where the child's natural family contests the agency's intervention does the case go to the family court system.

The agency's social workers are also involved in "voluntary" counseling for women who phone in asking for advice about pregnancy or help preparing for childbirth. With prevention, most of this is prenatal work where the social workers help parents get therapy or treatment for various problems, such as drug and alcohol addiction, so that these risk factors can be removed before the baby comes.

A major part of preventive work involves "ambivalence counselling" for women who are not sure that they want to be pregnant. If this is not resolved, the child is said to be at risk both physically and emotionally. Therefore, the social worker's job is to counsel women, especially teenage mothers, and help them to make decisions that are appropriate to their lives and for their unborn child.

INTERVIEWS WITH KEY INFORMANTS

All key informants explained that at university they were taught that bonding was "an immediate black and white kind of thing". Moreover, "there was great debate in the class about what part of mother-infant bonding was hormonal, genetic, or learned behavior to connect to your children". However, over the past two decades there has been a considerable shift in the conception of bonding. As the nurse-practitioner states:

I just had an orientation program a month or two ago and it's very much taught that it's a process. Its not immediate...a black and white kind of thing. They're looking at it now as much more complicated than that. And that yes there is a physical element but its much more a developmental thing. [Bonding develops] as the mother gets comfortable with the baby, learns how to care for it, and it responds to her.

Inherent in the definition of bonding as a developmental process are the qualities of love, nurturance, caring, giving, sharing, and sacrifice. Bonding has become an acceptable synonym for a caring and intimate relationship. All informants describe bonding as "the process of

the mother falling in love with her child". The definition given by the Children's Aid social worker was the most expansive:

It is a process of connection between mother and infant following the birth of a child. Part of it is the mother's overwhelming desire to care for the child and protect it. And its the child's awareness of who the caregiver is. And who that person is that provides their care. A certain amount of it is affection and love. It is the willingness to protect and care.

Part of that is a mother looks at an infant and thinks that it's beautiful and feels great feelings of warmth towards that child; feels a connection with it. Part of it is age appropriate expectations of what the baby can do. For a mother love is a warm, fuzzy feeling that it's a beautiful baby, and there is a warm protective side which I think can sometimes happen without the love. Sometimes the one comes before the other.

Bonding is the ability to love that child so much and to be so irrational that you are willing to put all of yourself or most of yourself aside so the child's needs can be met...

Thus according to the key informants the definition of bonding has shifted from a mechanical and instantaneous phenomenon to a developmental and interactional process between mother and child. Moreover, the rate of development is not always at the same pace: "there is a warm protective side which...can sometimes happen without love".

All key informants agree that for many mothers bonding starts before the baby is born. According to the maternity ward's social worker:

...there is an attachment process that occurs prenatally and of course that varies again among people. How desperate [the parents are] to have a baby or want a baby, that motivation for having a baby...sickness during pregnancy, complications, that kind of thing...Of course there are some parents who have had previous losses or they have had a very complicated pregnancy, they will try to block that process of attachment.

Similarly, the social worker from the Children's Aid Society points out that while bonding for some women begins prenatally, for others it takes at least a week or so to feel comfortable with their newborns:

Some of my girls tell me that it starts when the baby is still inside them. They felt tremendous feelings about that child and felt some connections began in there. We talk about that. For some of the women bonding does not begin immediately. Where initially for the first few days that they are with the child it is quite mechanical and then they say that over the next week or so [bonding] starts to develop. That is hard for women to talk about because the expectations is the first time you see this baby, you'll be overwhelmed with love and tenderness.

Many nurses and social workers now believe that if mother-infant bonding does not occur within the first days after birth that it can still be picked up later. According to the social worker from the Children's Aid Society:

I don't think that you're either bonded or you are not. I think that its on a continuum. I do think that in the community sometimes we talk as if you were bonded or not. I certainly see levels of it and often its part of a continuum and they move along the continuum one way or the other. Sometimes there may be a really strong bond at birth. We see that quite often but due to circumstances that bond will drop off and be gone which is very hard.

Then I've had cases...There was a couple of women that I've had just in the past year who did not want to be pregnant. Wanted nothing to do with the baby when the baby was born. Had the baby sent away. [The baby] went to foster care, and then [the mother] came back 2 or 3 weeks later and began to connect with the baby and then took the baby home and parented them.

There were also two older women. One who was raped. And one who did not expect to be pregnant and who was completely overwhelmed at the birth; didn't even want to see the baby, wanted nothing to do with the baby. But came back and through a process of counselling decided what to do, and visited the baby in

the foster homes and became connected. I believe that these women are completely bonded to their babies now. It certainly did not happen after birth and it probably took them longer.

On the maternity ward the term 'bonding' is no longer used because of its earlier negative history. Instead, the nursing staff assure parents it takes time to feel comfortable caring for their baby and that this is not unusual depending on the mother's circumstance. Parents are also advised that the postpartum period is a bitter sweet time during which they may even resent the time the baby is taking and how it has changed their lives. Moreover, many women cannot believe that they are now mothers and the nurses assure them that this is a normal reaction.

As well, part of the prenatal work at the Children's Aid Society involves "ambivalence counseling" with women of all ages who are not sure if they want to be pregnant. The agency feels that ambivalence is a real protection concern for if it is not resolved the infant then is at risk both physically and emotionally. Therefore a very large portion of the social worker's time is spent helping these women to decide what they are going to do when the baby comes:

Most of the younger women who get pregnant have a lot of social issues in terms of sexual abuse, transiency, being kicked out of their homes. Pregnancy serves a different purpose for them. There is not the insight there. I work with a lot of older women in their 30s, early 40s. Sometimes through rape, sometimes through unwanted pregnancy, they really want to talk about not wanting to be pregnant. The younger women think that being pregnant is going to be great. They have no sense what it will do to their bodies. Their life is great at that point.

The demand for ambivalence counselling is on the increase as more women are willing to admit that they have a lot of difficulties being pregnant. The agency's social worker states that: "Its very freeing for these women to wonder "Is this what I want for my body?", "Is this what I want for my life?'. In counseling these mothers are taught that their all of their feelings and questions are normal. As the social worker explains:

we have this idea with women that the hormones will just take over and we will think that this is the best thing in the entire world; that we will be perfectly fulfilled. For many women there is a lot of difficulty accepting pregnancy....Its more acceptable to say that this is difficult, its not all rosy. I am pregnant myself and its not that way. I'm 30; I want to be pregnant. But I think its more acceptable to say this is difficult; this is not rosy.

All key informants agreed that the shift in how they currently conceptualized bonding is largely due to their work experiences. For instance, the maternity ward's social worker explains that:

... as you become more experienced you realize that there are so many factors that influence an individual on how they respond to their baby. So I think that you are more flexible and take into account more factors. I think that it is partly due to life experience...I think the theory, as I said earlier, was 2 or 3 weeks for the bonding. If you didn't have that you were out of luck for the mother and child. But I think that has changed over the years. I definitely work from the perspective that bonding takes place or is a process that takes several months if not longer.

Similarly, it is her experience with dysfunctional mothers that helped the Children's Aid social worker to reconceptualize bonding as a developmental process:

...we see many women who do not have the ability to connect. There is just nothing there. I've seen mothers that hold babies as if they were boards; want nothing to do with them; won't interact;

won't look at them; want them gone. One woman I've dealt with four times; she is a very bright woman wants nothing to do with it...will not look at it; will not grieve; will not do anything; wants that baby put up for adoption. She takes off and that's the last we ever hear of her. So you wonder what is going on.

Although bonding is no longer envisioned as an "immediate black and white kind of thing", the Children's Aid social worker feels that women are still confined by cultural expectations concerning childbirth, and motherhood:

Now that I am pregnant I sure can say that it changes your life a lot. It affects your body, it affects everything. Its not all fun and games. We're suppose to be these glowing, healthy women all the time. Not to say being pregnant and having babies is not wonderful. But it is not all wonderful. Its a lot of hard work. I think its easier for the male establishment to give us the idea that it is all wonderful because then they don't have to deal with that its not all wonderful. Why, you're a bad woman if its not all wonderful. You're suppose to be glowing and happy. And if you're not that way, there is something wrong with you. Its not something wrong with the process. You're abnormal.

At this particular Ottawa hospital nursing assessment tools, or checklists, are not used. The nurse practitioner advises that instead the comments "bonding well", or the absence of a behavior, are noted on the patient's chart. Moreover, the focus is no longer on just the mother and her infant. The nurse practitioner comments "we don't just look at the mother, but we look at the whole family in terms of how the mother, father and siblings are relating and we make an assessment of that whole unit". Maternal behaviors which the nurses see as problematic and which are "immediately flagged" include:

Whether [the mother] is directly interested in actually physically caring for the baby or not...whether she's happy to leave the baby in the nursery to be looked after or whether she wants the baby in her room all the time...whether that's appropriate because we don't necessarily expect Moms to care for the baby all the time if she's not up to it...whether she is sort of concerned about feeding. The normal kinds of concerns about learning how to bathe the baby, clean the baby, that kind of thing. If she's thought about the supplies she needs for the baby — car seat. There are so many things as to whether or not that this mother is expecting this child as part of her unit, part of her family. Some things are very obvious. There are some mothers that don't do these things, don't have these behaviors. They are the ones we immediately flag and we start to wonder whether there is a problem.

The nurse practitioner admits that their assessments are informed not only by their training but also by their experience and a degree of intuition. She feels that bonding is important because it promotes a close parent-child relationship in the future. She explains that a major role in obstetrics is teaching and increasing the parents' confidence in interacting with their newborns. Maternity nurses will first determine why the mother seems fearful of interacting with the baby. The second step is then to increase mother-infant interaction by helping the mother to focus not only on the problem with the infant, but also on the infant's positive aspects. As the nurse practitioner comments "confidence is a big issue here...some mothers feel that they are not competent; that they can't look after this child; they panic or get afraid that they can't look after this child". Often the extended family or the father are asked to encourage and support the mother to feel more competent in interacting

with the infant. The aim is to build the mother's confidence in her skills by positive feedback. According to the nurse practitioner:

Well, I think its good to give observations like "you seem to be getting more comfortable with your baby", or "how are you feeling about bathing the baby" [or] "do you think you'll be able to do this at home.

She cautions that:

you have to really watch it in a sort of power position...like a nurse or physician not to be condescending and go like "pat on the head...you seem to be doing that well" kind of thing. The whole idea is to build the mother's confidence in herself. So if you can observe her doing things well and give her that feedback as to what your observations are that's more positive than "she did that well, so I'm going to give her a gold star because I'm the nurse.

However, not all nurses are sensitive to the delicate position of power they are in vis-à-vis their patients. According to the social worker at the Children's Aid Society:

I've had teenage mothers who felt very judged because they were young, unmarried mothers. Also their care in hospitals can feel very restricting and its difficult to bond. They feel that they are being watched every time they are with the baby. So they find it very hard to be themselves and really bond with the baby. They prefer not to have the baby with them because they just don't want to be criticized.

Thus while the nursing staff tries to increase the self-confidence of these young mothers in their childcare skills, their actions can have exactly the opposite effect.

Many maternity nurses and physicians are slowly becoming aware of the need to be cautious in their assessments of mother-infant pairs from different ethnic groups and are seeking advice from the ward's

social worker who then checks with a cultural association to find out how a mother from a particular ethnic background responds in the first 10 days with their babies. The ward's social worker points out that:

its really on a case by case basis and really we are aware that there can be cultural differences, so we don't automatically say "oh, this person is not bonding well with their baby". We had examples of certain cultural groups where their baby is ill and is in the special care nursery, the family will not visit the baby for 10 days or name the baby for the first 10 days after birth....So we know that that in this particular cultural group this is normal and even though we try to encourage them to come in we respect their wishes. Or another group where the birth mother is at home for a month after delivery and our expectation is that they come and visit to develop this relationship with their child. But their cultural norms are to stay home for 30 days, so its the extended family that is coming in and developing this relationship. So we do respect what they believe in...we don't impose our values on them.

Although they do not deal with many different social classes or ethnic groups, the Children's Aid Society is also starting to become cognizant that their "ideas are quite middle class about what they expect from mothers". Their social worker states:

We certainly talk a lot about it in terms of poor mothers. Mothers have come in who don't want the baby to room-in because they have little ones at home and they are going to get no help. Its a different kind of feeling than me as a middle-class woman. Their expectations about their ability to provide care in the hospitals are different because they have less support at home.

We have a number of Native women, Inuit women, Jamaican women. Certainly there are difference with how they would interact with a child. With the Jamaican culture we are finding that we have to be aware of an extended family connection with babies. Sometimes we are concerned with the interaction between the mother and child, while its really the grandmother that will be involved at this point and that the child will have a bond, but not with whom we culturally think the child should have a bond with.

Some of the native women tend to be more reserved in their verbal feelings about the baby and that had to be seen as acceptable.

In their training all key informants were taught to look for 'bonding factors' that might place the child at higher risk for abuse and neglect. In addition, all key informants admit that their work experience has served to reinforce their belief in the postulated link between poor maternal bonding and abuse and neglect. According to the Children's Aid social worker "...if the bond is not established in the first few weeks very serious consequences would be emotional rejection, [which] can lead to physical abuse; the parents not putting the child's needs first". In her opinion the child needs an "irrational advocate":

someone who loves you so much that they are irrational about you, and it does not have to be your mother...Bonding is the ability to love that child so much and to be so irrational that you are willing to put all of yourself, or most of yourself aside so the child's needs can be met....If the child's needs are not foremost in that person's mind we get failure-to-thrive and child abuse

According to the agency's social worker bonding in the first few weeks is extremely important as the parents become adjusted to the difficulties of raising children. If this transition is not met abuse or failure-to-thrive may occur:

Those very difficult first weeks with the child where you're up all night and having to pour your whole self into caring for that child, if you're not bonded to that child, its much more likely that a parent will act out toward that child. It would be like us caring for a neighbor's child, a child that we did not love, it would be much harder to put up with that day after day. its is not the only factor. But in conjunction with other factors, it can lead to people losing it. The most common injury we see with infants is shaking which to me is not a deliberate "I want to hurt this baby". It is a

frustration "I can't take it" kind of injury. That injury comes from just being fed up. It doesn't mean that bonded parents don't shake their babies. its more likely with the parent that doesn't have that special love that they will lose their cool.

However, she does admit that "there are parents who don't bond, but who have enough insight to provide the basic needs for the child and then it would be more of an emotional lack of nurturing". Often this is compensated for as grandparents or other people bond with the child and provide nurturance.

In addition to poor maternal bonding, all key informants identified the following as "high-risk" factors leading to abuse and neglect:

- ambivalence about pregnancy
- alcohol and drug addiction
- unstable family life
- mother's own experience at being parented
- multiple caregivers
- problems with boyfriends
- psychiatric illness
- maturity of parents
- lack of social support
- financial problems
- intellectual limitations of parents

All key informants admit that their assessments are really based on a very small piece of the mother-child interaction. For instance, the maternity ward's social worker explains that "some people can be very uncomfortable in a public hospital setting, they are very private, they are not going to demonstrate truly how they are going to interact with their child until they get home". Thus, she states that it is important that "a

number of factors are taken to together before we determine if it is a high risk situation, and the mother-infant pair are referred to public health for follow-up or to the Children's Aid Society". She admits that assessment of poor maternal bonding is not "black and white":

...because every situation is different. We are dynamic. People are dynamic, ever changing and we have many factors influencing us. We are very complicated, very complex, and we have to look at a number of factors to see how that particular parent and their attachment is affected.

The Children's Aid Society tries to enhance the mother-infant relationship by working on those factors that they believe impede the mother's relationship with her infant. For example, mothers with addiction problems are sent for treatment in the belief that only then can the mother focus attention on her infant. Psychiatric patients are offered medication or treatment which will lessen some of their impediments so that they can interact with their infant. The agency also has an "Infant Stimulation" Program where public health nurses teach young parents "about spending time in eye-to eye-contact and other kinds of stimulation". The social worker comments that spending time in eye-to-eye contact is vitally important for parents because the more that parents interact with their child the less likely they are to objectify the child:

Its a way of getting to know each other to the point that you can love or feel irrational about the child. We find with parents when they spend time eye-to-eye with the child, getting to know that child, they are less likely to objectify that child. A lot of parents

will talk about their child as possessions. Even their language is "my son, "my daughter" and will not call the child by name.

In cases of child abuse or neglect, as well as fostering and adoptions, the concept of mother-infant bonding often brings the Children's Aid Society into conflict with family court system over the removal of infants from their birth families. Their social worker complains that the rights of the parents and the family court procedures often take priority over the needs of the abused or neglected child. For instance, the agency has to prove that the child is in substantial risk before the child are removed from their parents. With issues such as poor maternal bonding and emotional abuse its much harder to prove substantial risk than in cases of physical or sexual abuse. Their social worker often is frustrated trying to explain to the family court judge the psychological effect of emotional abuse on the infant:

Its not that they don't take [bonding and emotional abuse] into account, but is much more difficult in the court process to make those things known to the judge. Its the psychological aspect that's difficult, especially with infants because they are not acting out. They are not giving you very specific signs. I can go to a home and I can know, a sort of gut feeling, that that child has not bonded. That there is something wrong there. How do i say to the judge "Oh, the child's eyes looked dead".

With emotionally abused children, the social worker looks for specific signs which she believes indicates either a total lack or poor maternal bonding:

I should not say that I know. I have a lot of indications. One is the things we talked about before with the mother. The mother's inability[to put the needs of her child first]. There are certain

children we go to see that we have bad feelings about. They are not animated, they have flat affect. They don't care who picks them up. I have apprehended 9 or 10 month olds who don't care who I hand them to. There is no separation anxiety, there is no concern who you give them to. That kind of thing is a strong sign that there has been no bonding...

If the child's removal from its birth family is contested by the natural parents, the court process is an extremely long process. According to the agency's social worker "If I apprehend an infant in September 1994, and I ask for a court date, it would be June of 95 before I would get a trial...We feel that all that is bonding time we're missing with the family". Thus Children's Aid Society has developed a program called "Fostering- With-A-View-to-Adoption" where families are approved both as foster parents and as adoptive parents. If the agency is very confident that they are heading towards an adoption in a contested matter, they remove the child as early as possible to a "fostering-with adoption" home. As their social worker states "what that does is that child doesn't have to move at a later date and there is more chance bonding can go on". This puts the risk on the adults and not on the child. Previously, the children would be kept in foster homes until the court process was completely finalized and then the child would go to adoptive homes "where bonding was harder at a later age and the risk was on the child". The agency feels that in this way if the children are

returned to their natural parents then it is the adults that suffer more.

Their social worker admits that:

the courts really don't like it at all. They feel that it forces their hand. It makes it inevitable that this child will stay with the couple. They really, really have a hard time with it. This is one of the things that was a reaction to our fear that these kids were not getting a chance to bond with their forever families because they stayed in foster care for a long period of time.

In addition, more and more parents are choosing to join the "Fostering-with-A-View-To- Adoption" program rather than just becoming foster parents. The agency feels that if a foster placement is a good placement and the child is bonded there, there has to be very good reasons to break that bond before we take them out. However, the program is currently still under scrutiny and therefore is not very stable.

The mother who has relinquished her child for adoption can, with the courts approval and within a certain period of time, have her child returned to her. This is a contentious area with the Children's Aid Society as they feel that these cases are not made in the best interests of the child, but on the basis of parental rights. As their social worker contends:

I do believe that if the child has a strong bond and has been in placement for a year or more that we are really putting the child at risk by moving it. But we have to do it if that's what the judge orders. That's the problem, all these decisions are not made by us. They are made by a court who does not see the bonding as the priority issue for them.

In contentious custody disputes where the Children's Aid Society feels that what the parents are asking would be detrimental, or in other

cases where there are concerns with mother-infant interaction, the agency utilizes the services of a child psychologist, whose specialty is mother-infant bonding, to do a full assessment of the parents and infant.

In addition, the Children's Aid Society has developed an "Infant Clinic" where the child psychologist sees 4 or 5 children in care with their parents and assess parental bonding. All children in the care of the agency are assessed every 3 months. According to the agency's social worker:

...A child who has not bonded well will be quite deficient in development. Dr. X [referring to the child psychologist] can't say for sure that this child is developmentally lacking because they are not bonded. There could be lots of other indications. But it is another sign to look for.

In the first part of the assessment, the child psychologist spends time with the foster parents, the most primary caregivers, and the child is tested in terms of developmental deficiencies. For example, failure-to-thrive children often show gross motor deficiencies such as not walking, not sitting, not crawling, or not grasping for things. Thus the children are tested for their reaction to a face, their interaction with their caregiver, their skill at vocalization, eye-hand coordination, and so forth. Also with failure-to-thrive children, who were either premature or the mother had a difficult delivery, a full birth history of the child is taken. Then the bonding between the foster parents and the child is assessed. The interaction between the child and its birth parents, may also be

assessed. Most initial assessments are quite short, lasting only an hour. However, if this assessment indicates that the child has a behavioral problem, a fuller assessment will be done where both parent and child are monitored over a longer period of time. A detailed assessment is often required with older children as they tend to have more behavioral problems.

The Children's Aid Society complains that in the Ottawa area there are no treatment centers where addicted mothers can go with their infants. This means that mothers and infants have to be separated, which the Agency believes negatively affects bonding. As their social worker comments:

What we are finding is that with cocaine addicts especially [is that] they do beautifully in their treatment. But the bonding is so disrupted that they are unable to parent or don't want to parent. And that's a real struggle for us because lots of cocaine addicts can be tremendous parents. But they have to be separated. The treatment people don't have a lot of insight into what mothers and babies need. They first want them to focus on their addiction, and then we're looking at the needs of the child.

On the wish list of the Children's Aid Society is "a treatment facility where the babies and mothers could live together because the bonding is just destroyed". Through in-service training, the Children's Aid Society is trying to familiarize addiction counselors with the concept of maternal bonding as well as the problems that they feel addicted mothers have interacting with their infants. The lack of treatment facilities where addicted mothers can receive treatment while not being separated from

their infants is a important concern for the agency as addiction is about 80% of their caseload.

SUMMARY

These three key informant interviews have corroborated or expanded upon data obtained from an extensive literature search and which was discussed in previous chapters. In particular, the interviews reveal that the concept of mother-infant bonding is still very central to both hospital and social work practices and policies concerning childbirth and the protection of the infant. Yet at the same time, certain previously held perceptions and beliefs about the bonding process have altered considerably. Although poor maternal bonding is still believed to be linked to child abuse and neglect, the concept of bonding as it is linked to the sensitive period hypothesis has undergone a transition. Both the nurse practitioner and the social workers now emphasis the *ongoing and interactive* nature of the bonding process rather than *one best time* for forming parent-child relationships. All key informants agree that as they became more experienced working with numerous families in different circumstances, their conception of maternal bonding became more flexible. In turn, parents are now advised that while many mothers begin to bond prenatally or immediately after childbirth, this is not the case for all parents. Instead for many other mothers, parenting in the first few weeks can be quite mechanical. As they get to know their

babies and feel more comfortable in their childcare skills, these mothers (and fathers) will start to bond with their infant. Indeed as many women now feel freer to admit that they are having difficulties being pregnant, or being a parent, the demand for 'ambivalence counselling' offer by the Children's Aid Society is on the increase. Moreover, the agency's social worker explains that even women, who because of a traumatic experience did not initially want the infant, if given counselling to understand their feelings and their experience, can become completely bonded to their babies.

All key informants state that their work experience has reinforced their belief in the postulated link between poor maternal bonding and abuse and neglect. On the other hand, all key informants admit that their assessments are based on only a small piece of mother-infant interaction. Poor maternal bonding was identified as only one of many variables that have to be considered together in order to identify a 'high-risk' situation. Nursing assessment of mother-infant pairs still depends on questionable attitudinal and behavioral criteria. However, the stated focus of these evaluations has currently shifted to include the immediate family unit. It is now recognized that grandparents and other significant people can bond with the child and compensate for the lack of emotional nurturance from the mother. As more medical and social work professionals interact with mothers and infants in a variety of situations,

and from a variety of sociocultural and socioeconomic backgrounds, the previous emphasis on a brief sensitive period for maternal bonding has proven not to be viable.

Thus these interviews indicate: a) a shift away from the brief sensitive period hypothesis; b) that nurses and social workers now face with new difficulties as they evaluate mothers and infants from various ethnic backgrounds, and different social classes; c) the need for further research into item b) and into the various programs and policies of the Children's Aid Society that are predicated upon the bonding concept (e.g. the Infant Stimulation Program, the Fostering-With-A-View -to-Adoption Program).

CONCLUSION

Tucked away in disciplinary boundaries, protected by a thick layer of scientific doubt, and properly critiqued, bonding theory and research might seem relatively benign. But knowledge of any sort is a resource available for use beyond the walls of academy, and bonding theory very quickly found its way out of the laboratory and into medicine and social policy (Arney, 1980:556).

The bonding theory, despite its methodological flaws and ideological biases, has been readily accepted by the medical and social work professions as well as the general public. In fact, some people still feel that the evidence concerning the effects of bonding is so substantial that social policy and programs can be based on it. In trying to understand the scientific controversy that has surrounded the bonding thesis since its conception, this thesis has asked three main questions: Is there a valid empirical basis of data for the sensitive period concept and its effects? To what extent is the theory a product of social and political influences? And third, what are the practical consequences of the theory? The following is a brief recapitulation of the main evidence and arguments presented in this process of discovery.

First, there seems to be no direct evidence from the ethological research or from human studies that directly supports the hypothesis that there is a *brief sensitive period* immediately after delivery during which it is necessary for the mother to form an attachment to her infant. Klaus and Kennell understood the necessity of understanding the

biological and social factors that are inherent in human behavior and development. Nevertheless, by selective choice of species, and by concentrating on commonalities instead of diversity at the species and individual level, they extended the animal research beyond the data in an attempt to construct universal principles of maternal behavior. In addition, Klaus and Kennell ignored their own evidence concerning the interactive nature to the bonding process. Instead the mother's behavior, especially any negative influences, became the central focus of their research. The father's influence, as well as that of other family members, on the mother and infant is conspicuously absent. This unidirectional approach became the model for the early human bonding studies, and currently informs much practice and research in nursing, social work, and child psychiatry.

Relevancy to Anthropology:

Recently anthropology has recognized the importance of the mother-infant bond for the development of language, learning, and for the formation of subsequent bonds that are the basis of human social institutions and organization (Laughlin, 1989). Trevathan (1987:36) observes that there is a lack of systematic cross-cultural data on pregnancy, birth, mother-infant and family interaction in non-industrial, rural and non-hospital environments. While in recent years more cross-cultural research has been undertaken on the nature of mother-infant

relationships, there is also more disagreement (Amighi, 1990:138). This is not surprising for as many critics point out the early studies on mother-infant bonding initiated a research field with many theoretical and methodological flaws. It is from this field that cross-cultural studies draw their hypotheses and research methods.

Three differing hypotheses about the nature and conditions of maternal attachment cross-culturally are competing for prominence: 1) maternal behaviors are more or less universally patterned across species, 2) maternal behavior varies systematically by such factors as cultural background, gender of the infant, maternal parity, obstetrical medication, and so forth, and 3) maternal behaviors vary randomly or with no discernible patterns (Amighi, 1990:132, 144; Trevathan, 1987:54-55). Amighi (1990), Lewis and Ban (1977), and Scheper-Hughes (1985) argue that such contradictory hypotheses arise from methodologically weak studies based on cultural descriptions of ambivalent, or even contradictory, valuations of maternal nurturance. They also state that the use of pre-determined distal units of behavioral evaluation, which the early bonding studies introduced, are not appropriate for non-Western societies where the emphasis instead is on the holding, touching, feeling kinesthetic sphere.

The questionable validity of the early bonding research raises another equally important issue. Enriquez (1982:62) mentions that, due

to the lack of documentation of cultural differences in maternal behavior, the medical profession in the United States often questions the maternal attachment of mothers from different ethnic backgrounds who seem to deviate from the accepted norms of bonding behaviors. Similarly, my key informant interviews with a social worker from the Children's Aid Society and with the medical personnel from a local Ottawa hospital suggests that only recently is there any awareness of cultural differences in behavior, norms, and values among different ethnic groups that make up their clientele. In a multi-cultural society like Canada, it is imperative that our social practices and policies be sensitive to the cultural norms of different socio-economic classes and ethnic groups. This is an area where anthropological research is needed to determine and to help integrate the needs of the different ethnic communities with the practices and policies of the community's hospitals, and the Children's Aid Society.

Research on mother-infant bonding has far reaching implications for understanding the determinants of human behavior and development, and for making valid extrapolations across different ethnic groups and classes within our culture and in cross-cultural studies. Thus it is important to understand to what extent we can find a valid base of data that can be used, and to understand the practical consequences of the bonding theory for future research on mother-infant relationships as well as child abuse and neglect.

Early Research on Mother-Infant Bonding:

Critics of the early human research have cited the lack of procedural and methodological controls that are expected in normal scientific research. Studies have been difficult to replicate, and when attempts were made, results across studies have been inconsistent. While some researchers claim to have demonstrated positive short-term effects of early mother-infant contact, others claimed no significant effects. Only six studies have reported positive long-term consequences and five have reported no long-term effects. Thus one can only state that early contact has no enduring effects on maternal attachment, but may sometimes have modest short-term effects on *some* mothers in *some* circumstances. However, what these characteristics might be is not known as the evidence is inconsistent or lacking (Lamb, 1983:492).

The complexity of mother-infant interaction creates problems in the selection of variables to study. Some researchers have ignored the problem by assessing global categories, such as 'caretaking style', or maternal 'warmth' or 'responsiveness'. Global assessment of these independent variables is too abstract and coarse to capture many of the subtle nuances of maternal behavior. Thus other researchers have tested either: 1) the frequency of various maternal behaviors such as gaze, vocalization, and touching, or, 2) some measure of success at breastfeeding, such as length of time mother breastfeeds her infant or

extent of supplemental feeding. However, assessing the patterning, content, and quality of component bonding behaviors and their inter-relatedness has also proven to be formidable. In most studies the correlations between measures has not been high, and a unitary attribute of 'sensitive' mothering has yet to be identified. In fact, single indicators can only reflect some partial aspect of mother-infant interaction. Early studies by Stern (1977), Dunn (1975), Schaffer and Dunn (1977), and Lewis and Ban (1977) found that instead of discrete behavioral units, attachment is displayed as a package of interactional and complementary behaviors between mother and infant.

Harlow (1971) postulates that in humans maternal love develops over a period of several months. Based on their longitudinal studies of mother-infant interaction, Dunn (1975) and Leiderman (1981) have come to similar conclusions. Leiderman (1982:460) states that "even after the initial two to three months of separation from their premature infants, mothers do establish social bonds that cannot be differentiated from the bonds established by the mothers of prematures and full-term mothers who initially were not separated from their infants". He also comments (1982:461) that "A sensitive phase, if it does exist, is at least three months in duration and not only influences the mother-infant bond, but extends to the familial network." Dunn's (1975) study demonstrates the extreme difficulty of basing predictions of future relationships on the

early mother-infant interactions. Dunn (1975:169) summarizes that the absence of a correlation between co-ordination measures from the early feeds and the later consistent maternal measures “suggest that the post-partum period, rather than being a sensitive period, may be a time when the relationship between the mother and baby is buffered against difficulties of adjustment”. She adds that it would make sense in adaptational terms if problems of adjustment did not have long-term consequences. The results of her study indicates that it takes at least 3 to 4 weeks for mother and infant to settle into a characteristic pattern of interaction. This is supported by my interviews where all key informants state that in their experience, it can take weeks or months for the mother-infant bond to become firmly established. Indeed, as Herbert et al., (1982:218) state “it is difficult to comprehend the biological utility or social value of a situation in which difficulties of adjustment during the often exhausting, depressing days following labour and delivery had long-term consequences for the mother-child relationship”.

Leiderman (1981), Leiderman and Seashore (1975), and Rutter (1981) discuss the effects that maternal separation may have on premature infants. Although separation in the newborn period may have a short-term effect, they argue that it is probably non-specific, acting through the family as a stress that creates disequilibrium in the nuclear family structure. Both mothers and fathers are affected by separation.

The postpartum period is simply a time of high saliency and arousal in which learning can take place rapidly. The most reasonable explanation for maternal behaviors, Leiderman and Seashore state (1975:230), "is one that emphasizes cultural, social and experiential influences on the mother — influences that are modified according to well known principles of social learning".

Relationship Approach to Mother-Infant Bonding:

Evidence from various sources, especially current studies on parent-infant interaction, child abuse and neglect, and the hormonal correlates of maternal responsiveness, indicates that a 'ethological' model of human maternal bonding can be constructed which takes into account both cultural and psychobiological factors. From this evidence and modifying Hinde's 'relationship approach', mother-infant bonding is re-defined as:

- a process of *interactive* behavior between mother and infant that takes place *over time* and that leads to a state of mutual attachment and entrainment.
- the frequency, patterning and quality of the mother's behavior (or that of other caregiver's) is *guided by*: inherent 'predispositions' and motivations, past experiences and culturally shared expectations of appropriate infant behavior, responses received from the infant, responses received from other family members and from their wider

social group, cultural values and beliefs (including those of appropriate childcare and rearing) and characteristics of the sociocultural environment

- the infant has signaling and other manipulative behaviors as well as underlying predispositions and capacities for acquiring the necessary energetic, affectional and informational responses from the mother or other caregiver. Initially the infant's behaviors are under genetic control but as the infant develops, his/her behaviors are modified by the mother's responses as to increasingly conform to the particular norms of the culture.

The behavioral strategies employed by both the parent(s) and infant are aimed at accomplishing three universal goals: infant survival and eventual reproduction, economic self-sufficiency, and enculturation. These behavioral strategies vary according to individual needs, environmental conditions and various sociocultural systems. Although this position assumes that there is no best prototypical caregiving strategy or pattern of child development, there are underlying universal constraints that parent-infant behavioral strategies must fulfill (Harkness and Super, 1983; Hinde, 1982; Morelli and Tronick, 1991:42). Thus the regularities of the physical, social and psychological parameters of the mother-child environment, as well as culturally shared norms for behavior by and towards individuals, is the source of the infant's

enculturation, including the experience, encoding, and expression of affection. Various studies were cited to demonstrate that mothers from different cultural, ethnic and/or socioeconomic group have different patterns of infant care, and their infants' pattern of behavior and development also differ correspondingly.

Psychobiological Correlates of Maternal Responsiveness:

Currently there are very few studies that have researched the psychobiological correlates of maternal responsiveness in human mothers. While human maternal behavior is considerably more complex in its organization and control than are functionally similar behaviors in other mammals, some important commonalities are apparent. Studies of the biological basis of maternal behavior in various species such as rats, goats, and sheep suggest the joint operation of neural/hormonal and experiential mechanisms that determine maternal behavior. In particular, steroids (estrogen and progesterone), an anterior pituitary hormone (prolactin) and oxytocin play an important role in triggering maternal patterns associated with pregnancy and parturition. The pattern of circulating levels of these hormones is quite similar in nearly all mammals that have been studied, with hamsters and monkeys as notable exceptions. Too few species have been studied, however, to allow researchers to determine whether the uniformity in hormonal secretions during pregnancy implies a similar uniformity in the hormones that

stimulate maternal behavior (Rosenblatt, 1990:47). Particular questions to be researched include: 1) the timing of the onset period for maternal behavior which is regulated by hormonal influences, and the time of the maintenance phase which is regulated by stimulation received from the infant, and 2) the amount of mother-infant contact needed and when it must occur.

Similarly, preliminary studies suggest that in human mothers maternal responsiveness is multiply determined and may be differentially related to hormones and experience at different times. For instance:

- increases in cortisol and possibly other pregnancy hormones (ACTH, estrogren, prolactin etc.) may not directly activate positive maternal behaviors, but may do so indirectly by increasing the mother's general state of arousal, her responsivity to infant cues, and the extent to which she is influenced by interactions with her infant.
- in support this hypothesis, recent studies found that low levels of corticotropin releasing hormone was related to postpartum depression in new mothers
- cortisol, or more likely ACTH in the postpartum period, may facilitate the mother's ability to recognize the distinctive odour, vocal and other characteristics that would promote subsequent mother-infant interactions. Mothers would need less exposure to infant cues than

would fathers or nonparturient women to produce the same level of recognition.

- variation in receptor chemistry may be the key to the differential effects of hormones among various women

Synchronization of Mother-Infant Interaction:

Early research has demonstrated the conversation-like pattern of mother-infant interaction in which each partner appears to be responsive to each other's cues and signaling. Although preliminary, current studies suggest that this *interactive* pattern might be created in 3 ways:

- Periodic events cycle on and off at regular, precise intervals. Periodic cycles occur in the behavior of mother and infant and these behaviors then become synchronized through a process of mutual entrainment.
- Expressive behaviors are autocorrelated (occur nonrandomly) over short intervals, but they are contingent on the preceding behavior of the partner
- bidirectional mother-infant behavior could occur in both these ways.

All three hypothesis postulate active processing of social signals by the infant and are consistent with earlier findings that infants respond in specific and appropriate ways to their mother's communicative displays.

More research into the nature of this *interactive* behavior between mother and infant needs to take place. In attempting to reduce

complexity, researchers often have not taken fully into account many relevant variables such as the 'goodness of fit between the mother's and infant's temperament, family structure, birth order, environmental stimulation, ethnicity, religion, the family's socio-economic status, or the social and environment context. Virtually no studies on child development of parent-infant interaction have accounted for all of these relevant variables. However, as demonstrated, these variables are important influences on mother-infant interaction. Indeed, as Clarke-Stewart (1977:7) states "only studies which attempt to control those variables which are not under investigation can provide definitive evidence about the variables being examined". This problem is common in studies which consist of simple comparisons of two populations that differ in some one obvious dimension (e.g. socioeconomic status) but which fail to consider other ways in which the populations differ (e.g. race, health, and environmental context).

Co-option of the Bonding Hypothesis:

Bonding research, critics such as Arney (1980:547) charge, is a 'pseudoscience' which helps to explain its appeal and the paucity of criticisms directed toward it. Indeed, bonding research and its application reflects deeply embedded problems within western society regarding the use of science. Science is socially contingent; it is a social process. As Freidson (1970) clearly puts it while medical knowledge may

be based on an objective science, the *application* of medical knowledge often is not. Medical knowledge and evaluation of it is mediated by the social and political circumstances in which doctors practice. This places them in a very powerful position:

Medicine is not neutral. It is either deliberately amoral, guided by someone's else's morality - or it is actively moral by its selective intervention. As a moral enterprise it is an instrument of social control which should be scrutinized as such without confusing the "objectivity" of its basic knowledge with the subjectivity of its application (Freidson, 1970:348).

Medical knowledge, Freidson (1970:351) warns, cannot properly be a guide for social policy for it is a creation of the profession itself, expressing the commitments and perception of a special occupational class rather than that of the public as a whole.

To be specific, research on childcare in the family has mainly been conducted by white, middle-class clinicians and psychologists, and thus knowledge produced will reflect the biases and value orientations of these researchers. For many in the medical and social work professions, as well as many parents, the bonding thesis is an ideal political platform by which to ensure that their middle-class values and norms concerning the centrality of the family, especially the mother-infant relationship, are reflected in child welfare and hospital practices and policies. As mentioned previously, on May 16th, 1995, Dr. Barry T. Brazleton and Hillary Clinton recommended the establishment of early intervention programs throughout the United States where socially and economically

improvised mothers will be taught to care for and interact properly with their infants. This they believe will be the first major step toward resolving the million verified incidences of child abuse in the United States³³. However, as evidence demonstrates, multiple factors are involved in all facets of mother-infant interaction, including child maltreatment. Moreover, although critics of lower-class families often assume that child care in these homes is comparable to that provided in 'depriving' institutions, when differences have been noted, they often favor the infant from the less affluent family (Clarke-Stewart, 1977:12). Evidence demonstrates that the middle-class mother does not do more for her infant, but rather has a *different style* of responding to her infant.

On the other hand, research on the interplay of biological and environmental factors in human development point to the importance of the interaction of socioeconomic conditions with perinatal and postnatal vulnerability. High risk infants do better in high socioeconomic environment. Although the typical behavior of parents in different socioeconomic groups may not differ significantly, other conditions associated with socioeconomic conditions (poverty, father absence, health, nutrition) may have important consequences on infant development (Clarke-Stewart, 1977:13). The point to be emphasized is that with any research once the data are used as guidelines for moral

For source of this figure see Kaplan et al., 1994:786-795.

behavior, there is great danger than the results will be shaped to suit various social and political interests.

During the 1970s, the bonding hypothesis was quickly co-opted by various interest groups — the natural childbirth movement, childcare educators, child welfare activists, and the American Medical Association — in their effort to reform child welfare as well as hospital practices and policies. Although challenges to hospital childbirth practices had begun in the 1940s, as Arney (1980:560) states, “practices that have their own scientific basis cannot simply be changed in a profession the very existence of which is dependent on the autonomy that science, or at least a facade of scientism, accords it”. The bonding hypothesis provided ‘incontrovertible’ scientific evidence that researchers knew more about pregnancy, childbirth, and the mother-infant relationship than was previously known. Therefore accommodation of new knowledge, practices, and policies became permissible when it was not previously permissible.

At the same time, the impetus for change also came from obstetricians’ fear of losing their livelihoods as births increasingly were occurring at home or at freestanding alternative birth centers. In fact, throughout the 1970s, obstetrics was under attack from other specialists who encroached on their territory; from the government who threaten the profession with more regulation; from the press which reported higher

infant mortality rates in the United States compared to other countries; and from the natural childbirth movement. In response to such attacks, obstetrics closed ranks to become even more specialized and clinical than previously. There was a change in focus from the management of childbirth to monitoring and surveillance, and there was a concurrent shift from the woman as patient to the fetus. With the development of sophisticated obstetric technology, a risk orientation, and perinatal medicine, the image of childbirth fluctuated between the dangerous illness concept promoted earlier and the natural model promoted by the natural child birth movement (Burst, 1983:47-53). In this environment, the bonding hypothesis was readily accepted for it implied that simple interventions — 10 minutes of postpartum bonding — could correct problems of child abuse as well as failure-to-thrive syndrome.

Over the past three decades, numerous clinical and research studies (especially prospective and large scale studies) clearly demonstrate that poor maternal bonding is not related etiologically either to child abuse or to failure-to-thrive syndrome. Critics cite various problems with studies which did report such a casual link: a) the majority were small retrospective studies of hospital care records; b) the type of pregnancy experienced, family problems, parent-child separations, and child's behavioral problems were not mentioned in these hospital care records; c) there is no evidence that a bonding

problem existed, or d) that such bonding problems were the cause of later abuse and neglect. On the other hand, evidence does indicate that a host of interactive factors — the biopsychological characteristics of both the parents and the infant, the family's social support system, the parent's own abuse as children, marital and/or economic stress, cultural values and norms regarding childcare practices, and so forth — are implicated in child abuse and failure-to-thrive syndrome. If intervention procedures are to be effective, sound frameworks need to be established noting both baseline interactive styles and the specific parent-infant behaviors that need to be changed.

Nevertheless, a review of the social work and the allied health science literature, as well as key informant interviews, indicates that the 'quality' of the maternal bond is still used to identify mother-infant pairs believed to be at risk for future abuse or neglect. On one level, key informants now emphasize the *interactive and ongoing* nature of the bonding process. However, at the level of practice, assessments are still based on a unidirectional model: mother-to-infant. What are the father's, grandparents', and siblings' responsibility as part of the family unit? Nor is there any evaluation of how the baby's temperament affects the mother's behavior and the family as a unit. However, as mother-infant pairs are only in the hospital for two days postpartum such evaluations, if they were done, would be inconclusive. The child is once

again a passive recipient of negative socio-environmental and parental influences. Moreover, many of the bonding indicators reflect a white, middle-class North American bias and it is unclear how they can accurately measure the quality and quantity of maternal bonding. For example, nursing evaluation of attitudinal and behavioral criteria, such as eye-to-eye contact, the tilt of the mother's head, ease at breastfeeding, naming of the infant, the purchasing of infant supplies, or desire for 24 hour 'rooming-in', are spurious measures of maternal bonding.. Moreover, such assessments are usually very subjective. Current nursing assessments only reflect our cultural expectations of appropriate maternal behavior and attitudes, and in order to meet these expectations the mother first has to be aware of them. Indeed, as already discussed, research indicates that a mother's behavior and attitudes varies according to inherent maternal predispositions and other characteristics, her socioeconomic and cultural background, as well as the infant's characteristics and predispositions, and numerous environmental factors.

The validity of the bonding thesis and its correlation with child abuse and neglect has been accepted uncritically by many in the social work and medical professions. Indeed, key informants displayed no knowledge of the early bonding research (animal and human) nor of the critiques the research engendered. Nor was there an awareness that

various studies did not substantiate the casual link between poor maternal bonding and child abuse and neglect. Nevertheless, this ideology also informs other programs of the Children's Aid Society, such as their Infant Stimulation program, the Fostering-With-A-View-to-Adoption Program, and rehabilitation programs for addicted mothers. More importantly, the agency's emphasis on the negative consequences of separation for the mother-infant bond often brings them into conflict with the family court system and various other agencies over what policies and programs are in the 'best interest of the mother and child'.

For instance, the Children's Aid Society complains that mothers and infants are separated during the course of the mother's treatment for drug addiction. In contrast, the treatment centers believe that these mothers need to first focus on their addiction. While the agency's wish to allow addicted mothers to keep their infants with them during treatment may seem reasonable and commendable, there are certain problems with this position. The Agency is mistaken in their belief that mothers addicted on cocaine cannot focus and be attentive to their child. On the contrary, while on cocaine the mother's mental state is in equilibrium which means that she can focus and thus be attentive to her child. According to current neurochemical theory of addiction, most substances of abuse, with the exception of alcohol, have particular neurotransmitters or neurotransmitter receptors on which the

substances have their effects (Kaplan et al., 1994:425-429). The major neuro-transmitters that may be involved in the development of substance abuse and dependence are the opiate, catecholamine (especially dopamine) and γ -aminobutyric acid systems. The dopaminergic neurons in the ventral tegmental area that project to the cortical and limbic regions, especially the nucleus accumbens, are believed to be involved in the sensation of reward and to be the major mediator of the effects of such substances as amphetamine and cocaine. Thus a person with too little endogenous cocaine activity or who has too much activity of an endogenous cocaine antagonist may be at risk to develop cocaine dependence. Even in a person with normal endogenous receptor function and neurotransmitter concentration, the long-term use of a particular substance of abuse may modulate the brain's receptor's systems so that the brain requires the presence of the exogenous substance to maintain homeostasis. This reception-level process may be the mechanism for the development of tolerance within the central nervous system (Kalpan et al., 1994:392).

However, during withdrawal, the mother's mental state is now in dis-equilibrium as there is a biochemical change in the receptor chemistry of the brain. After cessation of cocaine use, a postintoxication depression (crash) is characterized by dysphoria, anhedonia, anxiety, irritability, fatigue, hypersomnolence, and sometimes agitation. With

mild to moderate cocaine use these withdrawal symptoms can last up to a week and usually peak in two to four days (Kaplan et al., 1994:427) Thus during withdrawal, the mother can no longer focus and interact with her infant. There is greater chance of poor maternal bonding or even abuse and/or neglect during withdrawal from cocaine or other substances of abuse.

In addition, one has to consider the effects of the mother's drug or alcohol consumption on her pregnancy and her newborn whose developing brain adapts to the cocaine or other substances. While cocaine normalizes the mother's mental state allowing her to focus on her child, in contrast, her infant, who is addicted, but not on the drug, is not in a normalized state. The baby's mental state is in dis-equilibrium. This means that mother-infant interaction and bonding would be extremely difficult and aggravated.

A possible solution to the Children's Aid Society concern that the mother and infant bonding during the first few weeks postpartum, is to send the mother to receive treatment for her addiction after the bond with her child has been established. The baby will also have to be treated for his/her addiction. Although there has been an increased sensitivity (or more accurately hypersensitivity) to the vital environmental facilitators of healthy infant development in hospital wards and child

protective services, much practice still fails to examine the totality of the socio-environmental variables involved.

In cases of abuse and neglect, the family court judge decides whether the safety and well being of the child is so seriously jeopardized that the removal of the child from his/her natural parents is warranted. It is disturbing that the Children's Aid Society, as do child protection services in the United States and Britain, base the advice they give in these cases upon the belief that once the infant is taken away at birth, it is inadvisable to return the child to its natural parents, even when circumstances allow it because the period for bonding is now lost forever. Moreover, the Children's Aid Society forces the court's hand by placing the infant immediately into its Fostering-With-A-View-to-Adoption Program before the court case is even heard. The bonding thesis is cited to assure the courts, parents, and the public that such actions are taken in the 'scientifically best interest of the child'. In other words, the Children's Aid Society uses the bonding thesis as a means of exerting social power and control in its tug-of-war with the family court system, and especially over those families who are relatively marginalized in mainstream society.

It is also disturbing that despite three decades of scientific evidence and controversy, many social scientists still accept the bonding hypothesis uncritically. For example, Davis-Floyd, in *Birth As An*

American Rite of Passage, 1992, compares the technocratic and holistic paradigms of childbirth. Although Davis-Floyd acknowledges the various problems inherent in the early bonding research, she concentrates mainly on the benefits of physiological interaction between mother and infant in the immediate postpartum period, and the symbolic connotation of first mother-infant contact. As Davis-Floyd (1992:143) states "the handling of the baby to the mother constitutes a powerful ritual acknowledgment on the part of society that she is now a mother, that her transformation is complete...". While Davis-Floyd is correct that this initial contact is an emotionally powerful moment, the effects of the bonding imperative are not always benign. Davis-Floyd does not mention the dubious validity of nursing assessment of mother-infant interaction and the consequences of intervention by child protective services based upon such assessments. Nor does she mention the simple fact that many mothers — unmarried teenage mothers, mothers from different ethnic or socioeconomic groups, mothers who experience difficulty breastfeeding — often state that they feel harassed by well-meaning nurses whose main concern is to ensure that proper bonding behaviors and attitudes are exhibited.

The exploitation of the bonding ideology in order to sell the benefits of 'holistic' approaches to childbirth is even more pronounced in the hands of other feminist scholars. For instance, Leni Schwartz, an

environmental psychologist, in *Bonding Before Birth: A Guide to Becoming a Family*, 1991, extols the benefits of birth workshops she conducts where prospective parents can get information on pregnancy and birth, explore their feelings during the childbearing year, and engage in 'prenatal bonding' rituals. While the aims of an 'holistic' approach to childbirth is commendable, the information presented, especially on mother-infant bonding is highly inaccurate and one-sided. According to Schwartz, post-birth physical contact is so integral a part of the birth process that it may be seen as the fourth stage of labor and should not be considered only as part of the delivery process. In support of this claim, she (1991:17) states that Lorenz has shown that psychological imprinting immediately after birth is relevant in this period. This sensitive period is a once in a lifetime opportunity for attachment that would never again be available. And furthermore:

the significance of the period immediately following birth for the emotional well-being of the baby has also been clearly shown by the pioneering work of Drs. Marshall Klaus and John Kennell..." (Schwartz, 1992:17).

The claims made by Schwartz become even more emphatic:

In the studies of Klaus and Kennell, women who were able to have immediate extended physical contact with their babies formed deeper attachments than mothers where were not permitted, because of hospital regulations, to perform the bonding ritual... All animals exhibit this welcoming behavior. Newborns need the tender welcome and security of maternal touch. We know that babies that are not bonded *may die* — either an *actual physical death or a psychological one and are forever in search of the missing bond...*(Schwartz, 1991:18) (italics added).

According to Schwartz (1991:19) "it is quite clear that the occurrence of the first few hours after birth determine the future development of the child". In the following sentence, she (1991:19) recommends that "if, for some medical reason, a mother cannot be with her newborn immediately after birth, it is possible to have the father or a motherly surrogate hold and touch the baby". None of the critical reviews of the bonding research nor of Lorenz's work are cited by Schwartz.

In the hands of such social scientists the bonding hypothesis is once again reduced to mere 'pseudoscience'. What is the price paid for such one-sided advice? What about mothers who are unable to have this immediate contact with their newborns, either because of illness in the baby, or mother? As in the late 1970s and 1980s, will we again see mothers who were separated from their newborns in premature or intensive care units showing anxiety and guilt reactions? How many infants have been removed from their natural families based upon dubious assessment of mother-infant interactions? How many infants have been left in the care of abusive or neglectful parents because the parents when examined by a social worker exhibited 'normative' bonding behaviors? Indeed, the problem for the social worker as Herbert et. al explains is very complicated:

..the pseudoexplanatory properties of the term 'bonding' may inhibit the painstaking thought and analysis required when she is assessing a child in the context of a family with complex social and emotional problems in all of its members. Encountering what she perceives to be failure of bonding, the social worker is likely to link

it aetiologically to the child's difficulties and thereby be deterred from assessing precisely, in behavioral terms, where and when, and in what situations it occurs (Herbert et al., 1981982:216-217).

Of course, the social worker cannot afford to risk Type II errors — denying relationships which actually exist, because of a cautious attitude to evidence. However erring on the side of making Type I errors (asserting relationships falsely) may also be damaging to parents and infants. As Herbert et al., (1982:217) aptly state "Interventions, which, at best, are ineffectual, at worst, harmful, may be the cost".

Our understanding of the mother-infant bond, as well as child abuse and neglect, is currently very limited. However, sound research requires that scientists move beyond their various ideological orientations to adopt a multiple perspective approach and to account for *all side-effects* of the problem being studied. Any ideology, especially when based upon false premises, provides the opportunity for control and power, destructive goals, the legitimization of such goals, the pressure to participate in them, and the protection of abusive practices and social policies. We need to avoid the type of intervention program currently being advocated by Dr. Brazleton and Hillary Clinton in the United States. Adding an 'ounce of bonding' will not solve problems of family poverty, lack of social supports, absentee parents, or child abuse and neglect.

Future Directions for Research:

My overview of the literature and praxis indicates that research is still required in the following areas:

1. The study of individual differences to determine how conditions surrounding labor, delivery and recovery affect maternal responsiveness. For instance, how do factors such as parity, infant's gender, planned or unplanned pregnancies enhance or depress the effects of early mother-infant contact? Is the affective quality of this first experience contained in later mother-infant interactions?
2. The assessment of parental feelings, attitudes and cognitive expectations and perceptions of the infant is needed to supplement dependent variables used in current studies.
3. The in-depth study of the effects of early contact on adults other than mothers, especially fathers, in order to separate psychological and physiological processes underlying the effects of contact.
4. The documentation of processes involved in early contact and of behaviors during first interactions for both infants and parents.
5. As parents adopt children of different ages, researchers could test the hypothesis that the onset of sensitive phase for bonding varies with the age of the child.
6. The comparison of parental behavior of adoptive children with that of natural parents, and the behavior of mothers and fathers who have both

natural and adoptive children. This type of study could help to untangle the complex series of event bound up in childbirth, early contact, feeding practices and sensitive phases in social bonding.

7. The in-depth study of the hormonal correlates of maternal responsiveness in human mothers, especially concerning the variation in receptor chemistry in different women.

8. The determination if mother-infant interaction is created by periodic, stochastic behavioral cycles or a combination of both

9. The development of a good working model of mother-infant interaction which successfully accounts for both biological and social factors.

10. The continuation of cross-cultural research on pregnancy, childbirth and mother infant interaction to determine cultural and biological similarities and differences.

11. The continuation of longitudinal and prospective studies on the variables linked to child abuse and neglect. Also important is the need to establish a framework noting baseline interactive styles as well as the ability to pinpoint which behaviors are linked to child maltreatment and thus worth changing.

12. Similarly, the continuation of longitudinal and prospective studies on the biological and cultural factors involved in failure-to-thrive syndrome and the 'difficult' or hyperactive child. Current research indicates that 'difficult children' often have developmental and learning disorders which

may result from genetic or neurological disorders. For example, attention deficit disorder with hyperactivity various neurological signs have been identified, such as the distribution of neurotransmitter an receptors in the central ganglia and EEG normalities in the frontal lobes (understimulated frontal lobes) (Kaplan et al., 1994:1063-1064).

The above suggestions indicates that our knowledge about the initial mother-infant interaction and effects on later behavior is still very sparse. Since the early studies in the 1970s were published, public awareness of the bonding thesis and the subsequent changes in hospital practices have combined to create a climate in which it has been very difficult to do the experiments that can properly answer the questions that researchers should have been asking in the last three decades (Goldberg, 1983:1374). However, as child protective practices and policies, as well as recommendations for new intervention programs, are predicated on the bonding theory, it is imperative that research, especially multi-disciplinary research, in this area continue.

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Appendix A

INTERVIEW QUESTIONS: SOCIAL WORK PROFESSION

1. As a social worker with children, what is your primary role or responsibility?
2. How has this role changed since you first began to practice? How did these changes come about?
3. At university what were you taught about the development of the mother-infant relationship during the first few hours after birth?
4. What have you subsequently learned about it?
5. How would you define mother-infant bonding?
6. Why is bonding important?
7. When does mother-infant bonding occur? What happens if does not occur just then?
8. Are you familiar with the research that the bonding hypothesis is based on?
9. Are you familiar with any articles or books citing methodological problems with the early bonding research?
10. What criteria do you use in assessing the quality of the maternal bond?
11. Are the same criteria used when assessing the relationship of mothers and infants from different ethnic backgrounds or from different social classes? [if so, why?] [If not, why not?]
12. What factors seem to influence mother-infant bonding, either in a positive or negative manner?
13. Do you feel that there are serious consequences if a mother does not bond to her infant during the first few hours immediately after birth?

14. Are your feelings based more on your experience or more on your education and reading?
15. Do you believe that child abuse or neglect is related to poor maternal bonding? 1_____YES 2___No Why?
16. In your experience, is there any one group of mothers that are particularly vulnerable to poor maternal bonding?
17. How has the concept of maternal bonding affected the adoption of infants and children?
18. In cases where infants have been removed from their families at birth and the bonding process has been disrupted, should adoption take place as a matter of course?
19. In your experience, how often do hospitals in the Region make referrals to social services or other community agencies when the mother-infant relationship is jeopardized due to poor maternal bonding?
20. Are there ways of enhancing such relationships?
21. In your experience, how has the concept of maternal bonding affected the welfare of children - cases such as custody disputes, adoption, or abuse and neglect?
22. Do you believe that children adopted immediately after birth should not be returned to the birth mother if she so requests because by then the bonding between the infant and its adoptive parents is too strong? Assume there is no other reasons for not returning the baby.
23. Does the topic of bonding come up frequently in case evaluation meetings?
24. Have there been any papers recently presented on the topic in professional meetings you have attended or heard about? [if yes, generally speaking, what did they say?]
25. Generally speaking, do you feel that other professionals with whom deal, such as nurses, obstetricians, pediatricians and psychologists, use the idea of bonding properly? [please elaborate]

INTERVIEW QUESTIONS: NURSING PROFESSION

1. As a maternal child health nurse, what is your primary role and responsibility?
2. How has that changed since you first began to practice?
3. What changes have occurred in childbirth education since you have been practicing?
4. When a mother/family leaves the hospital, what type of child care information and/or help should they receive from the hospital staff?
5. What are some of the conflicts you experience between what a mother/parents want, and what you feel must be done?
6. What problems regarding the mother-infant relationship do you feel responsible for identifying?
7. What percentage of parents seem to have had childbirth education classes? __ __ less than 30% __ 30-50%
____ 50-75% ____ 75-100%
8. Are you satisfied with what the parents are being taught, especially about what to expect during the first few hours immediately after birth?
9. How would you define mother-infant bonding?
10. Why is bonding important?
11. Are you familiar with the research that the bonding hypothesis is based on?
12. Are you familiar with the articles and books citing methodological problems with the early bonding research?
13. What criteria do you use to assess the quality of the mother-infant bond?

14. There are certain behavioral indicators of maternal attachment such as en face position, eye-to-eye contact, use of fingertip on infant's head and extremities, etc. Are these behavioral indicators also used when assessing the relationships of mothers and infants from different social classes or ethnic backgrounds? [If so, why?] [If not, why not?]
15. In your experience, besides skin-to-skin contact immediately after birth, what other factors, positively or negatively, influence mother-infant bonding?
16. What are the consequences of not bonding?
17. Do you think that child abuse is related to lack of maternal bonding? ____Yes ____No Why?
18. For parents that are assessed as having difficulty bonding what type of nursing intervention does the hospital recommend?
19. When bonding problems persist are referrals made to social service or other community agencies?
20. Where did you first learn about bonding?
 1.____Doctors 2.____Nurses 3.____Conferences
 4.____Professional Literature 5.____Popular Literature
 6.____Parents
21. To what degree are you satisfied or dissatisfied with the hospital's policy regarding the manner in which mothers and family now spend time with their infants?
 (Dissatisfied = 1; Neutral = 3; Satisfied = 5)..__1__2__3__4__5
 Comments:
22. Generally speaking, do you feel that other professionals with whom you deal use the idea of bonding properly? [Please elaborate]

Appendix B

INTERVIEW RE: EARLY MOTHER-INFANT BONDING INFORMED CONSENT

Principal Investigator: Lynda Bertrand

I am conducting research on ideas about the development of the mother-infant relationship which I will be using for a Master's Thesis in anthropology at Carleton University.

Aim of This Study: The past few decades has seen the introduction of many new ideas, some controversial, about the nature of mother-infant interactions during the immediate postpartum period. The aim of the present research is to see to what extent these ideas have been adopted and affect current practice.

Interview questions will focus on the following areas:

- a) your primary role and responsibility in the childbirth process or in child services and protection
- b) the nature of your education about the development of the mother-infant relationship, and your perception of the ideas of other professionals
- c) how these ideas are used in your work, and how they affect hospital and social work practices and policies

The interview should not take any longer than 1 1/2 to 2 hours and will be scheduled at your convenience.

It is part of Sociological and Anthropological ethics that a Request for Informed Consent be made of all those asked to participate in research. All information collected is held in strictest confidence, with records maintained and results reported in such a way that individuals remain anonymous. Participants are reminded that they may refuse to answer any specific question, and requests that their interviews not be used in the study will be respected.

At the start of the interview, I will ask for your permission to use a tape recorder. I will stop doing so, and erase the tape any time you request this.

For further information about any aspect of the study, you may contact either the principal investigator, Lynda Bertrand at:

788-2600-ext. 1436

or Thesis Supervisors:

Professors C. Laughlin at 788-2600- ext. 2606
H. Burshtyn at 788-2600-ext. 2625

Questions may also be directed to Professor F.K. Andrews, Chair,
Department of Sociology and Anthropology at 788-2600-ext. 2585

Master's Theses are available to the general public at MacOrdum
Library, Carleton University

The University requires proof of Informed Consent. Hence, I would
appreciate your signature on this to form to indicate that the
requirement has been fulfilled.

Researcher's Signature

Participant's Signature

Date

END

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FIN