

1. INTRODUCTION.

1.1. Why this Study ?

A foster child placed in a family has its placement breaking down within six months. The same child placed within another family forms a successful attachment. While the first family forms a positive attachment when a different child is placed with them soon after. WHY? This is the question I came across time and time again in my work as a psychologist, and it is for this reason I embarked on this research. I suspected that the different attachment outcomes are related to the way the foster parents and the child understand or felt comfortable with each other on a basic personality/temperament level (Steinhauer and Snowden, 1991). I found it almost impossible to operationalise this idea since so many, often intangible, variables are involved. I finally settled on a very broad meshed design comparing temperament match/mismatch with attachment outcomes as a preliminary study of the problem. The findings of this study are presented in this Masters thesis.

1.2. An Overview.

Attachment theorists assert that social experiences during the first two years are pivotal for later development and unique for both the parent and the infant (Sroufe, 1979b; Arend, Gove & Sroufe, 1979; Rutter, 1981; Goldberg, 1991). As parents, our first encounter in relating to an infant may

well be with our own child (Richards, 1980; Sluckin et al., 1983). Traditionally mothers' and fathers' experiences are different but in Anglo-Australian families there is a slowly changing cultural image from fathers as "left out of family life, taking refuge in self-conscious masculinity around sport, 'ockerdom' and alcohol as compensation" (Stagoll, 1983, p. 17) to a more complex picture of paternal involvement with the child. Russell (1987) and Bryson (1984) report, while there is considerable diversity among Australian families, that fathers are becoming more involved with their children. In his review of fatherhood in Australia, Russell (1987) suggested that differences between mothers' and fathers' relationships with their children are culturally based. In those Anglo-Australian families where fathers are involved in shared care arrangements (providing about 45% of childcare tasks), the fathers reported more satisfaction in watching their child develop and were more likely to acknowledge pleasure from their child's expression of love compared to fathers in traditional roles. Russell notes that these changes "had not occurred as a result of (the fathers) simply spending more time with their children, but rather as a consequence of the type of time they spent - having the sole and extended day-to-day responsibility for their child." (p. 351). Hence fathers are open to become involved in the type of relationship with their child that has traditionally been ascribed to the mother. Keeping this in mind, research findings on parent-child interaction may well apply to both mothers and fathers.

Schaffer (1985) notes that "meshing" (the synchronisation of the interaction between the infant and the parent) occurs from the earliest moments of life. Brazelton, Koslowsky and Main (1974) and Stern (1985) have identified the 'mutual regulation' of both mothers and infants in their interaction from the early weeks of life. Once established, the dyad's communication becomes sustained by the mutual co-operation of the parent and the child. The infant appears to respond to the affective consistency of the interaction; relating to the quality of the maternal tone, facial expressions and the familiarity of the process to their own pattern of behaviour and expression. Distortions to the relationship result in the infant displaying distress. Trevarthan et al. (1981) found that infants became distressed when the mother behaved incongruously during their interactions. Furthermore, literature on infant's affective development and attachment (Van-IJzendoorn et al., 1991; Pederson et al., 1990; Smith et al., 1988; Bretherton, 1990; Searle, 1987) support the claim that given 'sensitive mothering' a positive relationship emerges quickly for the infant and the parent. The role of the infant's characteristics in such interactions has been largely confined to predetermined species characteristics. Bowlby (1988) states that "human infants, like infants of other species, are preprogrammed to develop in a socially co-operative way" (p. 9).

The expectation that the parent-infant dyad moves quickly and smoothly into an interactive relationship, which

is rewarding for the mother and the child, appears to be supported by strong popular belief. Such beliefs, when incorrect, support the idealisation of the maternal role and further isolate mothers from support. The high incidence of depression (30% - 40%) (Phillips, 1985, p. 61) among mothers of children in the preschool years is consistent with this rationale. Bradley (1991) suggests that researchers have selectively studied the infant during those moments when the infant-mother relationship is most positive. Consequently the results reflect a more positive and non-conflicted relationship than actually exists. While the current *zeitgeist* is that these early relationships are hard work, consume long hours and in many instances contribute to depression for the mother (Pound, 1982), such aspects, Bradley would argue, are overshadowed by the idealisation of "motherhood".

The way in which both the infant and the parent manage stress is equal in importance to how they cope with their positive interactions. The parent's personality is related to their adjustment to change and the management of stress. Additionally, temperament theorists and researchers have long recognised the value of parents understanding their child's temperament in helping stressed parent-child interaction (Carey, 1982). In this research I will endeavour to examine how particular temperaments of toddlers interact with the personality of their mother or father to form what I call their temperamental 'fit' or 'lack of fit' and how this influences the quality of attachment.

1.3. Contributions from the Psychoanalytic Theory.

The importance of the relationship between the child and his/her parents has been recognised since the early 1900s. Psychoanalytic theories, in which Freud's ideas have been formative, have used terms such as "libidinal cathexis, object formation, and object relations" (Gewirtz, 1991, p. 249) to describe the uniqueness of the relationship. The theories of Freud (1920) and Mahler et al., (1975) consider the young infant as having a "protective shield" during the first months which ensured that the environment does not overstimulate and stress the infant. Stern notes that this "shield" is of "intrinsic biological origin" (Stern, 1985, p. 232). The emergence of biological considerations in Freud's ideas on infancy reflected significant changes. In his earliest formulations, Freud developed his understanding from the study of adult pathology. Hence his thoughts on infancy (Theory of Infant Sexuality) constructed an image of the infant with weakly formed Ego and a powerful Id. Freud's observations of infants (in particular his younger relatives (Bradley, 1989)) and his attraction to the ideas of two biologists, Lamarck and Haeckel (Bowlby, 1988), led Freud to develop his theory on Instinctual Drives. In either case Freud's theory stresses that the relationship between the baby and the outside world is primarily through the mother and breast feeding.

The infant's bond with the mother develops through the satisfaction of the instinctual drive in which the mother

becomes the 'love object' for the infant. The quality of this early relationship facilitates the formation of the Ego (Lamb and Campos, 1982). As the infant grows so does the range of restrictions placed upon her/his freedom with concomitant frustration (e.g., foods, weaning, freedom to explore and toilet training). Throughout this development the "mother is intrinsically tied into the infant's affective life." (Lamb and Campos, 1982, p. 157). The mother is both the source of satisfaction and the cause of frustration with the infant's desire. Mahler's Psychoanalytic theory of infant development also incorporated the idea of the infant's "protective shield" in the formulation of the first of three stages of development ('Autism'). In Mahler's terms, between the ages of two and five months the infant moves into 'symbiosis' with the mother, establishing her/his autonomy from five to twenty-five months ('Separation and Individuation'). Lamb and Campos (1982) note that Psychoanalytic theory, like other theories dealing with attachment, places importance on separation. In fact, separation anxiety was considered by Freud as an indication of object relation. Freud (1926) notes that anxiety manifests itself "when a child is alone, or in the dark, or when it finds itself with an unknown person instead of one to whom it is used - such as its mother. These three instances can be reduced to a single condition, namely that of missing someone who is loved and longed for. But here, I think, we have the key to an understanding of anxiety...anxiety appears to be the reaction to the felt loss of the object." (pp. 136-137).

Since the development of Freud's influential theories, research has shown the infant to be more capable of moderating stimulation at an earlier age than Freud initially suggested (Als, 1983; Stern, 1985, p. 21). Interestingly, Bowlby (1980) also notes Freud's attraction towards biological principles and implies that if Freud had the benefit of the establishment of Darwinian principles, his formulations may have been more in tune with his own (Bowlby's). In short, the retrospective methods used by Freud to develop his theories have directed our attention to the importance of the mother-child interaction. Freud's approach places responsibility for the relationship largely with the mother's abilities to respond to the infant's needs and frustration. Furthermore, it does not address the impact that the child's own personality and capabilities have upon the relationship.

1.4. Contributions from Learning Theory.

Learning theorists present a mechanistic view of attachment. They do not attempt to deal with underlying "constructs" and avoid concepts of Id or Ego, but instead turn their attention to the visible and quantifiable presence and timing of stimuli. Gewirtz (1972) notes that "under such an approach, there tends to be little need for gross terms like attachment or dependence, except possibly to point to the particular literature for which a set of findings are considered relevant" (p. 204). Both operant conditioning and

classical conditioning provides powerful explanations for the conditioning of emotions in infants. Behaviours such as crying, eye contact, head turning, smiling and sucking are all influenced by operant conditioning (Petrovich & Gewirtz, 1991). More specifically, behaviours which reflect the child's attachment have also been conditioned using operant procedures. Gewirtz and Pelaez-Nogueras (1991) using a small sample of nine infant-mother dyads, concluded that at the age of 6 to 9 months the infants were able to be trained to protest or not protest the mother's departure or separation. The contingencies used in this laboratory study were also likely to occur within the natural setting of the home.

Early learning theorists adopted a 'secondary reinforcement' model of attachment. While this model is no longer put forward as a full explanation for attachment, its assumptions are worth considering. Supporters of this theory, such as Sears (1963) and Gewirtz (1969), have argued that through the process of feeding, a range of maternal characteristics came to be associated with the pleasurable experience for the infant. Sears notes that among these characteristics are the mother's warmth as well as auditory and physical stimulation. In addition to this, the mother is positively reinforced by the infant's smiling and vocalising. Hence the conditioning is bi-directional, establishing both the maternal bond and the infant's attachment. However, Harlow and Zimmermanns' (1959) study of maternally deprived infant monkeys disputed the basic assumption of the secondary

reinforcement model (i.e. the food based positive association). Infant monkeys preferred non-nutrient cloth surrogates to the wire surrogates when seeking security in times of stress or just for contact comfort. In this study the wire surrogates with the food had no obvious qualities which would naturally attract secondary reinforcement status using the operant conditioning model being tested.

A parallel to human infants was drawn and used to strengthen the arguments against the behaviourist explanation of attachment. From Harlow and Zimmermann's (1959) observations, feeding was the weaker of the needs satisfied by the surrogates. Warmth and "contact comfort" appeared to be more important for the infant monkeys. They reported that the infant monkeys used the cloth surrogate in a situation of "fear" in the same manner as other naturally reared infants use their attachment figure. Later research by Schaffer and Emerson (1964) also suggested that responsiveness and physical contact has a stronger relationship with attachment than feeding. Both Schaffer and Emersons' study and the attachment study by Ainsworth et al. (1978) identified parental sensitivity as the basis of the child's preference for attachment figures.

Harlow and Zimmermann (1959) also demonstrated that the infant can become attached to an unresponsive (and inanimate) figure. Bowlby ([1969] 1987) notes that one of the central points to be drawn from Harlow and Zimmerman's study is the

primacy of the attachment response across species. At times the attachment response appears to form even in circumstances where the attachment object threatens the infant. Seay et al., (Bowlby, ([1969], 1987), p. 216) found that infant monkeys demonstrated intense attachment to abusive maternal monkeys. Similarly, attachment among human infants develops in those circumstances where the infant is exposed to poor or unresponsive parental care. In such circumstances the learning model suggests that the child (similar to the infant monkeys above) will develop behaviour which is congruent with their history. Langmeier and Matejcek (1975) note that "theories based on principles of instrumental (operant) conditioning conceive of deprivation as originating in 'an inadequate reinforcement history'" (p. 297). Crittenden (1988) report on studies of child abuse and attachment have found that children who have earlier been neglected had a higher proportion of 'avoidant attachment' while those with abusive early histories respond to their parent with 'ambivalent' feelings.

A limitation of the learning explanations of attachment is that such theories refer to the development of learned patterns of behaviour and do not consider or refer to underlying motivational factors. Maccoby and Masters (1970) have defined attachment as "behaviour that maintains contact of varying degrees of closeness between the child and one or more individuals and elicits reciprocal attentive behaviour and nurturant behaviour from those individuals" (p. 75).

Notwithstanding this, Petrovich and Gewirtz (1991) state that attachment theorists rely upon the idea of the child's internal working model of the relationship and have not sought to integrate the learning principles as explanations for the child's attachment.

1.5. Contributions from the Social Learning Theory.

A Social Learning approach to attachment has been proposed by several researchers (Gewirtz, 1991; Papousek et al., 1991; Kagan, 1976; Schaffer, 1985). Each of these theorists has proposed variations but maintained that the infants developing relationship is "denoted by a complex of child-response patterns coming to be cued and reinforced/maintained by stimuli provided by the appearance and behaviour of an attachment figure/object, in early life primarily the mother, but also others" (Gewirtz and Palaez-Nogueras, 1991, p. 126). Kagan (1976) refers to the infant developing a "schemata" for both the parent's face and the parent's location; allowing the mother or father to move around the home without the infant needing to protest. Hence, when parents follow familiar or expected patterns of behaviour the infant would show no distress. Littenberg, Tulkin and Kagan (1971) found that 15 month old infants did not protest when their mother left a room through a familiar door but would protest when their mother departed through a door which she used infrequently.

The social learning theory proposes that a social behaviour can only be understood in its relationship to the stimulus, the actual behaviour and the consequences. This becomes a complex of interaction when the consequence of one social behaviour then becomes the stimulus for another behaviour. Hence, the child's social relationships become mapped onto the 'schemata' as models derived from previous interactions with that person and familiarity with the context and the content of the relationship. Researchers who have studied child-parent interactions have used a variety of terms for these social interactive patterns: "magic moments" (Stern, 1977, p. 25), "well practiced games" (Bell, 1971), "turn-taking" (Brazelton et al., 1974) and "intersubjectivity" (Trevathan and Hubley, 1978). Through these interactions the infant forms an expectation and understanding of the rules of the relationship. Brazelton et al., (1974) in their close analysis of five infant-mother dyads, referring to the emergence of the social interaction over the infant's first 20 weeks of life, stated that "an 'imprinting' model, as suggested by Bowlby (1969) and others (Klaus, 1972), seems too simple to explain a developing relationship. There seems to be rules for interaction which were consistently being altered by each member of the dyad, and flexibility and change were necessary for maintaining optimal interaction." (p. 73). Gewirtz (1991) has proposed that attachment, as a social learning concept, operates alongside the development of identification. Both attachment and identification, in Gewirtz's terms, appear to draw from

similar experiences with attachment developing from the infant's conceptual framework of the nature of the relationship while identification evolves through imitative learning. Gewirtz notes that, similar to Bandura's theory of pervasive imitation (1971), identification may be observed "after lengthy delays or in the model's absence" (Gewirtz, 1991, p. 251). Within the Social Learning theory this process operates equally for both attachment and identification and leads to the merging of the concepts.

Coinciding with the Psychoanalytic model and the model proposed by Bowlby, the Social Learning model predicts continuity in the social interaction as the child develops. However, like the learning model on which it is based, there is considerably more flexibility and the infant is more discriminate in associating qualities of interaction with specific people and context. The Social Learning model also predicts that the infant is capable of experiencing other social models later in life and is not confined only to the experience of the primary model (Commons, 1991; Kohlberg and Diessner, 1991; Levitt, 1991; Gewirtz, 1991).

Without relying upon ethological concepts the theory assumes that the infant is predisposed to respond to human social interaction in preference to other stimuli. While this appears to be the nature of the infant, Brazelton et al. (1974) and Papousek et al. (1991) have suggested that a biochemical mechanism (the opioid system) is acting as

"mediators and possibly intrinsic reinforcers of behaviours related to affective, integrative and communicative aspects of social bonding..." (p. 117). Papousek et al. (1991) reported that in earlier studies they observed that infants showed 'pleasant feelings' in circumstances where they were successful at identifying familiar adults, objects or events, in addition to this, the infant sought to repeat these experiences as often as possible. These authors stressed that without the bio-chemical understanding the Social Learning approach has difficulty in providing a consistent explanation for the early motivation of infants and the infant's efforts to repeat sequences of behaviour.

Despite this difficulty, the Social Learning approach provides researchers with a model of relationship development which explains the effect of separation upon young children better than other models. As an example, Field (1991) reports a study of preschool children and separation. In this study the children's behaviour and physiological responses were observed (in the home) before, during and after their expectant mothers' hospitalisation. Models of attachment which emphasise the child's "felt safety" or "secure base" (Ainsworth et al., 1978) as a central mechanism would argue that with the mother's return home the child's emotional and physiological condition would return to its state of equilibrium, having once again been reunited with their attachment figure. The Social Learning approach, viewing the child's social relationships as continually

adapting and developing would expect changes in the nature of the relationship following such a separation. Field (1991) reported that the children's responses, both to the separation from their mothers and to their mother's return, suggest that they experienced a depressed reaction (less positive affect, lower activity and lower heart rate) in both circumstances. The children in the study were considered to be affected by the changes in the nature of the relationship and the continued depressed reaction is consistent with the effects of readjusting their cognitive "schemata" of the relationship.

Similar reunion behaviour has been noted among toddlers who have been exposed to brief separation in the Ainsworth-Wittig Strange Situation procedure (Ainsworth et al., 1978). While explanations have generally been tied to early parental sensitivity and the quality of maternal care (Ainsworth et al., 1978; Ainsworth, 1990), it would seem equally valid that the child's behaviour in such circumstances is resulting from their perception that the rules of the relationship have been unexpectedly changed and that they were no longer confident that their interactive/social model of the relationship with the mother was maintained. Both the '*avoidant*' and the '*ambivalent*' responses observed in the reunion episode of the Strange Situation procedure could be explained in terms of the child's difficulties in adjusting to the conflict between the internal social model of the relationship and the series of events they experience. The Social Learning experience emphasises the idea of '*mutuality*' within parent-child

relationships. Both the child and the parent develop models on which they base their expectations and construct their responses. It provides a plausible explanation for the child's attachment behaviour observed during the reunion, accounting for the children's negative responses more clearly than the theory put forward by Ainsworth and Bowlby.

Finally, the Social Learning approach has difficulty in explaining two factors. First, the model inadequately addresses the infant's predisposition for social relationships; Papousek et al.s' (1991) bio-chemical explanation remains highly speculative. Second, in explaining the development of a 'schemata' of the child's social relationships, the process and development becomes complex with no understanding of how the infant identifies the significance of variables from peripherals or non-consequential events.

1.6. Contributions from Ethology.

The ethological approach was brought to the attention of the scientific community at the Academe Des Science (1830s) in a series of debates between Baron Cuvier, advocating a laboratory approach, and Geoffrey Saint-Hilarie, who advocated a "naturalistic evolutionary point of view" (Hess & Petrovich, 1991, p. 59). Cuvier's arguments on the 'Immutability of the Species' were more persuasive at the

time, although historically the principles advocated by Saint-Hilarie were found to be the correct ones. Hess and Petrovich (1991) note that Cuvier's methods led to the establishment of comparative psychology. While the ethological approach did not gain recognition until about sixty years later, when Haeckel published his book 'Oecology' (later known as ecology). Interestingly, it was Haeckel who Bowlby (1969) notes as one of the influential writers for Freud. The contention between the schools of thought (ethological and experimental/laboratory) have persisted but avoided open debate through the ethological arguments being presented "under the conceptual framework of evolutionary theory" (Hess & Petrovich, 1991, p. 60).

This historical background helps in understanding the role ethology has played in the development of the theories on attachment. Ethological principles and methodologies have existed alongside other theoretical perspectives. They have had an impact, not in debating with psychoanalytic or learning principles but in gaining recognition for and assisting other theoretical perspective to alter or fine tune their theories to address their findings. This is evident in Freud's later works which were influenced by two biologists (noted above).

Hess and Petrovich (1991) refer to ethology as the "biology of behaviour" and note that during the course of its own ontology it has collected large amounts of data across

species. The most striking characteristic of ethology has been its methodology and procedures, more so than the area of study. Lamb and Campos (1982) refer to ethology as an approach more than a theory to understanding behaviour. However, Hinde (1982), and Hess and Petrovich (1991) contend that there *is* a strong theoretical basis which acts to set its expectations and direct its analysis. These systemic principles are applied both species-wide in relation to its environment and in understanding the mechanisms which promote the individual's behavioural responses (Emde, 1982). Behavioural patterns are considered to have three hierarchical levels: the biological or genetic basis, the organisation of behaviour in respect of other response systems within the individual, and the function of the behaviour (Hess and Petrovich, 1991; Emde, 1982). Emde referred to these hierarchical levels as 'levels of meaning'. Furthermore, each level is sub-divided into 'patterns of behaviour' and 'context analysis' yielding six levels on which behaviour needs to be considered. Referring to patterns of behaviour, Emde (1980) comments that "scientific understanding begins with a full description of species-wide behavioural patterns" (p. 5). Context analysis identifies the conditions under which the behaviour will or will not occur, the operating principles for the behaviour and the general constraints within the individual's system.

At the first level, where biological influences are operating, the human species is considered as being

predisposed to respond emotionally (Emde, 1980, p. 5). Schaffer (1985) and Papousek et al. (1991) refer to the social and communicative predisposition of the infant.

The second level of understanding described by Emde is referred to as the organisational state. Changes in the nature of behaviour for the human infant occur at two months (Emde 1980; Emde, Gaensbauer and Harmon, 1976; Horowitz, 1984) and then again at seven to nine months (Stern, 1985; Kagan, 1978a; Trevarthan and Hubley, 1978). Among these changes, it has been noted that smiling and changing patterns of REM sleep take place at the same time (Spitz, Emde and Metcalf, 1970) suggesting the involvement of an underlying neurological development. During the first three weeks of infancy, smiling occurs without reference to social interaction. However, from that time on the smile response is occurring increasingly in response to social interaction (Schaffer, 1985; Bowlby, 1969). Schaffer notes that twin studies have found that the onset of smiling is influenced by genetic and maturational factors. Through the emergence of the smile the infant takes an active role in engaging the parent. This response which is in part dependant on the responsiveness of the parent also appears to elicit behavioural responses from the parent, promoting the parent-child bonding process (Schaffer, 1985). Gewirtz and Gewirtz (1969) found that the infant's smiles typically elicited a smile from adults, who in turn placed strong importance on the infant's response. Other researchers (Horowitz, 1984;

Sroufe, 1979b; Kagan, 1978b) have supported the importance of underlying maturational changes promoting the infant's attachment. Horowitz (1984) suggest that at two months the infant's shift to increased visual alertness reflected a "subcortical to cortical control (shift) of visual processing" (p. 10); similarly Kagan (1978a) reports that "between 2 and 4 months the schema for the human face is established" (p. 240).

The third and final level of meaning of behaviour is referred to as the functional level (Bowlby, 1969; Hess and Petrovich, 1991) or enduring trait (Emde, 1980). That is, the interactive qualities and the contingencies of behaviour further shape the development of behaviour. Infants as young as four weeks old have been shown to discriminate in their social interactions. Fogel (1979), found that infants are focused on more subtle and expressive cues with their mothers while when attending to peers their behaviour will be more active, intense and abrupt. Similar to the learning model, the ethologists propose that at this level of analysis the relationship is bi-directional in its influences and that the interaction between the infant and the parent "are likely to reflect the characteristics of *both* partners." (Hinde, 1982, p. 65, italics in the original quote). Furthermore, Emde (1980) notes that "enduring emotional traits have to do with individual differences in response tendencies, moods and temperament; they also lead to questions of pathology." (p. 10).

In the above paragraphs I have drawn attention to the manner in which ethnologists approach the understanding of behaviour. As mentioned earlier, the ethological model draws upon a systemic/maturational approach. A central aspect of this is the development of the expression of emotion. In Freud's psychoanalytic model, where the infant is searching for satisfaction and relief of tension, emotion is considered as a motivator of the infant's behaviour. In the ethological model the significance of emotions lies with their communicative function (Lamb and Campos, 1982). Emde (1980) notes that "In our own work, we have become particularly interested in the signalling aspects of emotional expressions and the developmental progression from biologically organised states of social signalling to psychologically organised states of cognitive-affective signalling" (p. 9). The social pre-adaptiveness of the infant also involves the development of receptive abilities which follows a similar pathway through the biological states to cognitive-affective states outlined by Emde above (Schaffer, 1985).

In the context of the present discussion on attachment from an ethological model, it is of interest to consider the concept of imprinting. The principles involved in imprinting are considered to have a direct bearing on human attachment (Bowlby, 1969, p. 167; Marvin, 1977; Petrovich and Gewirtz, 1991). While the term is often used in reference to the bonding process of precocial species (Petrovich and Gewirtz, 1991), Bowlby (1969) suggests that the 'four distinctive

properties' identified by Lorenz are universal across species (i.e. "(1) that it take place *only* during a brief critical period in the life-cycle, (2) that it is *irreversible*, (3) that it is *supra-individual learning*, and (4) that it *influences patterns of behaviour that have not yet developed* in the organisms repertoire" (Bowlby, 1969, p. 167)). Scott (1960) also saw the parallel between infant and human attachment stating that "imprinting is a special example of the process of the formation of the primary social relationship" (p. 269). However, the relevance of imprinting for the understanding of human attachment is debated by other authors. Hess (1973) has argued that imprinting refers to a unique relationship between a species and its environment and to apply the term to altricial species is to neglect the special qualities involved.

The focus of much of the attachment literature has been on understanding the infant's response, neglecting the impact of the relationship upon the carer's affective system. This point has been raised by ethologists both as a criticism of researchers' preoccupation with the infant in the process (Sluckin et al., 1983) and as an omitted integral part of the ethological perspective (Hinde, 1982). There have been arguments which suggest that similar to the concept of imprinting for infants, mothers may be influenced by a genetically determined critical period in which mother-infant bonding occurs. Early studies involving the maternal behaviour of sheep and goats contributed to this perception,

initially suggesting that when animals do not have contact with their young soon after birth the bonding process is severely disrupted. However, Sluckin et al. (1983) note that, in later research, it was found that the disruption to these maternal responses was as a result of changes, for the mother, in the smell of the young animal and not to critical timing. Foreign smell on the young resulted in the rejection by the mother and she reacted as if it did not belong to her.

While this later research has not received the attention of the earlier studies, it has shown that parallels between maternal bonding in humans and in animals may follow very different paths. Investigations of the importance of a critical time for humans have similarly proved inconclusive. Klaus and Kennell's (1978) study initially suggested that increased early maternal-infant contact (within the first 16 hours after birth and over the following three days) was related to positive development for the child and the mother-child interaction twelve months later. Failure to reproduce this result (Leifer et al., 1972) has led to speculation that other variables were responsible for this outcome. Among these speculations, consistent with a systemic model, is the possibility that the women benefited (psychologically) from perceiving themselves as special by being part of the research. Svejda (1980) found that when efforts were made to eliminate the 'specialness' for those mothers receiving additional contact with their infants no differences were found between groups on the affection, proximity seeking or

caretaking measures employed. Clearly there are many factors involved in the development of mother-infant relationships. Sluckin et al. (1983) state that among mammals other than humans, maternal bonding appears to have a genetic influence in that it will occur without prior experience. They argue that the consistent nature of these findings suggests that "maternal behaviour must therefore be regarded as at least to some extent inherited, innate or instinctive. However, in the human species such behaviour is at the same time highly modifiable and subject to environmental influences, involving much learning." (p. 74). Similar dynamics may also operate for fathers as Sullivan et al. (1979) found strong similarities in both mothers and fathers behaviour towards the infant soon after the birth of a child.

In summary, although research is continually attempting to give an understanding of the way in which the attachment behaviour develops, the process operates at an individual level and it can be argued that each relationship has its unique qualities. The parent's behaviour towards the infant will invariably affect the infant's behaviour in return and so forth, leading to a unique history for the dyad. Even so, some general principles across the species are seen to have an impact on the attachment (Hinde, 1979).

1.7. Bowlby's Attachment Theory.

In his book 'Maternal Care and Mental Health' (1951), Bowlby draws together the accumulated evidence on the effects of separation on children occurring as a result of the child being hospitalised, committed to an institution or placed in repeated foster placements. His work challenged current practices within these institutions and emphasised the need for more attention to be given to the importance of children's emotional bond with their parents. Bowlby's efforts, along with those of James Robertson, Rene Spitz, William Goldfarb and Anna Freud (Bowlby, 1988), generated pressures on the scientific and professional communities to reconsider current practices in child care. Surprisingly, a strong resistance to these ideas arose from medical professional ranks as well as psychoanalysts. Hinde (1982) recalling his early experience in the 1950s of staff reaction to Robertson's film on children's attachment and admissions to hospitals, noted reluctance of the staff to adopt more flexible visiting arrangement for the parents of children in hospital. It seems, from Hinde's comments, that the parents welcomed the message from the newly emerging attachment theorists and were at the forefront of a new consciousness about the importance of their children's attachment.

During the 1930's and 1940's, major contributions to early development in the work on the parent-child bond were drawn from a psychoanalytic perspective. Bowlby (1988) states that "each of the authors was a qualified analyst

(except Goldfarb who trained later)." (p. 21). Bowlby's introduction to the ethological principles in 1951 encouraged him to apply these new principles to problems he had already noted in institutions and in those situations where children had experienced multiple foster placements. His attachment theory was a "shift in conceptual framework" which was "designed to accommodate all the phenomena to which Freud called attention" (Bowlby, 1988, p. 26). Bowlby's ethological understanding of attachment incorporates not only the psychoanalytic but also Piagetian and learning theories into an eclectic perspective (Hinde, 1982; Marvin and Stewart, 1990; Ainsworth, 1990; Bowlby, 1988). In the same way as it developed from these theories, it also looks to each theory for assistance in understanding behaviour so that each theory contributes with its own strength to Bowlby's attachment model. While ethology provides an understanding of the consequences and adaptive nature of behaviour, cognitive learning theories provide an understanding of the conditioning process which operates within the attachment process and the analytic theories contribute to the understanding of the long term emotional impact.

The term 'attachment' was first applied to developmental concepts by Bowlby in 1958 as an alternative to the psychoanalytic and social learning theory terms of 'dependency' (Ainsworth, 1972; Bretherton, 1985). The theory has attempted to present a life-span approach based on events and relationships in the initial three years of childhood

(Bowlby, 1988, p. 162; Schneider-Rosen, 1990). The concept of attachment (derived from Bowlby's theory) is an ongoing and developing cognitive-affective representation commencing early in infancy, which establishes both a global and individual-specific view of interaction patterns and subsequently becomes formative in the individual's sense of her/himself. It is an innate process, related to the historical need for species survival, in which the infant is genetically predisposed to respond to social interactions. Through an ethologically conceived 'control mechanism', attachment promotes a number of purposeful behaviours which function to maintain proximity and contact with a 'secure base object' (usually the parents or other adults when older) when stimulated by specific contextual variables (e.g. stress, fear, illness or the need for affection).

Attachment theorists are criticised for neglecting the importance of genetic predisposition (Schaffer, 1985; Hess and Petrovich, 1991). However, Schaffer (1985) draws attention to the difficulties in establishing genetic origin in humans given the complexity of the infant's early environment. Unlike ethological studies of the development of specific calls among insects, as Hess and Petrovich (1991) point out, where genetic origins are assumed in the absence of early learning opportunities, the infant's native disposition is open to alteration and shaping by experience soon after birth (Kalnins & Bruner, 1978). Notwithstanding this, Bowlby draws upon the imprinting principles of Lorenz

(outlined above) to argue that the human infant's predisposition towards social interaction, which is evident soon after birth (Rheingold & Adams, 1980; Condon & Sander, 1974) supports a species-wide genetic influence promoting attachment. Furthermore, he notes that developmental changes over the first six months of infancy consolidate the parallels between attachment in human infants and imprinting in other species, stating that "the way in which attachment behaviour develops in the human infant and becomes focused on a discriminated figure is significantly like the way in which it develops in other mammals, and in birds, for it is to be included, legitimately, under the heading of imprinting - so long as that term is used in its current generic sense." (Bowlby, 1969, p. 223).

Despite global similarities between human attachment and imprinting in animals, the genetic hypothesis is difficult to establish. The difficulty lies partly in the adaptability of genetic expression. Group or cultural characteristics may be promoted over less valued characteristics in a population as a result of either social preferences or environmental factors. The same dynamics may also operate at an individual level, i.e. within the family (Hinde, 1982). In such circumstances adaptive attachment responses from children in an impoverished country may lead to more distress behaviour to attract the parents attention and receive affection and food, while in more affluent cultures the child's subdued response may be socially valued and encouraged. Similarly,

Lamb et al., (1985) have stated that "Evolutionary biology thus demands an evaluation not only of biologically influenced predispositions but also of the contingencies provided by the specific environments or 'niches' in which individuals might manifest these predispositions. Without a careful analysis of the fit between the behaviour patterns and the niches, it is impossible to determine which patterns might be adaptive and which not." (p. 274)

A central factor of Bowlby's theory is the organisation of the behavioural system (Ainsworth et al., 1978). These systems mediate between the organism's internal state and the environment, hence when a child is tired or distressed she or he will seek proximity with an attachment figure (Lamb et al., 1985). There are no specific behaviours which exclusively serve the attachment response and accordingly it is better to refer to the orientation of the behaviour (e.g. 'attachment orientated behaviour') to avoid the misconception that particular behaviours, independent of context, automatically infer an attachment purpose, particularly when 'the child is older than six months' (Campos et al., 1983; Lamb et al., 1985).

The view put forward by Bowlby ([1969] 1987) suggested that attachment is one of many innate behavioural systems important for the survival of the species. He notes that "attachment is presented as a system of behaviour having its own form of internal organisation and serving its own

function" (p. 230). Within this system the child's feelings, functioning at a conscious and unconscious level (Ainsworth, 1990) serve to regulate the attachment behavioural system; activating the system to promote proximity and a sense of security or to promote alternative behavioural systems (e.g., exploratory behavioural system). Bowlby (1969) reports on four such behavioural systems (attachment, fear/weariness, affiliation, exploration). Each of the behavioural systems has an effect upon the operation of the other behavioural systems. When the child is aroused by 'threatening' circumstances (e.g. a large dog) the fear/weariness orientated behaviour will inhibit exploratory behaviour and affiliative behaviour. However, the emotional responses of the child are likely to activate the attachment behavioural system (Robinson, 1990; Maslin-Cole & Spieker, 1990). Further empirical support for the interaction of the behavioural systems was found in an interesting study by Thompson and Lamb (1982). This study assessed infant temperament at 12 and 19 1/2 months and rated the infants reactions to an unfamiliar female stranger. In the procedure the stranger makes increasingly intrusive overtures towards the infant, whose reactions are rated on a 5 point scale. Stranger sociability ratings were negatively correlated with temperamentally rated 'fearful' reactions. The infant's exposure to other social contact did not influence the outcome. Thompson and Lamb (1982) note that their results "implies that affiliative/social and fear/wariness response systems are inversely related in infancy." (p. 10)

Gewirtz (1972), in considering Ainsworth's identification of attachment behaviour among Ganda infants, has suggested that attachment behaviour can be categorised into six behavioural groups reflecting: a positive control, absence of exploration, preference for a particular individual, security eliciting, avoidance of a stranger, and emotional distress signals in response to interference (e.g. the mother leaving the room). Lamb et al., (1985) has suggested that we need to make the distinction between those attachment behaviours present at birth and primarily focused on maintaining proximity to the parent (up to the age of 6 months) and later attachment behaviours. These early behaviours are "adaptively functional in maintaining proximity" (Lamb et al., 1985, p. 17) and more closely related to the observation of Ethnologist of other species. Later attachment behaviours reflect the history and style of the dyad and consequently need to be considered in this context.

Bowlby (1969) also notes that among the young goose "once it has learned the pattern of that object during the process of imprinting, its behaviour when alarmed changes in a dramatic way" (p. 48). Lamb et al. (1985) referred to this second group of behaviours as 'criterial', suggesting that such behaviours are more complex; motivated by the context, early history of the relationship, culture and involve the child's 'goal corrected' efforts. Lamb et al., (1985) have proposed this distinction on the basis of research which has

found that the inter-correlation of specific attachment orientated behaviour is poor and that it is only when the behaviour is considered categorically (that is, when it is considered for its purpose) that it achieves a high intercorrelation. Referring to the criterial attachment behaviours, they state that such attachment behaviours reflect a complex interaction of "contextual and situational variables independent of the quality of attachment" (Lamb et al., 1985, p. 18). It would appear that Lamb et al.s' point is not to dispute the attachment assessment developed by Ainsworth and her colleagues (as their later comments confirm that stability of such assessments achieves favourable correlations with later development of the child) but that we may not be sure of what we are measuring. This point has also been raised by Hinde (1982).

Bowlby goes beyond the ethological concept of control systems and considers the development of 'internal working models'. He argues that "in the higher vertebrates behavioural systems are more environmentally labile, responsive to more complex cues, and in their means of integration more likely to include casual or plan hierarchies. In man these trends have been carried a very long way further" (Bowlby, 1969, p. 80). The working model refers to the child's understanding of him/herself as well as their understanding of others (Bowlby, 1973). Through the relationship with the attachment figure the child develops models of both the attachment figure and themselves as a

lovable or unlovable person (Campos et al., 1983). The most powerful studies in this respect have involved assessing the relationships of neglected and deprived infants and toddlers. Bowlby (1951) identified the lack of available attachment opportunity, deprivation over a period of 3 to 6 months during the first four years, and changes in placements (the movement of the child from one carer to another) as contributing to negative outcomes later in the child's life (delinquency, lack of affection, committal to institutions, social and peer group difficulties). More recently, researchers have found disturbances in socio-emotional development associated with abuse or neglect in infants and toddlers (Aber and Allen, 1987; George and Main, 1979; Lamb et al., 1985; Crittenden, 1988). Such early experiences have been found to alter the way young children experience themselves and relate to their carers. Crittenden (1988) noticed that "many maltreated children cease to use universally understood negative signals" (p. 157). George and Main (1979) reported that infants with disturbed early backgrounds responded negatively to friendly approaches. These examples show how Bowlby's (1969) internal working model sets the child's expectations and responses.

Babies are often exposed to several caregivers over time and even with the same caregivers they may experience different types of care with changing circumstances or stressors such as changes in marital satisfaction, financial pressure, or loss of close relationships for the parent

(Belsky and Isabella, 1988). Bowlby (1969) notes that the working models are regularly updated in order to continue their function of providing predicability for the infant. Such models emerge at birth and change, not only in relation to the environmental factors, but also with the child's development as there are changes in the child's ability to plan (Bowlby, 1969, p. 381).

As the child is exposed to a wide range of relationships multiple attachments emerge. However, Bowlby's ideas do not adequately address the impact of multiple attachment models upon the child's concept of her/himself, nor his/her concept of the 'world' (Bretherton, Ridgeway & Cassidy, 1990). Certainly though, the working model from the 'mother' is considered primary (Ainsworth, 1990; Bowlby, 1969). Ainsworth (1990) raises the question of how conflicting experiences are integrated by the child. She suggests that at this level of organisation the child may hold two models which are incompatible, with one model operating at an unconscious level while the other model operates at a conscious level. Hence the child may be 'given a message' at one level that they are lovable while at another level the child has a sense of rejection. In Ainsworth's terms the more influential and resilient of these models is the unconscious model. A similar dichotomy has been proposed by Bowlby (1980) who distinguished between episodic and experiential memories. He notes that the defensive process of the individual may affect the episodic memory, reducing

emotionally painful experiences in some situations, such as when dealing with contradictory models between episodic memory and communicative memory. Conflict between these two levels results in a debilitating psychological conflict for the infant.

Experiences during infancy are formative for later personality development and there is an emerging body of research that has related the recollections of earlier experiences with later parental style (Main and Hesse, 1990; Main et al., 1985). While Bowlby considers that temperament may contribute to personality his emphasis on the 'internal working model' distinguishes him from ethological theorists (Campos et al., 1983). Similarly Bowlby's view of personality development differs from the developmental stage theorists such as Erikson or Mahler. In Bowlby's theory changes affecting personality can occur beyond this early time period specified by the psychoanalytic model (Bowlby, 1988). He does, however, place strong emphasis on the early years as the most influential period and states that "the extent to which he or she (the child) becomes resilient to stressful life events is determined to a very significant degree by the pattern of attachment he or she develops during the early years" (Bowlby, 1988, p. 172). Bretherton, Ridgeway and Cassidy (1990) note that 'script theory' proposed and redeveloped by Schank is similar to the concept of working models. However, these explanations do not adequately account for the impact of the child's attachment

to people other than the primary carer. Marvin and Stewart (1990) suggest that within the family system model the child would be expected to be "pushed" into interacting with other sub-systems, moving away from the exclusive relationship with the 'mother'. From these additional relationships the child becomes exposed to several relationship models. Systems theorists, such as Minuchin (1977) have categorised family relationships into adaptive, enmeshed and disengaged. These classifications bare a strong general resemblance to Ainsworth et al., (1978) groups of 'secure', 'ambivalent' and 'avoidant' attachments. At this level of comparison, it has been theoretically argued that there is a 'dominant' type of attachment style developed within families (Stewart and Marvin, 1990).

In summary, Bowlby's contribution to attachment theories has developed through the ethological perspective and his psychoanalytic training. The theory is described as an "open ended theory - open to extension, revision and refinement through research" (Ainsworth, 1990, p. 463). His earlier writings (1969, 1973) draw heavily upon the ethological principles with a mechanistic approach which offers little explanation of the development of emotions in the infant (Sroufe, 1979a). In addition to this the control system model suggested by Bowlby does not explain the responses observed with the loss of an attachment figure (Waters & Deane, 1985).

The systemic approach offers an explanation for how relationships, other than the 'early mother-child relationship' contributes to the child's working model, several researchers have found poor intercorrelations between the child's attachment to the mother the child's attachment to the father (this is discussed in a later section of the study). These researchers have stressed that the child's attachment is specific to each individual person and based on the history of the interaction of that person. But since there is little research utilising the systemic approach to attachment many of the attachment theorists have sought explanations for the quality of the child's attachment based on the early history of maternal care. Hence, the two areas which have been neglected by attachment theorists are, first, the influence of the child's attachment to one person upon their later attachment to another person. Cassidy (1990) raises this question and notes that "the role of additional attachment figures must be considered. Are they as influential? Do they influence the child in different ways? What happens when one attachment figure suggests that child is lovable and valuable and another suggests that the child is of little value? Do these conflicted views become integrated into the formation of one representational model of the self? If so, through what process does this occur?" (p. 114).

Cassidy also raises the question of the role of temperament but without specific direction. In the past much

of the research on temperament has dealt solely with the issue of the impact of the child's temperament on the quality of the attachment. The specific question which needs to be asked now is about the influence of the interaction of the child's and the adults' innate qualities upon their own 'working model' and later attachment. This focuses on the second issue which needs to be addressed, that is the impact or role of the primary relationship upon the formation of the child's attachment. The interactive quality of the attachment model has been the focus of Bowlby (1973), who notes that "the model of the attachment figure and the model of the self are likely to develop so as to be complementary and mutually confirming" (p. 238).

1.8. Attachment and Attunement.

By the age of six months, parents have a grasp of their child's emerging personal qualities (Trevarthan & Hublely, 1978). It would seem logical that these ideas are reflecting not only the discrete observations of the child's behavioural style but also involve a subjective analysis of the relationship by the parent. This was brought out by Trevarthan and Hublely (1978) in a case study of the changes in a mother-infant interaction. They found that during the first month the mother "demonstrated a conceptual personification" of the child (Trevarthan and Hublely, 1978, p. 186). Presumably, in the course of their dialogue, the mother bestowed qualities upon the child by giving

significance to the child's gestures and early vocalisations. While the child was co-operative and decidedly active in promoting the relationship, between the ages of 21 and 40 weeks her behaviour showed an increase in negative and rejecting responses. Following this period in which the infant distanced herself from the mother, there emerged (at around 9 months) the development of a co-operative and positive relationship. A period referred to by Trevarthen and Hubley as secondary intersubjectivity. This study supported the understanding that at this later stage in the relationship, the child and the mother had developed a "working model" of each other which is sufficient to allow them to operate independently and co-operatively on the development of their relationship. Similarly, Stern (1985) notes that "When the infant is around nine months old, however, one begins to see the mother add a new dimension to her imitation-like behaviour, a dimension that appears to be geared to the infant's new status as a potentially intersubjective partner."(p. 140).

As noted by Trevarthen and Hubley (1978) and Stern (1985), close observation of parent-child interaction reveals developmental changes in the relationship over time. It is from these observations that the attachment theorists speculate on the existence of fundamental changes to the infant's internal working model. These changes operate to establish for the child a resilient set of expectations about both the relationship and the child's own self concept. Some

have argued that early observations of the mother-infant dyad during the first three months have been shown to reflect more the mother's ability to facilitate the relationship and less the child's contribution which becomes more pronounced with the establishing of intersubjectivity at around nine months (Stern, 1985; Schaffer, 1985; Snow, 1977). Snow (1977), for example, noted that mother-infant dialogues were characterised by the mother's efforts "to maintain conversation with a conversationally inadequate partner" (Snow, 1977, p. 13). This point was clearly made in research by Hayes, Goodnow and Murray (1984) where infants (4 to 30 weeks of age) were observed first interacting with their mother for 3 minutes followed by a period when the mother displayed a range of facial and vocal gestures. These authors found that "the changes in task (from Free Interaction to Direct Modelling) alter the mothers behaviour but not the infants, again suggesting a lack of close tuning to one another." (Hayes et al., 1984, p. 13).

In contrast to these studies, the well reported study by Brazelton et al. (1974) found that during their procedures the parent's maintained continual attention to their infant (less than 20 weeks of age) while the infant regulated the interaction with looking away behaviour. The interaction observed by Brazelton et al., suggested to them a more involved infant than suggested by Hayes et al. (1984). Two explanations need to be considered in regard to this issue. First, research which simply measures counts of behaviour may

arrive at different conclusions from those studies which attempt to interpret the infant's behaviour. Second, in studying parent-infant relationships the nature of the behaviour, rather than discrete behaviours may be more informative of the level of attunement. As such it would not be relevant to assess the synchrony of a relationship relying largely upon the same behaviours for both parents and infants.

The concept of attunement involves the infant in a shift in focus from the behaviour to "the quality of feeling that is being shared" (Stern, 1985, p. 142). The process (according to Stern) is biologically programmed for both the parent and the infant. However Stern has given little insight into understanding the mechanisms which facilitate the emergence of attunement (Cushman, 1991). Despite this criticism Cushman notes that "the interpretation of affect attunement processes might be the most insightful and creative of Stern's contributions." (p. 211). Cushman's (1991) criticises Stern's theory in that he has decontextualised the behaviours, he does not recognise the cultural limitations of the theory and that in the absence of clear explanations for the process Stern has relied upon circularity in his arguments (through his appeal to common sense).

Both clinical and theoretical attention is focused on the notion of 'attunement'. Following on from Stern's work

and in line with Cushman's comments, research needs to address the question of how this process of attunement is facilitated within dyads. The wide variation of the qualitative differences in relationships suggests that if biological factors are responsible, then its influence is in conjunction with other variables. Schaffer (1985) suggests that relationship models become complex with individual contributions (parent and child) being unable to be separated from the interaction process. In addition to this, the parent and the child are continually making adjustments based on the other person's response. He notes that "What is more, a picture has emerged of parents taking great care to fit their behaviour to the child's, sensitively taking account of his particular state and condition at the time, adjusting their behaviour accordingly, and all along ensuring that their stimulus input is properly adapted to the child's abilities meaningfully to absorb it." (Schaffer, 1985, p. 169). Hence, in healthy well-tuned relationships the effective attunement and positive reciprocity can be easily understood as a factor promoting a positive and 'secure' relationship for both the mother and the child (Stern, 1985).

Infants with 'secure' attachments have consistently been found to be socially more competent and to have better attuned relationship styles with their mothers (Sroufe, 1986; Cassidy, 1986; Egeland and Farber, 1984). Ainsworth et al. (1978) report significant differences between mothers of

'secure' and 'anxious' infants in terms of levels of sensitivity, acceptance of the child, co-operation and accessibility to the child. Mothers of 'securely' attached infants tended to engage in more mutually positive responses and were distinct from mothers of 'avoidant' infants, who were described as abrupt and as interrupting the child's interactions. The 'ambivalently' attached infants tended to have mothers who were more routine orientated. The impact of poor attunement between the mother and the child, it should be remembered, is not likely to be observed for some months and it then becomes difficult to determine whether the parental characteristics have contributed to the 'anxious' attachment style or whether the dyad's problems in synchronising their relationship have generated a negative reciprocity. Wolkind and De Salis' (1982) study of the relationship between infant temperament, the mother's mental state and the child's behaviour problems, suggested that the infant's temperament may have contributed to maternal stress. They emphasise that "mothers are more likely to be tired" (physically). . . and there is a "possible loss of self-esteem caused by problems of looking after a *difficult* baby" (Wolkind and De Salis, 1982, p. 233).

'*Difficult*' qualities in one or both partners (parent or child) is not expected, on its own, to prescribe a difficult relationship. Brazelton et al. (1974) explained how two separate relationships, both with intense overactive infants, achieved strikingly dissimilar levels of effective attunement

between the parent and the child. They reported that "one mother responded with increased activity and stimulation to her baby's turning her off; another maintained a steady level of activity which gradually modulated the baby's overreactivity" (Brazelton et al., 1974, p. 60). These early observations by Brazelton et al. (1974) have supported later findings by Rosenberg (1975), that mothers of 'secure' infants show more reciprocity than mothers of infants classified as 'avoidant' during a 6 minute play period. Hence, it is expected that 'securely' attached dyads will differ from 'anxiously' attached dyads; with the 'secure' relationships showing higher levels of synchronisation and a higher rating on measures of reciprocity.

1.9. Assessment of Attachment.

The measurement of attachment has shifted from early attempts to identify specific behaviours to the employment of systemic principles and identification of behavioural systems. Harlow and Zimmermann's (1959) study with monkeys reinforced the importance of contact seeking behaviour in attachment relationships while Ambrose (1961) employed the infant's smiling behaviour as an indication of the attachment to the mother. Later Schaffer and Emerson (1964) used infant's reactions to their parent's departure to measure the strength of attachment. However, no single measure was found to consistently identify the nature of the child's attachment to the 'mother' (Campos et al., 1983; Ainsworth, 1990; Lamb

et al., 1985). Schaffer and Emersons' notion of the strength of attachment later proved to be a factor which did not relate to 'secure' attachment but to 'insecure' attachment. Ainsworth (1990) noted that "insecurely attached (children) generally displaying more intense attachment behaviour than those who are securely attached" (p. 478). It was Bowlby's application of ethological principles to attachment which facilitated the development of measures that sought to identify patterns of behaviour rather than specific behaviours. His control system model became the basis for the understanding of attachment behaviour and the development of attachment assessment techniques: both Ainsworth-Wittig (1969) Strange Situation and the Q-sort developed later by Waters and Deane (1985). In the following sections I will present a brief outline of each procedure.

1.9.1. The Strange Situation.

This attachment procedure, developed by Ainsworth and Wittig (1969), was devised to assess three factors: 1. how the toddler uses the mother as a secure base, 2. the toddler's reaction to the stranger and 3. how the toddlers react to separation and reunion.

The strange situation consists of eight episodes, these are presented in Table 1.1. Initially the parent and the child are introduced to the room where there are some toys and two chairs. During the first three minutes the parent's

TABLE 1.1

SUMMARY OF EPISODES IN THE STRANGE SITUATION.

No of Episode	Persons present	Duration	Brief Description of Action
1	Parent Baby Observer	30 secs.	Observer introduces parent and baby to experimental room, then leaves.
2	Parent Baby	3 min.	Baby explores; if necessary, parent encourages the baby to play after 2 mins.
3	Stranger Parent Baby	3 min.	Stranger enters. 1st min: Stranger silent. 2nd min: Stranger talks with parent. 3rd min: Stranger approaches baby. After 3 min: Parent leaves.
4	Stranger Baby	3 min. or less ^a	<i>1st separation episode.</i>
5	Parent Baby	3 min. or more ^b	<i>1st reunion episode.</i> Parent greets and/or comforts baby, then settles him again in play. Parent then leaves, saying "bye-bye".
6	Baby alone	3 min. or less ^a	<i>2nd separation episode.</i>
7	Stranger Baby	3 min. or less ^a	<i>Continuation of 2nd separation.</i> Stranger enters
8	Parent Baby	3 min.	<i>2nd reunion episode.</i> Parent enters, greets baby, then picks him up. Meanwhile stranger leaves unobtrusively.

^aEpisode is curtailed if the baby is unduly distressed.

^bEpisode is prolonged if more time is required for the baby to become reinvolved in play.

task is to settle the child into play and to sit down. At the end of episode 2 the stranger enters, spending one minute without interacting with the mother and responding only to overtures made by the child followed by a further minute interacting with the mother. At the end of two minutes the stranger then start interacting with the child and they play together for a further minute. The parent is then asked to leave the room, leaving his/her bag on her/his chair. During the separation, which last up to three minutes, the child's adjustment to the parent's departure is noted. The parent returns after three minutes, or sooner if the child becomes distressed, pausing as he/she enters the room to allow the child the opportunity to respond to her/his parent's return. The initial moments of the reunion are given strong importance in the rating of the child's avoidance response to the parent. While proximity seeking, contact maintaining, avoidance and resistance are scored across the session. Once the parent has resettled the child into play he/she sits down on a chair and three minutes later they are asked to leave the child again. On this occasion the parent leaves the child alone, with the stranger having left the room soon after the parent entered. The child is alone for three minutes (or less if she/he becomes distressed). Episode seven commences when the stranger returns to the room. In the initial analysis (Ainsworth et al., 1978) the child's behaviour towards the stranger was also scored in using factors of proximity seeking, contact maintaining, resistance and avoidance. However, since the child's response to the

stranger did not distinguish between attachment classifications for the infants this is no longer rated. The mother returns in the final episode (eight). In episode five the parent called to the child before entering while in episode eight the parent enters without calling. On both reunions the parent is instructed to wait on entering to allow the child to respond. On the second reunion the parent is also asked to pick up the child then resettle the child into play.

The Strange Situation Assessment draws heavily upon clinical skills (Campos et al., 1983; Kroonenberg and van Ijzendoorn, 1987). The procedure is described as clinically 'rich' (Kroonenberg and van Ijzendoorn, 1987, p. 380) providing a view of behaviour which is tied to the behavioural system and distinguished by this purposefulness or intent, rather than the discrete behaviours (Campos et al., 1983). Ainsworth (1990) notes that "it is a mistake to think of attachment entirely in behavioural terms at any stage of development. Attachment is organised within the individual, and we must infer its nature from whatever clues that are available to us" (p. 469).

The 'secure' child is typically able to use the parent as a secure haven when she or he is stressed or weary, moving freely between the exploratory behaviour to seeking proximity and contact with the parent. They are generally more effective in using contact with their parent to enable

themselves to resettle and recommence exploration of the toys. *Insecure avoidant* children's behaviour is characterised by their persistent effort to inhibit their attachment behaviour. This becomes expressed in their efforts to redirect their attention to exploring the toys or the room. However, their attachment behaviour remains active and the quality of the play is noticeably poorer. Sroufe and Waters (1977) found that although these children were least likely to show distress by their separation from their parents, their heart rates were similar to those children who showed strong reactions to their parent's departure. Hence, although not visibly distressed by the separation these children are still disturbed by the parent's absence and remain tense even with the parent's return. The third major classification of attachment style is referred to as '*anxious ambivalent*'. This group is distinguished by strong separation reactions and conflicting feelings towards the parent upon his/her return. These children respond to the parent with a heightened sense of attachment. Marvin (1993, Attachment workshop in Sydney) referred to such children as hyper-activating their attachment system.

Each of the sub-groups proposed by Ainsworth et al., (1978) has a distinct pattern of behaviour. The highly '*avoidant*' (A_1) child shows little or no resistance towards the parent upon reunion but will display strong avoidant behaviour (turning away from the parent when he/she enters the room). The A_2 child will show similar characteristics

but this will be mingled with approach behaviour. Such children will often make several approaches to the parent only to divert their approach before reaching the parent. The B₁ child is considered a 'secure' child who rely upon distance interaction. Such children do not appear to be as conflicted as the A₂ child in their relationship with the parent. The B₂ and B₃ sub-groups are both expected to seek proximity and contact from the parent, once having achieved this they are able to redirect their attention towards exploring the toys available. The last of the 'secure' sub-groups (B₄) tends to protest the parent's departure and during the reunion episodes require contact for much of the three minutes in order for them to feel secure. The third major classifications is the 'ambivalent' group. There are two sub-groups within this category, C₁ and C₂. Children identified as C₁ show strong and open ambivalence towards the parent, repeatedly indicating their desire for contact and to be held while turning away and resisting the parent's efforts to comfort them. The second of the 'ambivalent' sub-groups (C₂) are noticeable by their passivity and ambivalent reaction which persists through their reunion. An additional classification category has been suggested by Main and Weston (1981) who found that 12.5% of their sample of 152 infants could not be classified using the criteria proposed by Ainsworth and her colleagues. Main and Weston (1981) reported that these infants demonstrated behaviours that were inconsistent to the situation such as displaying similar secure behaviour towards both parent and stranger on reunions

or avoiding the parent when clearly and strongly upset. Often such infants appeared affectionless from the observer's perspective. This '*unclassifiable*' group is generally viewed as a '*non-secure*' group, who under normal classification procedures would be considered to be '*securely*' attached. Hence, while there is a large variation in the infant's reactions to the parental absence and reunion, the general patterns have been simplified into three (or four including the 'D' or disorganised group) (Main and Hess, 1990) general groups based on the infant's behaviour towards the parent in the reunion episodes.

Ainsworth and Bell (1970, p. 56) report that "in scoring the five classes of behaviour, the score was influenced by the following features: the strength of the behaviour, its frequency, duration and latency, and by the type of behaviour itself - with active behaviour being considered stronger than signalling (behaviour)". The internal consistency of this scoring procedure has been acknowledged by several authors (Ainsworth and Bell, 1970; Gardner, Lamb, Thompson & Sagi, 1986) who have reviewed previous studies and found the inter-rater reliability to vary between .93 and .97 (reliability coefficients). Such constancy, along with the stability of the child's classification supports the procedure's validity (Lamb et al., 1985). Kroonenberg and van IJzendoorn (1987) re-analysed the patterns of behaviour among children's reactions in the Strange Situation and identified four behavioural patterns which emerged across the

eight episodes. These authors suggested that pattern 1 which contained an increase in proximity seeking and a decrease in the amount of distance interaction was similar to the B₃/B₄ sub-groups. A second pattern where the child displayed a moderate amount of proximity seeking as well as a moderate amount of distance interaction resembled the B₁/B₂ sub-groups. While the third pattern identified was characterised by a rise in the amount of avoidance across the eight session with a corresponding decrease in proximity seeking and was associated with the 'avoidant' pattern of attachment. The fourth pattern resembled the 'ambivalent' attachment pattern with a rise in proximity seeking and an increase in resistance/avoidance particularly in episode eight.

Despite the clarity with which the A, B, C and unclassifiable groups suggest that the infants can be grouped, the sub-group distinctions indicate that these groups are not mutually exclusive. Ainsworth et al. (1978) confirmed the identification of three distinct groups using multiple discriminate factor analysis where it was found that the centroid point for each group was able to be identified as distinct from each of the other two centroids (p. 102). However, Gardner, Lamb, Thompson and Sagi (1986) report a re-analysis of the data by Connell using a cluster analysis technique. Gardner and his colleagues suggested that this latter technique is preferable on the basis that discriminate analysis assumes the existence of a group and sets about to distinguish the groups using particular variables, whereas

cluster analysis analyses the variables for the emergence of common factors and does not assume there are specific groups. Connell has categorised his data according to sub-group categories and Gardner et al. (1986) notes that "Connell's cluster analysis indicated that the borders between A/B and B/C groups were not well defined. The C infants were widely dispersed and mingled with the B₂, B₃ and B₄ subgroups. Although the A infants were relatively tightly clustered, the interior of their cluster contained a large number of B₁ infants" (p. 361). Connell is reported in Gardner et al. (1986) to have eliminated the subgroups B₁ and B₄ from his later analysis because of the difficulty in distinguishing these two subgroups from the A and C categories respectively. Shiller, Izard and Hembree (1986) reallocated B₁ subjects to the A group and B₄ subjects to the C group as suggested by the research of Connell and Rosenberg (refer to Ainsworth et al. 1978). Similarly, other researchers have considered B₁ and B₄ attachment classification sufficiently different from the '*core secure*' group to omit them from the '*secure*' group (Isabella et al., 1989; Spieker and Booth, 1988). Spieker and Booth (1988) noted that "we chose to eliminate these boundary cases so that we could get a clearer understanding of the meaningful differences that do exist among dyads representing the distinct categories in the Strange Situation" (p. 131). For similar reasons, Cassidy (1986) in her study of infant environmental competence chose to eliminate C₂, B₁ and B₄ infants. Hazen and Durrett (1982) also felt that the characteristics of the children in the

groups B₁ and B₄ warranted their inclusion into the A and C groups respectively.

Hence, while research continues to report attachment data based on the 'A, B, C' distribution, the above comments suggest that more careful consideration needs to be given to the borderline secure attachment sub-groups (B₁ and B₄). The security of these groups remains uncertain and they may be excluded from analysis or regrouped into the respective '*insecure*' attachment groups.

In addition to these difficulties distinguishing the borderline attachment sub-classifications and despite the close similarity between Ainsworth's classifications and the behavioural analysis of Kroonenberg and van IJzendoorn (1987) (referred to earlier), concerns have been raised in relation to the meaning of the attachment group or sub-group. Campos et al. (1983) reported that "the evidence reviewed in this (our) discussion suggests that it may not be justifiable to equate 'security of attachment' with 'Strange-Situation classification': B classifications may not reflect 'secure attachment', whereas A and C classifications may or may not reflect 'insecure attachment'" (p. 872).

Both psychometric and clinical concerns have been raised in relation to the Strange Situation Assessment (Campos et

al., 1983; Kroonenberg and van IJzendoorn, 1987; Lamb et al., 1984; Lamb et al. 1985). The child's attachment is grouped into one of eight sub-classifications and in the major studies these sub-groups are further reduced into the three major categories (*Avoidant, Secure and Ambivalent*) or into two groups (*Secure Vs. Insecure*). This data reduction is often the result of the low numbers among the sub-groups, resulting in the clinical richness of the procedure becoming lost in the analysis (Connell and Goldsmith, 1982). Sub-group classification have distinguished patterns of behaviour such that a 'secure' child may employ distant interaction to achieve a sense of security upon the parent's return, while other children with 'secure' attachment may require continual contact with the parent with some resistance. Ainsworth (1990) suggests that it may be valuable on some occasions (for the purpose of adjusting the measures to accommodate the statistical analysis) to group data or use linear rather than categorical scales. However, the clinical significance of the separate sub-groups ($A_1, A_2, B_1, B_2, B_3, B_4, C_1, C_2$) warrant their consideration as independent. Lamb et al., (1984) has challenged the significance of the differences of the groups (A vs B vs C). In their review of the procedures they note that the mothers of 'avoidant' and 'ambivalent' children differed less from each other than the mother of 'secure' children. In addition to this, Lamb et al., (1984) considered that Ainsworth and her colleagues had overstated their results, finding significance only in a small proportion of the variables studied. While there is debate

about the meaning of the classifications in the Strange Situation (Goldsmith and Alansky, 1987; Hinde, 1982) the research using this procedure has been impressive with the consistency in identifying significant factors in infant-parent relationship and predictive outcomes (Grossmann, Grossmann, Spangler, Suess, and Unzner, 1985; Main and Weston, 1981; Kestenbaum, Farber and Sroufe, 1989; Troy and Sroufe, 1987).

A confounding variable, which has received little attention in the Strange Situation, is the behaviour of the 'stranger' towards the child. Several researchers have found that stranger anxiety is more likely to occur under conditions where the stranger approaches the infant without the mother or father present (Campos, Emde, Gaensbauer and Henderson, 1975). Similarly, Plunkett et al. (1988) found that stranger anxiety was related to the degree of the stranger's intrusiveness. It may well be that the infants sense of control in the circumstances (control being a factor which in laboratory studies has been associated with stranger anxiety (Horner, 1980)) is an important variable in understanding their reaction to the first separation when the stranger is present. Hence, more attention needs to be given to the instructions given not only to the mother in the strange situation procedure but also to the stranger, who's behaviour may moderate or raise the child's anxiety in the situation.

Researchers have also drawn attention to the cultural differences in the distribution of attachment groups (Sagi & Lewkowicz, 1987; Lamb et al., 1985). A comparatively high proportion of children with 'avoidant' attachment among German samples has been interpreted as a culturally promoted independence among infants (Sagi & Lewkowicz, 1987). Similarly, some studies involving Japanese infants have found fewer 'avoidantly' attached children and an increase in the 'ambivalent' attachment group. Campos et al., (1983) concluded in their review that for both Japanese and Israeli infants the stress involved in the Strange Situation is more intense than for those American infants on whom the procedure is standardised. These observations raised two questions, first, the infants' level of distress experienced in the Strange Situation appears to vary between cultures. This may also be true between individuals within a culture and it could be argued that the level of distress is based partly on experience, temperament and stranger characteristics as well as culture. Second, there may be no single meaning for the attachment classification proposed by Ainsworth, such that 'avoidant' attachment among the German population may need to be considered differently (in terms of adaptability) than children identified as having 'avoidant' attachment among American or similar cultures.

In summary, the Strange Situation can be considered a reliable instrument in measuring attachment in infants provided care is taken in the interpretation of the results.

The borderline groups (B_1 and B_4) need to be given special consideration and cultural differences taken into account. As well care should be taken in the selection and training of strangers.

1.9.2. The Attachment Q-Sort.

Following on from the achievements of the Strange Situation procedure, Waters and Deane (1985) introduced the Q-sort measure of attachment. The procedure was developed to provide a home-based measure of children's attachment behaviour. The measure was initially developed for three-year old children (Waters and Deane, 1985) and later applied to one-year old children (Vaughn and Waters, 1990; Pederson et al., 1990). Other authors have applied the measure to children 18 months of age (van Dam and van IJzendoorn, 1988). This method of assessing attachment offers several advantages over the Strange Situation such as a linear scale, weighting of specific behaviours and not creating stress.

The Q-sort presents a linear scale on which all attachment assessments are rated (as opposed to the categories employed by Ainsworth et al., (1978). The behaviour descriptors (90 cards) used in the Q-sort are divided into nine piles, each pile containing ten descriptors (cards). This procedure ranks the child's behaviour along a dimension ranging from "the most like my child" to "most unlike my child". The data analysis provides ratings on three dimensions (security, dependency, sociability). The

children's attachment behaviour is rated and correlated with a hypothetical 'secure score' that is calculated from the comparison of the parent's/observer's rating, with the 'secure profile'. Higher scores on this measure represent a more secure attachment while lower scores (below $r=.33$) are generally regarded as insecure attachments (Vaughan & Waters, 1990; Pederson et al., 1990). The 'security dimension' is also correlated with security of attachment measured using the Strange Situation. In addition to the psychometric advantage of a linear scale, the Q-sort also allows parents and raters to weight specific behaviours by allocating them higher in the sorting process. Finally, because it does not actually involve the infant in a stressful situation it can be used repeatedly (Aber & Baker, 1990).

The reliability of the Q-sort has not been consistent across studies. The measure is completed by the parent/observer. Pederson et al., (1990) found a high correlation ($r=.72$), among their two trained observers. However, the observers were found to have less consistent ratings when compared to the parents with the parent/observer correlations ranging from $r=.57$ to $r=.4$. These lower correlations suggest that the parents may have a substantially different view of their child's behaviour from that of the trained observers. Two possible explanations for this difference are the broader base of information from which parents are able to draw in forming an opinion of their child, and secondly, the parents view of their child is

affected by their own emotional and dispositional factors. Vaughn et al., (1991) notes that "our findings indicate that the Q-sort scores are vulnerable to maternal attempts at 'impression management', in the sense that mothers may be expected to present a desirable picture of their child to researchers." (p. 267).

Another concern with the Q-sort has been raised by van Dam and van IJzendoorn (1988) who found only a moderate convergence between the Q-sort and the Ainsworth Strange Situation ($r=.36$). Unexpectedly, they also found that "the more difficult the child was, the more secure he or she was rated" (Dam and van IJzendoorn, 1988, p. 453). Difficult disposition in children has not been associated with 'secure' attachment in other studies (Bohlin et al., 1989; Lamb et al., 1985; Mangelsdorf et al., 1990) and this finding along with the weaker correlation between the outcome of the Q-sort measure and attachment security as measured in the Strange Situation raises questions about the consistency of the instrument in predicting attachment. As well, Vaughn and Waters (1990) found weaker relationships between their home and laboratory attachment data. In their discussion they ask "is the secure-base control system model, to which the Q-sort items are closely tied, too narrow a conceptualisation and measurement model for Bowlby's attachment construct?" (Vaughn & Waters, 1990, p. 1972).

In summary, the Q-sort attachment measure provides a valuable research instrument which has explored the relationship between laboratory observation and home based observations. Aber and Baker (1990) have drawn attention to the application of the Q-sort for clinical purposes as it is a measure which does not distress the infant and can be administered repeatedly to measure changes in security of attachment. Cicchetti et al., (1990) suggest that the Q-sort technique may have an important role in the study of attachment beyond infancy. On the other hand, its reliability is questionable and therefore it should be used with caution. Because of its greater reliability the present study employed the Ainsworth-Wittig (1969) Strange Situation measure.

1.10. Attachment and Personality.

Maternal styles of parenting distinguished securely attached infants from both avoidantly attached and ambivalently attached infants (Ainsworth et al., 1978) . In their study they employed four maternal measures: Sensitivity to the baby's signals; Acceptance-Rejection, referring to the balance between the mother's positive and negative feelings towards the baby and her ability to resolve conflictual feelings; Co-operation-Interference, the manner and the timing in which the mother introduces activities or interventions with the baby; Accessibility-Ignoring, the mother's level of attentiveness to the child even during

other tasks. On each of these measures, Ainsworth et al., (1978) found strong differences between mothers of securely attached babies (B classification) and those of insecurely attached babies (A and C classifications). Mothers of avoidant infants are described as emotionally uninvolved with the infant, infrequently such mothers were overintrusive with the infant and rejecting of the "baby along with the maternal role" (p. 237). While mothers of infants described as ambivalent in their attachment held "a strong investment in the maternal role" (Ainsworth et al., 1978, p. 237). However these mothers were also described as 'fragmented' in their efforts, providing the infant with inconsistent level of responsiveness. The mothers in secure dyads achieved a higher rating on each of the four measures employed in the Ainsworth et al.(1978) study. Further more, Main (reported in Ainsworth et al., 1978) reviewed home reports of maternal behaviour and suggested that in the first three months the mother's aversion to physical contact and the extent to which contact was seen as aversive for the infant was predictive of later attachment, such that secure dyads evidenced the lowest score on these rating, while avoidant dyads were rated highest. Main also suggested that mothers 'lack of emotional expressiveness' and high rating of 'rigidity' (measured throughout the year) were similarly predictive of attachment outcome.

These differences in the mother's behavioural style and affective characteristics suggested by Ainsworth et al.,

(1978) were drawn from a small and incomplete sample (in that not all sub-groups were represented, and 4 of the remaining 7 sub-groups had only two dyads). Other studies have not found such strong differences on the same maternal measures (Goldsmith & Alansky, 1987). Hence, on the basis of their data, Ainsworth et al. (1978) have overstated their findings and, as Lamb et al. (1985) notes, it remains to later research to establish if such differences are genuine precursors to development in attachment quality. No doubt, the early acceptance of the maternal descriptions relies on the intuitive logic in which the infant's and their mother's behaviour provides a working application of the theoretical 'internal working model' proposed by Bowlby (1969).

Maternal sensitivity towards the infant has consistently been reported as correlating with attachment outcomes (Goldsmith & Alansky, 1987; Isabella & Belsky, 1991; Lamb et al., 1985). Isabella and Belsky (1991) noted that earlier research has been inconsistent in "operationalis(ing) the sensitivity construct" (p. 373). In their research they found support for the understanding that security of attachment is promoted through the mother's behaviour. In this context, maternal sensitivity is seen as optimising the quality of the infant's stimulation and the interaction for the dyad. Similar to Ainsworth et al. (1978), these authors suggest that insecurity arises from both unresponsive and poorly timed maternal behaviour. In an earlier study, Belsky and Isabella (1988) found that mothers of secure dyads were

rated more positively on interpersonal affective measures (Cattell's Personality Factors). While the mothers of avoidant dyads were rated poorest on the measure of ego strength than either those mothers of secure or ambivalent dyads. However, Jacobson and Frye (1991) did not find maternal ego development to be related to attachment. Once again the operationalisation of the dependent variable (in this study the 'ego strength') has contributed to divergent findings. These two studies used different measures of 'ego development' (ie. Cattell's Personality Factors and Loevinger's measure) as well as different measures of attachment. Jacobson and Frye chose to use Loevinger's measure of 'ego level', assessing the relationship between maternal 'ego development' and the child's attachment. Both measures of 'ego development' attempt to measure adult emotional maturity and stability but do so from differing constructs. In addition to this Jacobson and Frye employed the 'attachment Q-sort' rated through home observations.

Izard et al. (1991) concluded from their study "that mothers' characteristic emotion experiences, emotion-expressive behaviours, and other emotion-related traits of personality (sociability, empathy) predicted quality of attachment." (p. 914). Furthermore, they found that in insecure dyads, the mothers themselves tended to present as emotionally insecure, having a strong reliance on social support. Izard et al. reported that their finding is consistent with those of Bretherton, O'Connell and Tracy

(1980, reported in Izard et al.) that mothers of securely attached dyads rated themselves as more extroverted than mothers of insecure dyads.

Social support has been described as a moderator of negative maternal and child characteristics. Belsky and Isabella (1988) found that negative changes in marital satisfaction were reflected in an increase in the likelihood of insecure attachments among dyads. However, they found no difference between secure and insecure dyads in maternal social networks. This was an unexpected result as their own earlier research (Belsky, 1984) and the work of Crockenberg (1981) had found that social support for the mother and 'maternal well being' moderated negative attributes of the infant. Belsky and Isabella (1988) suggested that "if we had to do it again (re-administer the social support instrument), we would inquire not simply about the frequency of contact with and support provided by friends, relatives and neighbours, but also about difficulties, stresses, and strains generated by these relationships" (p. 79).

Maternal depression has been found to impact on the quality of maternal care (Boyce, Hickie & Parker, 1991) the infant's developmental progress (Lyons, Connell, Grunenbaum & Botein, 1990), later social relationships for the child (Rubin, Both, Zahn-Waxler & Cummings, 1991) and security of attachment (Lyons et al., 1990; Cohn et al., 1991; Rubin et al., 1991). These studies consistently reported lower levels

of responsiveness from depressed mothers towards their infants. Field et al. (1988) found that among depressed dyads there were lower levels of maternal facial expression, vocalisation, imitative behaviour and contingency responsiveness than either those mothers in the non-depressed control group or in the infants' interaction with the 'stranger'. In addition to this they found that the infant's behaved similarly towards the stranger as they had done with their mother and speculated that the impact of depressed maternal characteristics had generalised to other relationships.

While maternal depression has consistently been related to less optimal interactional styles, emotional expressiveness of the mother has not been found to distinguish clearly between secure and insecure attachment outcomes (see Lamb et al., 1985). Other researchers have identified maternal reciprocity as a feature which distinguishes mothers of avoidantly attached infants from those mothers of securely attached infants (Rosenberg, 1975). Tronick, Ricks and Cohn (1982) found that mothers of secure dyads rated themselves as higher on self-esteem, competence and likeability than either mothers of avoidant or ambivalent dyads. Interestingly, these researchers found no differences between the groups on the level of defensiveness between the mothers. Similarly, Weber, Levitt and Clark (1986) found maternal differences between attachment groups emerged when they employed the Development of Temperament Survey (DOTS).

Mothers in avoidant dyads rated themselves higher on the reactivity dimension than those mothers in securely attached dyads (B2/B3). They also noted that mothers of the B3 and C groups rated themselves as less adaptable than mothers of B1/B2 or the A groups.

In summary, the studies of maternal characteristics and attachment suggest that 'positive' maternal qualities (ego strength, sensitivity, social responsiveness, a positive parental childhood and positive social support) are associated with secure attachment. However, Goldsmith and Alansky (1987) note that differences in procedures employed and definitions of the maternal qualities measured across the studies has fragmented the picture. Furthermore these authors note that across studies maternal measures, on their own, have a poor overall correlation ($r=.16$) with attachment outcome.

1.11. Temperament.

The second major factor in this study is temperament. Similar to attachment, the concept of temperament is complex. Among researchers there is no singular perspective of temperament, although most writers in this area agree that temperament refers to individual differences, is the basis of later personality and has strong hereditary components and should reflect some consistency across the child's development. However, temperament research needs to deal

with the absence of agreement on a theoretical definition. This point has been emphasised in the recent writings and reviews by Prior et al. (1987), Goldsmith et al. (1987), Stevenson and Fielding (1985), Hooker, Nesselroade, Nesselroade and Lerner (1987) and McCall (1986). Goldsmith et al. (1987) noted that strong differences in emphasis by the major authors in this field have led to a lack of clarity on what is being measured. Buss and Plomin (1986) acknowledge the criterion of a genetic basis of temperament to distinguish it from a learned reaction. However, the acceptance by most writers of the delayed emergence of genetic factors to coincide with developmental and environmental factors have made this a difficult criterion to use in distinguishing the primacy of factors in behaviour from those qualities which are principally of a secondary or learned origin. In an attempt to avoid this problem, Buss and Plomin (1986) have restricted temperament to those characteristics which emerge in the first year of life and include only those factors (emotionality, activity and sociability) which have been found to have significant correlations in mono-zygotic twin studies. Fraternal twins were found to have a "near zero" correlation ($r > .5$, $n=172$) on these factors (Buss & Plomin, 1984, 1986), a result which was seen to support the genetic basis of the factors selected by Buss and Plomin. They note that "the fraternal twin correlations are lower than one would expect for a heritable trait unless nonadditive genetic variance and contrast effects are important" (Buss & Plomin, 1986, p. 72). While

these authors initially included 'impulsivity' as a temperament factor, this was not supported in their later research, and was subsequently excluded in their recent twin studies. Referring to their understanding of temperament, they note "we have retained inheritance as crucial and added presence early in life as part of the definition. These two criteria serve to define temperaments as inherited personality traits present in early childhood" (Buss & Plomin, 1986, p. 68).

In their article, Buss and Plomin (1986) suggest that there are three broad approaches to temperament research. Firstly, there are those who view it as a behavioural style which is a product of an interaction with a number of factors. Proponents of this view include authors such as Thomas and Chess, and Carey. The second group of theorists, of which Buss and Plomin are supporters, have developed from the personality tradition and view temperament as the early and formative traits of later personality. This second approach relies heavily on the need to establish a genetic basis and sets out to identify characteristics which are similarly applicable across ages. The final approach draws upon individual differences among infants or characteristics associated with arousal. Buss and Plomin suggest that authors such as Goldsmith and Campos, Rothbart, and Kagan are proponents of this approach with their emphasis on emotional arousal, inhibition, and self regulation.

Thomas and Chess (1982, 1986) have defined temperament as an "independent psychological attribute" which is distinct from other attributes (such as cognition, abilities and motivations) but which interacts with them to determine the child's behaviour. Temperament is also expected to function as a 'mediator' between the child and the external environment. This interactional view of temperament requires research to analyse the infant's behaviour taking into account a wide range of factors (developmental level, context of the stimuli, motivation and cognitive abilities) in order to distinguish the temperament component of the behaviour. In their efforts to draw upon the widest possible base of experience in making this judgement Thomas and Chess, and other authors who have sought to define temperament along similar dimensions, have relied heavily on maternal reports in the evaluation of the infant's temperament. Within this understanding clinical observations of the infant would be far too brief to establish a reliable judgement of his/her temperament.

Despite this, a significant body of research has defined temperament along dimensions which accepts clinical observations as having a high reliability. Models of temperament which emphasise individual differences in emotional arousal, reactivity and self regulation imply that clinical observations of the child may be able to identify different temperamental dispositions when the child is observed during a number of standard tasks (Rothbart &

Derryberry, 1981, p. 78). Rothbart (1981, 1986) has defined temperament as "constitutional differences in reactivity and self regulation" and earlier research by Rothbart and Derryberry (1981) on temperament was based on the understanding developed by Thomas and Chess. While they view temperament as an attribute which interacts with other factors in the environment to determine behaviour, their definition of temperament draws upon a "psychobiological, maturational and social-experiential perspectives" (Rothbart & Derryberry, 1981, p. 79). Another important difference with the earlier work of Thomas and Chess, contained in Rothbart's work, is that self regulation and arousal is considered to be "influencing the resultant reactivity at every level" (Rothbart & Derryberry, 1981, p. 54). Neurological maturation is presented by them as the underlying mechanism by which the emergence of different temperamental qualities are thought to occur throughout the infant's early development. In respect to self regulation, they state that such "capacities facilitated through forebrain maturation are extremely important to the infant's developing temperament" (Rothbart & Derryberry, 1981, p. 63).

Goldsmith and Campos (1982) have based their definition of temperament on the infant's underlying emotional reactions, and in this they are more closely aligned with Rothbart and Derryberry (1981) than with any other theoreticians. However, Goldsmith and Campos' formal definition is expressed in behavioural terms; they define

temperament "as an individual difference in the probability of expressing and experiencing the primary emotional reactions and arousal" (Goldsmith & Campos, 1982, p. 510). Independent of the postulated underlying causes, temperament is seen by all researchers to be measured through the child's behaviour and the task of temperament research is to distinguish those behaviours which have an intrinsic basis from those behaviours which have external causes.

Temperament has been described in interactive terms by several researchers (Fullard et al., 1984; Plomin and Daniels, 1984). This concept has also been put forward by Thomas, Chess and Korn (1982) who define temperament as a constitutionally based, but environmentally modified characteristic of the child, and by Sanson et al. (1987) who note that "there is general agreement that temperament refers to the intrinsic behavioural characteristics of a child that can be modified through interaction with the environment" (p. 97). Other authors (Rothbart, 1986) have included in the concept of temperament the understanding that such a characteristic is also affected by the maturation of the child, so that the observed temperament is the result of not only the interaction of genetics and experience but the timing of that experience with the infant's ability to be able to assimilate and respond. Each of these approaches presents the temperament of the child as a behavioural style which becomes evident through the child's interaction with the environment and is best understood as "multivariate and

conceptual as opposed to directly observable" (McCall, 1986, p. 22). What is observed therefore, is a behavioural style which is a product of a complex arrangement of a large number of factors including maturation, past experience and constitutional tendencies, all within a particular context. McCall (refer to the commentary in Goldsmith et al., 1987) has offered the following definition as a 'synthesis' of the work of a number of other researchers: "Temperament consists of relatively consistent, basic dispositions inherent in the person that underlie and modulate the expression of activity, reactivity, emotionality and sociability. Major elements of temperament are present in early life, and those elements are likely to be strongly influenced by biological factors. As development proceeds, the expression of temperament increasingly becomes more influenced with experience and context" (p. 521). However, even though he offered this 'definition', McCall (1986) appears not to be so much concerned with the development of a definition of temperament as in identifying an area of research in which temperament should be applied.

As researchers approach this field there needs to be some explanation of how they view temperament and how that particular understanding supports their explanations. The environmental and constitutional factors which contribute to the formation of the infant's temperament have not been able to be sufficiently distinguished to allow researchers to define temperament solely from a genetic or biological basis.

While temperamental qualities are referred to as moderators of the infant's experience, our understanding of temperament has become increasingly complex, requiring research to take into account the contributions which maturation and environment have in affecting the development of the temperament of the infant. Such qualities are not to be confused with the underlying basic construct that research attempts to deduce from studies which manipulate or hold constant environmental or genetic variables. The importance of the environment and maturation in the emergence of temperamental factors has been consistently emphasised by all researchers and in defining temperament there is a need for such definitions to be both operationally based and inquiring rather than limiting. Hence, it is preferable to refer to temperament in infants younger than 3 months as being observable with least effect from the interaction with experience, than defining temperament as being clearly observable only during those early months.

1.12. Measurement of Temperament.

Increased interest in temperament since the work by Thomas and Chess et al. (1963) has stimulated researchers to develop and re-evaluate the methods of measuring temperament. Thomas and Chess et al. (1963) identified nine temperament factors which were assessed through an interview with the parent or caregiver. The administration and scoring of this method has been reported to take considerable time (Vaughn et

al., 1987) and this has inhibited its use in research. However, the inter-rater reliability achieved in scoring the parental interview protocols is reported to be extremely high (0.9). Later researchers in this field have attempted to reduce the time required to assess the infant's temperament without losing the consistency between assessments achieved by Thomas and Chess. This has led to substantial interest in the rating of an infant's temperament through questionnaires completed by parents, carers and teachers. Carey (1970) was the first to develop a questionnaire which attempted to measure temperament on the dimensions identified in the work of Thomas and Chess. Although there was no statistical analysis of the items included in the infant temperament questionnaire developed by Carey (refer to Rothbart, 1981; Sanson et al., 1987) this questionnaire has been widely used by later researchers. The revised version of this questionnaire by Carey and McDevitt (1977) has been reported to have adequate internal consistency (.49 to .71) and test-retest reliability. Carey and McDevitts' Revised Infant Temperament questionnaire assesses infants from 4 to 8 months of age while the Toddler Temperament Questionnaire evaluates children's temperament between the ages of 1 and 3 years. The Australian Temperament Study at La Trobe University in Melbourne bases its questionnaires upon the instrument developed by Carey and his colleagues. Using the same age groups, but following factor analysis of the contents and groupings of the infant temperament questionnaire, they have developed a shorter questionnaire with five groupings.

Although research by Prior et al. (1987) using the Toddler Temperament Questionnaire with Australian children, gives qualified support for its use with Australian families (p. 131), changes similar to those made in the development of the Short Infant Temperament Scale have been made in formulating the Short Questionnaire for Toddlers (1987).

The Thomas and Chess model has also provided the basis for the development of the Dimension of Temperament Survey (DOTS) (Lerner, Palermo, Spiro & Nesselroade, 1982). These authors were specifically interested in the establishment of a measure which would provide evaluation of 'fit' between the child, adolescent or adult's temperament and contextual demands, social values and expectations. This view of temperament differs from those models where the temperament is considered to be a trait which evidences consistency across time and context. The notion of 'fit' involves temperament as changing personal quality, responding to context and demands. Hooker et al., (1987) note that a central assumption of the 'goodness of fit model' is that it contains "cross-situational variability in temperament rather than stability, because if individuals are to optimally meet the demands of different contexts they must be able to modulate temperament in congruence with contextual demands" (p. 332). In developing the DOTS, Lerner et al. (1982) sought to maintain compatibility with the work of Thomas and Chess, whose work they saw as formative in temperament research. In addition to this, the DOTS employs the same questions across all age groups and it also avoids both class

bias and subjective appraisals by the rater (Lerner et al., 1982). A second instrument was developed to assess the contextual demands upon the subject (child, adolescent or adult). In this measure parent, teacher, or peers are asked to identify their expectations in relation to the items on the DOTS (Lerner et al., 1986). Hence, a teacher may be asked to rate the statement "I want my students to stay with an activity for a long time" (Lerner et al., 1986, p. 104). Using this design for assessing 'fit' Lerner (1984) found that 'fit' between the child's temperament (8th grade) and the teacher's expectations was related to social competence and academic performance. 'Fit' between the adolescent temperament and the parent's expectation has also been related to adjustment at home, school and peers (Nitz, Lerner, Lerner & Talwar, 1988). Notwithstanding these findings, the 'expectations measures' employed in the procedure have inherent problems. Social expectations are not always clearly verbalised and how parents or teachers respond may differ from general comments on how they would like their class or home routine to function. De Vas (1990) notes that in social questionnaires "too often researchers try to use behavioural measures to extrapolate to beliefs and attitudes. This is open to real dangers of misinterpretation" (p. 82). In addition to this Lerner et al. (1982) cautions that the DOTS, while developed to measure 'fit', should not be the major temperament measure in a study; researchers should look to include other measures to obtain a more complete understanding of the person's temperament.

Rothbart (1981) developed an Infant Behaviour Questionnaire for the measurement of temperament which differed from Carey's by not asking the parents global questions but focussing on the parents' reports of the regularity of behaviours over the past week. In Rothbart's terms, the Infant Behaviour Questionnaire was developed to "measure not only the Thomas, Chess et al. (1963, 1968) dimensions, but would tap other aspects of reactivity and self-regulation that had been identified as involving individual differences with a possible constitutional basis. In addition, we wished to identify dimensions of temperament that were conceptually independent, that is, involving no overlap among operational definitions" (Rothbart, 1981, p. 571). Rothbart identified and researched six dimensions in the Infant Behaviour Questionnaire and despite attempts to avoid conceptual overlap, positive correlations were found between 'distress to limitations', activity level and fear factors. Rothbart's temperament scale has been developed for infants between the ages of 3 and 12 months and as such is consistent with several other infant temperament questionnaires in identifying this developmental period as containing sufficient consistency to be able to make meaningful judgements on the basis of the parent's response.

While parental questionnaires have been the major method of assessing temperament, the objectivity of these assessments has been questioned. Several authors (Vaughn, Bradley, Joffe, Seifer & Barglow, 1987; Matheny et al., 1987;

Field et al., 1987; Prior et al., 1987) have raised questions concerning the ability of the mother to be objective due to her personality, level of anxiety and the influence of socio-economic status. Maternal personality has been found to be related to 'infant tractability' (a factor which is closely related to the 'easy/difficult' dimension in temperament) (Matheny et al., 1987). Mothers who describe themselves on the Thurstone Temperament Scale as less emotionally stable tended to rate their infants as less 'tractable'. Similar results have also been noted by Sameroff, Seifer and Elias (1982) who concluded from their study that maternal characteristics were more predictive of the infant's temperament score than the infant's own behaviour observed during a home visit. Other researchers have found similar relationships between the mother's psychological characteristics and her perception of the child's temperament during the first 12 months of the child's life (Vaughn et al., 1987). These authors found that mothers of 'difficult' children were emotionally labile, displayed more aggression, suspicion, dependence and anxiety than mothers of children identified as temperamentally 'easy'. The presence of these psychological attributes in the mother before the birth of the child further suggests that such qualities could not have been the result of the stress from managing with a 'difficult' child. Finally, Bates and Bayles (1988) also found a positive relationship between mothers' descriptions of themselves and their infants' temperament.

From these findings it would be expected that researchers would identify clear differences in parenting style between mothers of 'easy' and 'difficult' infants. Instead, Vaughn et al. (1987) and Rothbart (1986) both report that in their studies no such differences were evident. Similar unexpected results were observed by Matheny et al. (1987) who noted that mothers who were rated as tense by the social worker described their toddlers as "more tractable" while those mothers rated as more relaxed described their toddlers as "less tractable". Matheny et al. (1987) suggested that tense mothers were more prone to idealise their toddlers and as such their temperament ratings of the infants were less accurate than those of the mothers who were rated as relaxed. Such responses would suggest cultural and social influences in the parent's perception of the child's temperament. Some support for this has been suggested in a study by Sameroff et al. (1982) who concluded that "it is clear that when socio-economic status and race differences are found on these scales, they do not necessarily mean that the infants are different, but they do definitely mean that the mothers report them as different" (p. 172).

On the other hand, the validity of the maternal reports of infant temperament has been supported in studies which have compared mothers' and caretakers' reports and evaluated the ability of such reports to discriminate the children with behaviour problems. Research by Prior et al. (1987) found that with toddlers (aged between 1 and 3 years) maternal

reports and caretaker reports consistently identified similar temperament categories although the maternal reports were more discriminating in identifying relationships between the child's temperament and the reported behaviour problems. Moderate consistency in temperament ratings have also been found between parents (Field et al., 1987; Hubert et al., 1982) when they have been asked for independent ratings of their child. Although Hubert et al. (1982) described the inter-parent agreement coefficients reported for the various temperament scales as "discouragingly low" they offer a possible explanation for the low agreement, as well as the low correlation with independent raters, by stating that "parent ratings may well involve global perceptions, emotional ties and specific infant behaviours; in contrast, observer ratings may be based primarily on specific infant behaviours" (Hubert et al., 1982, p. 579). Field et al. (1987) offer a similar explanation by suggesting that the maternal reports may be more prone to being influenced by the mothers' projections during periods when the infant's motor milestones are slow. This explanation would be consistent with the strong correlations between the mother's personality and the infant's temperament rating found during the infant's first 8 months of life as mentioned above. From this it would seem that the infant's behavioural style would be more accurately tapped by discrete rather than global descriptives. Matheny et al. (1987) found in their study of toddler temperament that the mother's report of the infant's temperament (using Carey's Toddler Temperament Scale) bore a

significant relationship to the toddler's temperament as observed in the laboratory setting.

The problems of measurement of temperament remain unresolved for researchers, and differing theoretical perspectives on temperament have supported a range of measuring instruments. Some researchers have insisted on accepting only those characteristics that can be demonstrated to show high correlations with mono-zygotic twins while achieving a "near zero" correlation with di-zygotic or fraternal twins (Buss and Plomin, 1986, p. 72). Others have focussed their questionnaires on the measurement of self-regulation and reactivity in the child's behaviour and have sought physiological correlations as supportive data (Rothbart & Derryberry, 1981). The third approach has followed the Thomas and Chess model where clinical intuition has guided the criteria and classification of infants and toddlers (Carey et al., 1977). Recent research by Prior et al. (1987) revised the Carey Temperament Scale to include only those criteria which statistically demonstrate a hereditary factor. In addition to the problems which have emerged as a result of the differences in theoretical bases, the most of the temperament scales have sought to obtain measures through caregivers' reports. While such an approach draws upon the widest possible base of knowledge of the child's behaviour, strong correlations between the temperament of the child and maternal personality can only be viewed as an indicator that what is being measured represents

not only the child's behavioural style but also the caregiver's perception of the child.

1.13. Attachment and Temperament.

The Ainsworth-Wittig (1969) Strange Situation procedure operationalised the concept of attachment for researchers. This procedure has been found over many studies to be related to measures of social competency, peer group interaction in pre-school years and maternal sensitivity (Lamb, Thompson, Gardner, Charnov & Estes, 1984; Jacobson & Wille, 1986; Lamb, 1982; Arend et al., 1979; Van IJzendoorn, Van der Veer & Van Vliet-Visser, 1987). Several studies have compared Block and Blocks' (1980) concept of 'ego control' and 'ego resilience' in relationships to the attachment quality measured in the Strange Situation (Van IJzendoorn et al., 1987; Arend et al., 1979; Sroufe, 1983). These studies have found that the 'secure' attachment style is associated with stronger 'ego resilience', demonstrating both more flexibility and persistence in problem solving, than the 'anxious' attachment style. 'Ego resilience' was shown to vary according to context. Those children with 'avoidant' attachments typically present as having over control of their ego during the Strange Situation procedure. They appear less affected by the separation from their parents, placing their attention purposefully away from the parent, despite having physiological responses similar to the level of distress of those children who, upon reunion, respond demandingly to the

parent (Ainsworth et al., 1978). However, in peer interaction and interaction with the mother at home, the distancing behaviour observed in the Strange Situation for 'avoidant' children gives way to poor emotional control. They are equally likely to become tearful with the mother within the home as are children classified as having an 'ambivalent' attachment.

Belsky and Rovine (1987) found that toddlers with dispositions prone to reacting quickly and strongly to stress were tending to emerge as having B₃-C₂ attachment outcomes, while those with less intense reactions would tend towards the A₁-B₂ classifications. Similar results have also been reported by Frodi and Thompson (1985). The implication drawn from these studies is that temperament does not affect the child's 'security' or 'insecurity' but will influence the way in which the children express their attachment. Children classified as having an 'ambivalent' attachment are considered to react more quickly to distress, while those children in the 'avoidant' group are slower in showing their distress. However, Van Dam and IJzendoorn (1988) failed to replicate these results. They found in their study of 39 18 month old toddlers, that only 'persistence' correlated with 'resistance' ($r=.33, p=.04$).

In summary, the research assessing the relationship between attachment and temperament provides an inconsistent pattern. The difficulty with much of this research is that it

attempts to identify the direct effects of temperament on attachment and not address the indirect and interactive influences. Lamb et al. (1985) note that "to evaluate more complex models, future studies must be designed to assess infant characteristics both within and outside of interactive situations beginning early in the first year in order to better understand the child's contributions to interactive harmony" (p.113).

1.14. The Thomas and Chess Model of Goodness of Fit Between Parental Expectations and the Infant's Temperament.

The concept of "goodness of fit" proposed by Thomas and Chess (1986) is an interactionalists' perspective of temperament and refers to the relationship between the individual's temperament, developmental needs and environmental factors such as culture, parental responsiveness, expectations of the child and the home environment. Within this perspective the quality of "fit" between the individual and their environment is determined specifically on the basis of the person's need. While the principle is relatively clear and easily understood, its application becomes complex. Thomas and Chess, emphasising the individual nature of "goodness of fit" noted that "we could find (that there is) no one single pattern of person-environment interaction that could be applied as a general rule for predicting the developmental course of all our subjects" (Thomas & Chess, 1986, p. 49). The effect of a

'good fit' or 'match' for a child is evidenced in the subsequent positive development while a 'poor fit' (mismatch) results in a negative consequence on the child's development. Cultural factors and parental expectations both impact upon the child in this respect. Belsky, Lerner and Spanier (1984), reported that the relationship between temperament factors and early childhood problems has been found to vary between cultures, such that, in one group (Puerto Rican) the child's irregular sleeping pattern was easily managed within the cultural expectations while in a white middle class group such factors were seen as problematic by the parent and indicative of a child with a difficult temperament. However, the results of such research does not tap the complex dynamics of the principles of the 'goodness of fit' model.

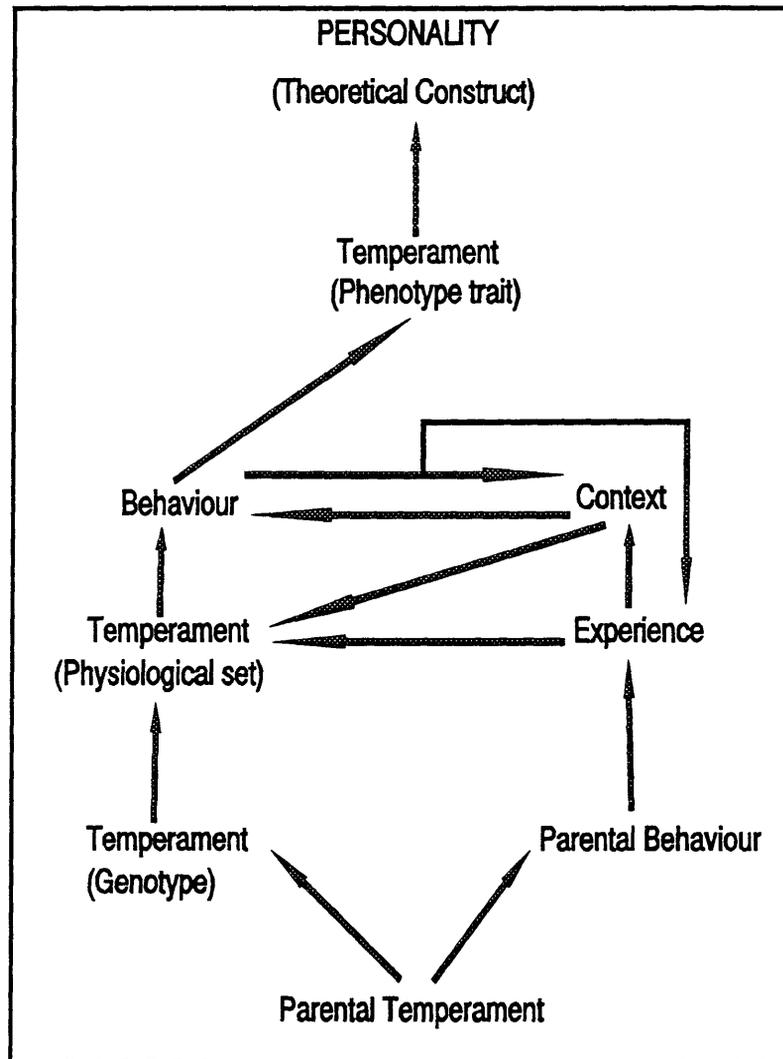
Researchers investigating the role of temperament in the child's development have tended to place increasing importance on the interaction of the child's temperament and other environmental factors rather than viewing temperament as a linear dimension (Thomas & Chess, 1986; Mangelsdorf et al., 1990; Carey, 1990; Windle & Lerner, 1986). Thomas, Chess and Korn (1982) noted that "parental characteristics and other environmental factors may modify or intensify the child's difficult temperament, just as the child's temperament may influence the parent's attitudes and behaviour" (p. 3). Maccoby, Snow and Jacklin (1984) reported that mothers of difficult boys were found to decrease the

level of input into a teaching task with the child over the period when the child was 12 months to 18 months old, these differences were seen as evidence for the "mutual influence between mother and child over the 6 month interval" (Maccoby, Snow & Jacklin, 1984, p. 459). The repercussions of these interactions are seen to generate a self perpetuating environment. Lerner and Galambos (1985) found that the quality of the parent-child relationship was the central pivot in determining the mother's parental satisfaction as well as the child's adjustment. Mothers who struggled with low satisfaction as a parent were more likely to respond in a rejecting fashion to their child and to have children with difficult behavioural patterns. Carey (1982) addresses this issue for clinicians in noting that mothers of 'difficult' children are all too often quick to assume the responsibility for their child's problems and develop a strong sense of guilt through the process. The interactive model does not set about to determine cause and effect but to present the influences and counter-influences which operate in a complex system.

Using the 'goodness of fit' model to understand temperament, the genetic origin becomes obscured and less directly accessible with the interaction and the continual adjustments of the individuals to both contextual factors and to each other. This process is schematised in Figure 1.1 from Stevenson and Graham (1982, p. 370). In this schema the parent's temperament influences the child both genetically and environmentally.

FIGURE 1.1

VARIOUS INFLUENCES ON TEMPERAMENTAL CHARACTERISTICS.
(From Stevenson & Graham, 1982, p. 370)



Within the framework outlined by Stevenson and Graham the impact of the parent's temperament/personality upon the child is considered to be the major determinant of the child's later development. While, in this model, the child's temperament is not considered to act directly upon the parent's temperament, the child does influence the parent through their behaviour at both the contextual level (defined

by Stevenson and Graham as the 'current environmental conditions') and at the experiential level (defined as the 'cumulative environmental effects'). Stevenson and Graham state that the child's 'poorness of fit' or 'mismatch' is derived from the degree to which the child's attributes conflict with their social environment, of which the parent is a significant factor. Hence the interaction of the parent and toddler temperament becomes the central issue for this model of 'goodness of fit'. Stevenson and Graham further state that "However if, as may be so, it proves impossible to isolate the specific behavioural contribution of the child to these mismatches or poorness of fit, then the concept of temperament, as it is usually defined, is likely to be of little heuristic value" (Stevenson and Graham, 1982, p. 38).

1.15. The Concept of Match-Mismatch in Toddler and Parent Temperament/Personality

The theoretical framework proposed in this study for the concept of **match-mismatch** of parent and toddler temperament is derived from well established bodies of research on attachment and attunement and from the Thomas and Chess concept of 'Goodness of Fit'. Studies by Trevarthan and Hubley (1978) and Stern (1985) both suggest that by the age of nine months the child and the mother have developed a 'working model' of each other which is sufficient to allow them to operate independently and co-operatively on the development of their relationship. The quality of the

interaction, of which synchronisation is an important component, is seen as formative of the level of attunement between the child and the mother (Stern, 1985). Similarly, the 'Goodness of Fit' model considers that the temperaments of the parent and the child have a central role in developing the quality of the relationship (Thomas, Chess & Korn, 1982; Stevenson & Graham, 1982). A 'good fit' between the parent and the child promotes a healthy well tuned relationship, while a poor fit stresses the relationship for both. Hence the match-mismatch between parent and child refers to the expression of dispositional qualities of both partners in the dyad and the extent to which they contribute to a synchronised relationship. Within the relationship, both the parent and the child "focus on the qualitative nature of the feeling being shared" (Stern, 1985). While Stern (1985) refers to the mother-infant interaction as occurring intuitively for the parent, Trevarthan and Hubley (1978) note that "We would describe the mother's acts we have seen as adaptations to the infant's changing play, and this in turn reflects the infant's changing understanding of her mother as a person" (p. 212). Both suggest that the quality of the relationship emerges not from either the mother's (parent's) temperament/personality nor from the infant's temperament alone, but is a product of how such personal qualities interact within the dyad.

The concept of match-mismatch has received little attention in attachment research, a growing number of authors

are referring to the mutual influences which the parent (usually the mother) and the child bring to the relationship (Thomas, Chess & Korn, 1982; Cutrona and Troutman, 1986; Maccoby, Snow & Jacklin, 1984; Mangelsdorf et al., 1990; Clarke-Stewart, 1973; Plomin & DeFries, 1985). In addition to the emerging research, clinical practice is also aware of 'matching' of parent and infant temperament. Plomin and DeFries (1985) report that adoption agencies recognise the importance of matching adoptive parents and natural parents of the child on a range of factors which include personality. Also Izard et al. (1991) argue from their own earlier research that "emotion-related characteristics of both mother and infant mediate the attachment process." (p. 907). Similarly, Clarke-Stewart (1973) concluded from a detailed study of 36 families that maternal acceptance led to the promotion of a positive and synchronised relationship, while maternal rejection was evidenced by an increase in the negative behaviour of the infant.

Egeland and Farber (1984) and Vaughn, Egeland, Sroufe and Waters (1979) found no relationship between either the parent's personality or the infant's temperament and the attachment outcome. However, insecure attachments were found to be more likely when mothers who were rated as less adaptable and more rigid in their personality had infants whose temperament were rated as high on the 'prone to distress' measure. Similarly, Mangelsdorf et al. (1990) found no evidence that either infant temperament or parent

personality was related to attachment outcome, but the interaction of these factors were related to attachment outcome. In their analysis they grouped infant scores on 'proneness to distress' and adult global personality rating into two groups each (above and below the mean for each dimension). The results suggest that in relationships where infants were rated as high on 'proneness to distress' and had mothers who were rated as high on the personality factors of 'rigidity, traditionalisation and low-risk taking', there is a likelihood of insecure attachment. In those dyad where the infants were rated as 'low' on 'proness to distress' the mother's personality did not distinguish attachment security of the infant. Izard et al. (1991) found that in insecure dyads, mothers experienced "more negative emotions but were less open to the expression of negative emotions around their children" (p. 912). Hence it appears that negative maternal characteristics combined with the infant temperament influences the quality of the attachment. However, subjectively feeling an emotion and expressing that emotion need to be considered separately. Weininger (1983) studied mother-infant play and concluded that poor control by the mothers of their aggressive feelings affected the child's quality of exploration.

Consistent with this finding, secure attachments may well occur in those relationships where the mother views herself as generally more rigid if she feels confident about controlling and expressing her feelings with the child.

Similar dynamics may be expected to operate for the child, such that negative maternal quality along with the infant's difficult temperament would not reduce the possibility of a secure attachment.

In summary, the concept of **match-mismatch** of infant and parent temperament/personality involves identifying complementary dispositions. The research discussed above and in the section referring to parental personality and attachment consistently support the notion that positive qualities in both the parent and the child results in a higher proportion of secure attachment outcomes. **Mis-match** in temperament/personality has not been well researched, but it is argued in this paper that a match in disposition facilitates the development of a positive relationship and that mis-match would evidence fewer secure relationships. Negative match (where both the child and the parent are described as difficult in their temperament or disposition) is expected to be more vulnerable to contextual factors as well as the parents' ability to control their emotions. In a positive context a 'negative match' may provide the basis for a secure relationship. Belsky, Fish and Isabella (1991) found that "harmonious complementary interactions were disproportionately characteristic of the group that remained low in positive emotionality where the reverse was true in the case of infants who changed from low to high positivity" (p. 428). This finding lends some support to the assumption of the current study that match-mismatch is important in

attachment outcomes, such that the impact of changes in one partner need to be considered in relation to the characteristics of the other partner.

1.16. Research Expectations.

1.16.1. The Impact of Temperament Match and Mismatch upon Attachment Outcome.

This research attempts to address one aspect of the complex nature of the parent-child relationship. Stemming from the 'Goodness of Fit' model and the theories of Bowlby and Stern (1985), (who have stressed the importance of the infant's internal working model, the infant's developing sense of core self and affective attunement) it is proposed that the most powerful effect the child's temperament has upon attachment will be evident when considered in the context of the carers' disposition (personality and temperament). The effect that this interaction between the parent's and the child's temperaments has upon attachment has received little attention. Mangelsdorf, Gunnar, Kestenbaum, Lang and Andreas (1990) reported that in their sample of 66 infant-mother dyads, 'Proneness-to-Distress Temperament' measured at 9 months was not predictive of attachment outcome at 13 months. However, security of attachment could be predicted by the interaction of 'Proneness-to-Distress Temperament' and maternal personality. These findings, that infant temperament and parent personality interact to predict attachment security, are strengthened by the finding that

neither the temperament of the child nor the parent's personality (as single factors) are predictive of attachment security.

Belsky and Isabella (1988) who have investigated infant temperament and parental personality, found that the interaction of positive parental personality (based on ego strength, nurturance, interpersonal affect and self esteem) and infant temperament (drawn from the Infant Characteristics Questionnaire) was more predictive of attachment security than when these factors were considered individually. In Belsky and Isabella's sample 92% of the dyads with positive parental personality and positive changes in infant temperament had '*secure*' attachments. The dyads with '*negative parent personality*' and '*negative changes in infant temperament*', as well as low marital satisfaction, had the smallest number of '*securely*' attached children (17%). The study by Belsky and Isabella (1988) suggested a strong relationship between parent personality and infant temperament and marital satisfaction. In their study, there were 8 possible combinations of parent personality, marital satisfaction and infant temperament, therefore the distribution of the 51 infant-mother relationships resulted in groups with small numbers (groups varied from 2 to 12). Following on from this discussion on temperament and attachment it is hypothesised that:

-96-HYPOTHESIS 1a.

Toddler Temperament is orthogonal to Attachment Outcome.

and

HYPOTHESIS 1b.

Parent Temperament is orthogonal to Attachment Outcome.

In other words, neither the temperament of the child nor the temperament\personality of the parent when considered in isolation will be significantly correlated with attachment outcomes.

The present research design assesses not only the individual contributions of temperament but the relationship between the temperament of the child and the personality characteristics of the parent in conjunction upon attachment outcome. This is expressed in the central hypothesis of this study which is:

HYPOTHESIS 2.

Temperament MATCH between parents and toddlers will have a different pattern of attachment outcome than parents and toddlers with a MISMATCH of temperaments, such that MATCHED dyads will be composed of a higher proportion of CORE SECURE attachment outcomes than chance and MISMATCHED dyads will have a higher proportion of INSECURE/BORDERLINE SECURE attachment outcomes than chance.

This overview approach is refined in the next two hypotheses which investigate positive and negative matches separately.

While the individual contributions of the child and the parent may not, on their own, be predictive of attachment, the studies cited above support the expectation that positive parental personality and positive child temperament (i.e. 'positive matches') will evidence more 'secure' dyads than other combinations (Belsky and Isabella, 1988). This is explored in

HYPOTHESIS 3

POSITIVE MATCH dyads (a fit of an easy temperament child with an easy temperament parent) will yield a HIGHER than chance proportion of CORE SECURE attachment outcomes.

However, the present research also hypothesises that 'negative matches' between parent and child will not be as counter-productive as suggested by Belsky and Isabella (1988). In relationships where the child is considered to have a 'difficult' temperament and the parent's rating on the personality/temperament factor are below the average for the sample (that is, rated as less optimal), contextual variables such as marital satisfaction and social support have been found to contribute significantly more to the quality of the relationship between the parent and the child (Belsky & Isabella, 1988; Crockenberg, 1981). Hence, it is expected that although parents may well rate themselves on personality/temperament measures as less flexible, more prone to negative mood, less outgoing and having less confidence, when relating to a 'difficult' toddler (in essence the child they view as similar to themselves in disposition) they are

also more likely to exercise an understanding with which they can achieve a sense of attunement should other stresses not be large enough to interfere with this relationship. Hypothesis 4 was formulated to explore this relationship.

HYPOTHESIS 4

NEGATIVE MATCH *dyads* (a fit of a difficult temperament child with a difficult temperament parent) will yield a LOWER proportion of CORE SECURE attachment outcomes THAN POSITIVE MATCH *dyads*.

In the '**mismatched**' relationships - those relationships where parents rate their toddler's temperament as strikingly different from their own personality/temperament - the parents are likely to feel less affectively attuned to their toddler and this will contribute to the development of a higher frequency of '*insecure*' attachments. Rothbart and Derryberry (1981) suggest that differences in temperament for parents and infants will lead to less proximity seeking and contact maintaining in the Strange Situation assessment. Thus a child's temperament is expected to affect his/her preference for the type of contact and the way in which it is achieved, in the same way as the parent's temperament may affect his/her preferences in this respect. Rothbart and Derryberry (1981) state that "mothers differ in their own characteristic reactivity and regulatory strategies, and thus they differ in the extent to which the infant becomes a source of comfort and stimulation" (p. 68).

HYPOTHESIS 5

MISMATCH *between toddlers' and parents' temperaments will yield a LOWER than chance proportion of CORE SECURE attachment outcomes.*

The quality of the child/parent relationship has been assessed by several researches using play procedures. Within these studies a 'secure' attachment outcome has been linked to infant sociability at 3 months (Lewis & Feiring, 1989); positive reciprocity at 6 months (Kiser, Bates, Maslin, & Bayles, 1986); positive social exchange between infant and mother at 14 months (Roggman, Langlois & Hubbs-Tait, 1987); increased positive maternal involvement in the child's play (Slade, 1987) and an increase in attention and involvement in play at 21 months (Main, 1983). Maternal behaviour has consistently been identified as a central factor in the development of secure attachment for children. Egeland and Farber (1984) found that mothers of securely attached infants were more co-operative and sensitive with their infants, while mothers of anxiously attached infants tended to respond to their infants in a functional manner achieving less enjoyment from the relationship. Zaslow, Rabinovich, Suwalsky and Klein (1988) noted that mothers of avoidantly attached infants had fewer playful interactions with their infants. The pattern which emerges from these studies is that mothers of securely attached infants appear to have the most positive relationship with their infants and are more likely to respond with a higher level of attunement than

those mothers whose infants are identified as anxiously attached. In the present study parent/toddler play was employed as an assessment procedure to further understand the impact of 'match' and 'mismatch' of toddler and parent temperament upon the quality of the relationship. Previous research using such assessments support hypothesis 6 and 7:

HYPOTHESIS 6

Those dyads where parents and toddlers are identified as having similar dispositions (Matched) will achieve a higher rating of synchronisation on their interaction in a semi-structured play procedure (Kangaroo Box) than those dyads identified as mis-matched.

HYPOTHESIS 7

Toddlers with Core-Secure attachment outcomes (B2/B3) will evidence a higher rating on the synchronisation of their interaction in a semi-structured play procedure (Kangaroo Box).

1.16.2. The Impact of Toddler Temperament on Attachment Outcome.

The debate which developed and persisted throughout the 1980's, about the relevance of temperament to attachment outcome, has (in part) drawn upon the findings that the child's attachment to the mother is independent of the child's attachment to the father (Grossman, Grossman, Huber & Wartner, 1981; Lamb, 1978; Main & Weston, 1981). In their review of research Lamb et al. (1985) report that concordance of the infant's attachment to the mother and father has

varied across studies between 48% and 68% (agreement for A vs B vs C groupings) and between 50% and 72% for '*secure*' Vs '*insecure*' classification (p. 102).

Recently a meta-analysis of attachment studies investigated this issue (Fox, Kimmerly & Schafer, 1991). In the analysis, Fox et al. acknowledged that there was considerable variation within the 11 studies involved in the analysis: the average interval between attachment assessments for the mother and the father was 11.2 weeks (varying between 1 week and 6 months intervals); counter-balancing of the order in which mothers and fathers were assessed with the child occurred in 7 of the 11 studies; the use of a different stranger for the mother's and father's assessment was reported in only three studies; maternal employment was reported in only 4 studies; and in the studies involving children with siblings, 6 of the 11 studies made no assessment of the effect of ordinal position within the family. Contrary to earlier studies the results of the meta-analysis (Fox et al., 1991) concluded that the child's attachment to the mother was not independent of the child's attachment to the father. Significant concordance between the child's attachment to the mother and the father was found in 6 re-grouping procedures used by Fox et al. (1991) (A vs B vs C ; '*secure*' vs '*insecure*' ; A vs C ; B₁-B₂ vs B₃-B₄ ; A₁-B₂ vs B₃-C₂ ; A vs B₁-B₂ ; C vs B₃-B₄). While the authors concluded that the child's attachment to the mother and to the father were not independent, the variability across studies diminishes the confidence of the conclusions.

Belsky and Rovine (1987) found that in their 2 sample study (n=42 and n=92) children's attachment to the mother was not significantly related to their attachment to the father using traditional classifications (A vs B vs C). However, when the classifications were re-grouped into A₁-B₂ and B₃-C₂ the inter-parent agreement was an average of 68%. The debate which has emerged concerning the concordance of the child's attachment to the mother and the father has held importance as a result of the implication for the role of temperament in the development of attachment. Research to date is unclear about the relationship between temperament and attachment and it would seem most likely that the influence of temperament upon attachment is effected through its interaction with other factor/s. The studies assessing the relationship between the toddler's attachment to the mother and the father reviewed in Fox et al. (1991) demonstrate the diversity of research designs employed in seeking out answers to this question. Consequently the overall results are difficult to interpret. In the present research the relationship of the toddler's attachment to the mother and the father is evaluated with the expectation that:

HYPOTHESIS 8

The toddlers' attachment outcomes with their MOTHERS and their FATHERS will not be significantly correlated.

This expectation is consistent with the expectation that it is the interaction of the parent's temperament/personality and the toddler's temperament which is predictive of attachment outcome.

Despite the expected independence of the toddler's attachment outcome to the mother and the father, as well as the earlier hypothesis that the toddler's temperament will be independent of the attachment outcome, the toddler's temperament is expected to influence the manner in which insecurity is expressed (as proposed by Belsky and Rovine (1987)). Belsky and Rovine noted that regrouping attachment classification into A_1-B_2 and B_3-C_2 was more predictive of the child's temperament than classifications by Ainsworth et al. (1978). While none of the four temperament dimensions (drawn from the Infant Characteristics Questionnaire) used in their study were found to distinguish between the groups, the aggregate of these dimensions were able to distinguish A_1-B_2 infants from B_3-C_2 infants. Infants rated by their mothers at 3 months of age as 'easier' tended towards the A_1-B_2 group while infants in the B_3-C_2 group were rated as temperamentally more vulnerable. Lerner, Palermo, Spiro & Nesselroade (1982) also reported that resistance in the reunion episodes of the Strange Situation assessment was associated with temperamental 'difficulty'. Fish and Belsky (1991) found the A_1-B_2 vs B_3-C_2 grouping of attachment outcome at 12 months to be "most reliable in distinguishing three year olds who could not tolerate full separation" (Fish & Belsky, 1991, p. 423). In both Belsky and Rovine (1987) and Fish and Belsky (1991) the association of temperament 'difficultness' with the dichotomised attachment outcome was statistically tentative, consequently the clinical value of the studies is questionable. The differences between the means of the

'Difficulty rating' of A₁-B₂ vs B₃-C₂ groups in Belsky and Rovine's study ('secure' average of 40.5 and 'insecure' average of 42.5) translates into small differences within each of the four factors from which they were derived. Fish and Belsky's (1991) findings that early attachment classification (at 12 months of age) was related to intolerance to separation at 3 years of age was also borderline in its results ($p \leq .055$). Weber, Levitt and Clark (1986) reported that maternal temperament was the main predictor of infant behaviour towards the mother, as well as being predictive of the infant level of distress in the Strange Situation. Consistent with the earlier discussed research, 'difficult' infants were found to be more resistant to the mother on reunion. The consistency of the reports that temperament 'difficultness' is associated with resistance in reunion episodes, has led to the expectations in this study that:

HYPOTHESIS 9

Toddlers who are identified as both Insecure/Borderline-Secure and classified as Difficult on the Temperament measure will evidence a higher than chance proportion of B4/C attachment outcomes.

Hypothesis 10

Toddlers who are identified as both Insecure/Borderline-Secure and classified as Easy on the Temperament measure will evidence a higher than chance proportion of A/B1 attachment outcomes.