2. METHODS.

2.1. Subjects.

A total of 27 families were involved in the study. Four of these were single parents (all mothers), and in five of the 23 two parent families the fathers were not involved in the study at all; a further two fathers completed only some of the assessments. The families were drawn from the Armidale community (a country town of approximately 21,500 people) and were recruited through advertisement at child care centres, baby health centers and at talks given to mothers' groups.

The 46 parents were largely white Australian (41); two fathers were born overseas (one father from Egypt and the other father from Canada, both having migrated to Australia as adults). There were three Aboriginal parents in the study (one father and two mothers). The ages of the parents ranged from 19 to 50 years with the average age being 32.63 years (standard deviation of 7.34 years). Their employment and educational standards were grouped using 'Hollingshead's Two Factor Index of Social Position' (Miller, 1983).

The dispersion of parents' education and employment are outlined in Figures 2.1 and 2.2. Both the employment and the educational profiles are consistent with a middle class sample, with 33% of parents being employed as teachers or lecturers, either at the time of the assessment or before the birth of the child.
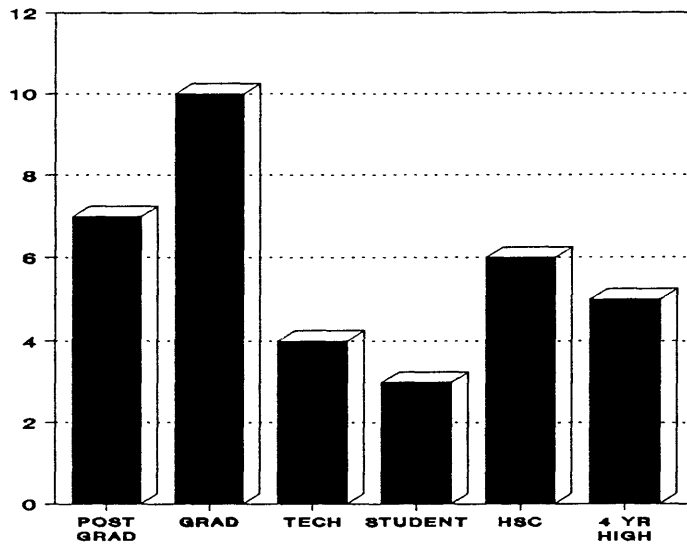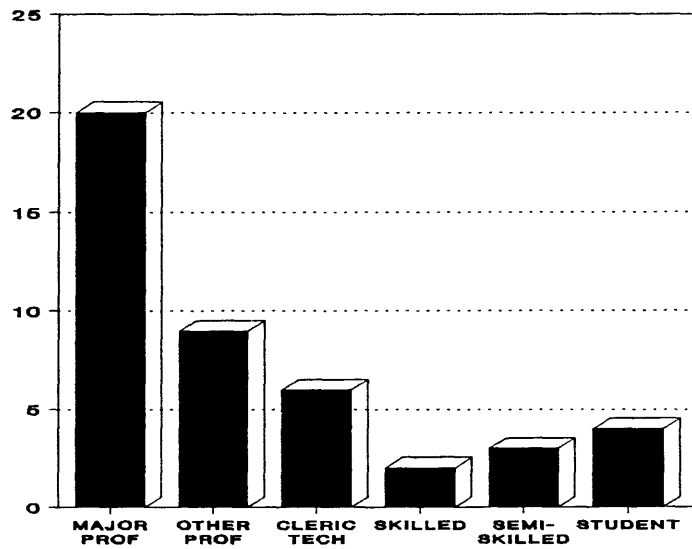
FIGURE 2.1

PARENT'S EDUCATION.

FIGURE 2.2

PARENT'S EMPLOYMENT.

None of the mothers in the study were in full-time employment outside the home, although five were studying, two worked in part-time or relief work, and one managed a home-based business.

Responses to questions related to child care arrangements between the parents indicated that the mothers (in dual parent families) were responsible for 58.5% to 81.5% of the duties on the tasks measured (refer to Figure 2.3). These tasks consisted of feeding the child, changing dirty clothes as well as wet and soiled nappies, bathing the child, caring for the child at night, dressing the child and having the sole care of the child.

FIGURE 2.3

DIVISION OF CHILD CARE BETWEEN PARENTS.
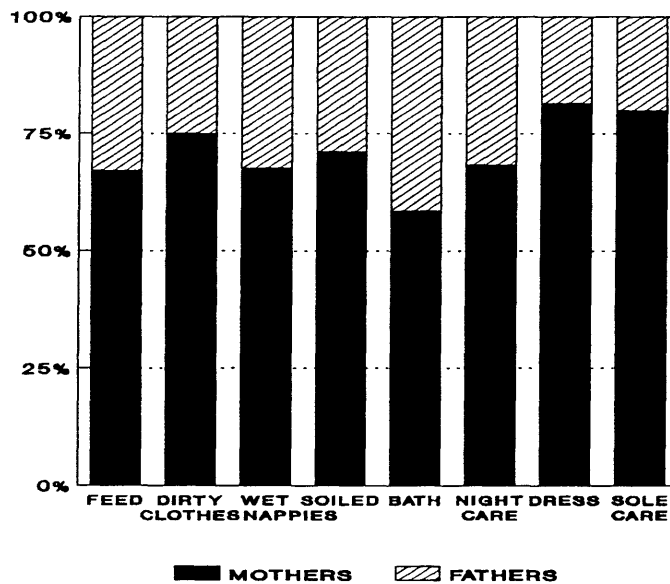
Two thirds of the mothers involved in the study were not employed outside the home, and this may be seen to account for the large proportion of caretaking responsibilities assumed by the mothers. However, Hwang (1987) suggests that among Swedish families maternal employment outside the home did not affect the distribution of child care tasks. In this study, the parental pattern of responsibilities for the care

of the child indicate that fathers tend to be more involved
in bathing the child (41.5%) and to a lesser extent caring
for the child at night (31.8%), feeding the child (33%) and
changing wet nappies (32.5%). Having the sole care of the
child for periods of time and dressing the child are normally
performed by the mother (79.9% and 81.5% respectively).

There were sixteen (16) boys and eleven (11) girls in
the sample of toddlers. The children in the study were
between twelve and twenty-two months old, when introduced to
the study; the average age was 16 months (S.D. of 3.0
months); the children's birth weights ranged from 2920 grams
to 4855 grams. The cognitive assessments of the toddlers
(Bayley's Scales of Infant Development, Mental Developmental
Index (1969)) indicated that they were within the normal
range (mean = 111.74, S.D.= 13.75). Seventy-seven percent of
the children (19) had at least one elder sibling, with ten of
these having two or more siblings. Eighteen of the twenty-
seven families indicated that occasional child care
arrangements were made with the child being cared for by
other than immediate family members. Thirteen families had
regular care arrangements with the time of the care ranging
from one to twenty five hours each week ($\bar{X}$= 6.8 hours).
There were no major or ongoing medical concerns with the
children at the time of the study, although one child had
exhibited failure to thrive in its first six months; a second
child had suffered gastric and reflux over a period of twelve
months, with the mother reporting that the child was often

distressed by the condition and required frequent soothing, though at the time of the research the condition had ameliorated. Three parents reported birth difficulties - two caesareans, one for a placenta praevia and the other an emergency caesarean due to the infant being a 'footling' and the third reported difficulty was with a slight breathing problem for the child at the time of the birth.

2.2. Measures.

2.2.1. Toddler Temperament Measures.

Two child temperament measures were used for this study. The Dimensions of Temperament Survey (DOTS-R) (Windle & Lerner, 1986) and the Toddler Temperament Scale (TTS) (Fullard et al., 1984). The DOTS-R is the only instrument (to the researcher's knowledge) which measures both parents' and children's temperaments on the same dimensions, and for this reason it was included in the research. The questionnaire uses the same questions for both adult and child with changes in the sentence structure from "my child" to "I". 'Task Orientation' on the DOTS-R (the ninth dimension on which the child is rated) is divided and rated as two dimensions ('distractability' and 'persistence') when scoring for adults.

TABLE 2.1

REVISED DIMENSIONS OF TEMPERAMENT SURVEY
(DOTS-R)

DIMENSION	PARENT/CHILD	HIGHER SCORE INDICATE.....
ACTIVITY GENERAL	PARENT CHILD	higher general activity levels
ACTIVITY SLEEP	PARENT CHILD	higher sleep activity levels
APPROACH WITHDRAWAL	PARENT CHILD	more approach
FLEXIBILITY RIGIDITY	PARENT CHILD	a more flexible behavioral style
MOOD	PARENT CHILD	a more positive quality of mood
RHYTHMICITY SLEEP	PARENT CHILD	more regularity of sleeping behaviour
RHYTHMICITY EATING	PARENT CHILD	more regularity of eating behaviour
RHYTHMICITY DAILY HABITS	PARENT CHILD	more regularity of daily habits
TASK ORIENTATION	CHILD	higher persistence and lower distractibility
DISTRACTIBILITY	PARENT	lower distractibility
PERSISTENCE	PARENT	higher persistence

This pencil and paper assessment requires parents to rate the child's behaviour on a 4-point rating scale. The dimensions are outlined in Table 2.1. The instrument has a reported high level of reliability across the scales for pre-school children (Chronbach Alpha, .79 to .91) (Lerner et al., 1982), but it is of some concern that the normative data on which the instrument was established is based on a sample of children with the mean age of 3.97 years (30 months older than the sample of children in this study).

TABLE 2.2

DIMENSIONS OF THE TODDLER TEMPERAMENT SCALE.
(TTS)

DIMENSION	DESCRIPTION	LOW SCORE	HIGH SCORE
Activity level	Level and extent of motor activity	Not active	Very active
Rhythmicity	Regularity with which behaviours such as sleeping and feeding occur	Rhythmic, regular	Arrhythmic, irregular
Approach-Withdrawal	Nature of the response to a new person or stimulus	First response is approach	First response is withdrawal
Adaptability	Ease with which a child adapts to changes in his environment	Very adaptable	Not adaptable
Intensity	Energy level of a response or reaction	Not intense	Very intense
Threshold of responsiveness	Strength of stimulation necessary to evoke a discernible response	High threshold	Low threshold
Mood	Amount of friendly, happy behaviour as contrasted with unfriendly, unhappy behaviour	Positive, happy	Negative, unhappy
Distractability	Degree to which extraneous stimuli alter ongoing behaviour	Not distractable	Distractable
Persistence or Attention span	Amount of time devoted to an activity, and the effect of distraction on the activity	Persistent, long attention span	Not persistent, short attention span

From Prior et al. (1987, p. 123).

The second Temperament measure used is the Toddler Temperament Scale (TTS) developed by Fullard, McDevitt and Carey (1984). The TTS assesses toddlers temperament over 9 dimensions (refer to Table 2.2 for summary of these dimensions) using 95 questions. Parents rate their child's behaviour on a 6-point scale and the child's temperament classification is determined by the pattern of ratings across

dimensions, such that *'easy'* children have no more than two of the five dimensions of 'Rhythmicity', 'Approach', 'Adaptability', 'Intensity' and 'Mood' above the mean. Conversely, *'difficult'* children are classified as scoring above the means on 'Intensity' plus three of the four dimensions outlined above. *'Slow to Warm Up'* children are a third category identified when using this procedure. These children have scores below the mean on 'Intensity' and 'Activity' while at the same time having scores above the mean on 'Approach', 'Adaptability' and 'Mood'. The final two categories in this classification are the *'intermediate high'* and *'intermediate low'*. Toddlers identified as *'intermediate high'* are considered to resemble the pattern of responses observed among the *'difficult'* children but failing to achieve the full criteria for this category while the *'intermediate low'* classification refers to 'all other intermediate groups'.

Australian standardisation of this instrument (Prior, Sanson, Oberklaid & Northam, 1987) found that while the instrument was "less than satisfactory" (psychometrically) the norms were appropriate for the Australian population. The number of questions in the TTS (95) can be inhibiting for many parents and this along with the lack of a single *'easy/difficult'* score was considered to lack sensitivity in identifying the degree of *'easy'* or *'difficult'* temperament that children may be exhibiting. Therefore Prior et al. (1987) reduced the number of questions in the toddler

temperament scale from 95 to 31 with the nine dimensions being reduced to seven. The classification procedure was also changed to a single *'easy/difficult'* rating (this being achieved by adding the scores of the 'Approach', 'Co-operation/Manageability' and 'Irritability' scales). These alterations to the TTS have addressed some of the difficulties with the original scale.

Although this shortened version of the TTS (Short Temperament Scale for Toddlers) developed by Prior et al. (1987) has demonstrated internal reliability through factor analysis, research with the longer TTS indicates a solid concurrent validity with temperament ratings (TTS) being associated with autonomic arousal (Healy, 1989), social interaction (Spangler, 1989), home environment (Wachs, 1988) and reported behaviour problems (Prior et al., 1987). Hubert et al. (1982) noted that the TTS was among the "most promising" in respect of its concurrent validity. The reported test/retest reliability of the TTS for the 9 dimensions ranged between correlations of .69 (Distractability) and .89 (Approach) with internal consistency for each scale yielding alpha between .57 (Threshold) to .85 (Approach) in a sample of 309 toddlers. Therefore, in this research the TTS was employed on the basis of its concurrent validity and its high level of acceptance among researchers assessing the relationship between attachment and temperament. However, the procedure used by Prior et al. (1987) for classifying children's' level of

'difficultness' was applied to the TTS in the present research. A global rating was estimated, using the factors which contribute to the *'easy/difficult'* rating of the TTS (Fullard et al., 1984). There are five such factors; rhythmicity, approach, adaptability, intensity and mood (i.e. toddler global temperament rating = the Z-scores of: Rhythmicity + Approach + Adaptability + Intensity + Mood /5).

2.2.2. Parent Temperament Measures.

Parent temperament/personality factors were evaluated using the Adult DOTS-R and the California Psychological Inventory (CPI). The Adult DOTS-R yields 9 dimensions (refer to Table 2.1, p. 110) and has been used in earlier studies (Talwar, Nitz & Lerner, 1990) for the identification of 'Goodness of Fit' between parents and adolescents (where the 'Fit' score was found to be more predictive of adolescent adjustment than either adolescent temperament or parent temperament alone). The total CPI inventory consists of 462 items which evaluate the personality factors over 20 scales. Due to the questionnaire's length only 12 of these scales (outlined in Table 2.3) were selected for this study (based on 252 questions).

TABLE 2.3

DIMENSIONS OF THE CALIFORNIA PSYCHOLOGICAL INVENTORY
(CPI)

DIMENSION	HIGHER SCORE	LOWER SCORE
Dominance (Do)	Confident, assertive, dominant, task-oriented	Unassuming, not forceful
Sociability (Sy)	Sociable, likes to be with people, friendly	Shy, feels uneasy in social situations, prefers to keep in the background
Social Presence (Sp)	Self-assured, spontaneous; a good talker; not easily embarrassed	Cautious, hesitant to assert own views or opinions; not sarcastic or sharp-tongued
Self-acceptance (Sa)	Has good opinion of self; sees self as talented & as personally attractive	Self-doubting; readily assumes blame when things go wrong; often thinks others are better
Empathy (Em)	Comfortable with self & well-accepted by others; understands the feelings of others	Ill at ease in many situations; unempathetic
Socialisation (So)	Comfortably accepts ordinary rules & regulations: finds it easy to conform	Resists rules & regulations; finds it hard to conform; not conventional
Self-control (Sc)	Tries to control emotions & temper; takes pride in being self-disciplined	Has strong feelings & emotions and makes little attempt to hide them; speaks out when angry or annoyed
Achievement via Conformance (Ac)	Has strong drive to do well; likes to work in settings where tasks & expectations are clearly defined	Has difficulty in doing best work in situations with strict rules & expectations
Achievement via Independence (Ai)	Has strong drive to do well; likes to work in settings that encourage freedom and individual initiative	Has difficulty doing best work in situations that are vague, poorly defined & lacking in clear-cut methods & standards
Psychological Mindedness (Py)	More interested in why people do what they do than in what they do; good judge of how people feel & what they think about things	More interested in the practical & concrete than the abstract; looks more at what people do than what they feel & think
Flexibility (Fx)	Flexible; likes change & variety; easily bored by routine life & everyday experience; may be impatient and even erratic	Not changeable; likes a steady pace & well-ordered life; may be stubborn & even rigid
Internality (V. 1)	Introverted; inwardly oriented; reserved in manner	Extroverted; outgoing

From Gough (1988, pp. 6-7).

The relationship between maternal personality and mother-child interaction has received strong attention following the formative work of Ainsworth et al (1978). Therefore, from the 12 CPI scales 5 were selected together with 4 scales from the DOTS-R to create a Parental Global Temperament Rating (GTR). The CPI and DOTS-R scales selected for inclusion into the Parental Global Temperament Rating (GTR) were based primarily on factors which were considered conducive to the development of parental sensitivity, acceptance, accessibility and co-operation (four factors proposed by Ainsworth et al. (1978) to be related to positive attachment). Sroufe and Fleeson (1986) report that mothers of *securely* attached children are rated as 'smoothly co-operative' in a problem solving situation, while the mothers of *anxiously* attached children tend to be discordant, provide inconsistent support and showing little emotional involvement. Factors from the CPI and DOTS-R which are comparable to these maternal qualities are 'Empathy' (CPI) and 'Psychological Mindedness' (CPI), both measuring the ability of the parent to understand others and to respond insightfully. High ratings of 'Distractability' (DOTS-R) are also expected to be related to the parent's ability to remain tuned to the child's needs and signals and therefore supportive of a positive relationship. Weininger's (1983) research into maternal personality and play with young infants found that mothers who were more in control of their own feelings and tended to be less narcissistic (inwardly focussed) were more available to encourage the child's

constructive play. The author noted that "It seems that the way in which a mother approaches her baby in a more or less obviously directing way, is related to the manner she experiences her own aggressive impulses" (Weininger, 1983, p. 37). The parent's management of their own feelings are expected (based on the instrument descriptors) to be reflected in ratings of 'Self Control' (CPI), 'Self Acceptance' (CPI), 'Mood' (DOTS-R) and 'Flexibility' (DOTS-R). The other scales included in the parental Global Temperament Rating (GTR) are 'Sociability' (CPI) and 'Approach' (DOTS-R). These factors would appear important in the parent sustaining positive social support (a factor which has been related to the development of *'secure'* attachment amongst children) (Belsky & Isabella, 1988). Table 2.4 summarises the scale used in the Parental Global Temperament (GTR) rating.

TABLE 2.4

THE DIMENSIONS USED TO DEVELOP THE PARENTAL GLOBAL
TEMPERAMENT (GTR) RATING.

DIMENSION	MEASURE	DIMENSION	MEASURE
Sociability	CPI	Approach	DOTS-R
Empathy	CPI	Flexibility	DOTS-R
Self Control	CPI	Mood	DOTS-R
Psychological Mindedness	CPI	Distract-ability	DOTS-R
Self Acceptance	CPI		

In developing a single score for the parents' GTR, each of the dimensions used was transformed into a Z-score before being added and divided by the total number of factors involved (i.e. the Z-scores of: Sociability + Empathy + Psychological Mindedness + Self Acceptance + Self Control + Approach + Flexibility + Mood + Distractability /9). This ensured that each factor contributed equally to the final parental rating.

2.2.3. Attachment Assessment.

The Strange Situation Procedure (Ainsworth & Wittig, 1969) was used to assess the toddler's attachment to the mother and the father. The instructions for the parent and the stranger were obtained from Ainsworth et al. (1978). The procedure involves 8 three minute episodes (outlined in Table 1.1, p. 46) during which the toddler's responses to the separation and reunion with their parent is observed. Sessions were shortened if the child became unduly upset by the separation. In this assessment emphasis is placed on the child's responses during the two reunions (episodes 5 & 8), although the child's quality of exploration and play and the child's need for proximity and contact to the parent throughout the assessment, are considered in the overall determination of the attachment classification. The child is rated on a 7 point scale on each of four factors (proximity seeking, contact maintaining, avoidance and resistance). Researchers have consistently emphasised the need for specialised training in the rating of the Strange Situation

Procedure (Richters, Waters & Vaughn, 1988; Lamb et al. 1985, Sroufe personal communication 25 March, 1988). Subsequently training was undertaken by the researcher in July/August 1990 at the University of Minnesota under Allen Sroufe and Mary Main.

In order to ensure that each child assessed using this Strange Situation procedure was introduced to a new person, four female strangers were trained for this project. The training of the 'strangers' involved viewing of a video tape of the procedure implemented at the Child Development Institute, University of Minnesota (Sroufe, 1982) and clarification with the 'stranger' of the rating requirements (e.g. the parent's reunion with the child is not to be interrupted by the stranger leaving, the child needs to be away from the door when the parent enters and the general level of interaction the stranger should initiate with the child throughout the assessment was clarified). An Aboriginal 'stranger' was recruited to assist in the assessment of two Aboriginal children.

While the attachment research to date has tended to report attachment outcomes as *'avoidant'* (A), *'secure'* (B) or *'ambivalent'* (C) (Ainsworth, 1975: Ainsworth et al., 1978; Main & Weston, 1981), the attachment classification procedure initially identifies the child's attachment behaviour as one of 8 sub-categories. (These categories have been described in Table 2.5.). Several authors have re-classified those

TABLE 2.5

THE ATTACHMENT CLASSIFICATION CATEGORIES

Label	Brief Description
A_1	Conspicuous avoidance of parent in reunion episodes (e.g. ignoring, pointed looking away, turning or moving away). No approach on reunion, or approach is abortive. Little or no contact maintaining if picked up. Tendency to treat the stranger the same as the parent is treated.
A_2	Some tendency to greet and approach the parent mixed with a tendency to turn, move, or look away, or to ignore. Maybe some contact maintaining, but in the context of avoidant behaviour.
B_1	Greets the parent on reunion with positive distance interaction rather than approach and contact seeking. Little contact-maintaining if picked up. Little separation distress, and perhaps some avoidance during reunions.
B_2	Tends to approach and greet the parent, but only low degree of contact seeking behaviour. Perhaps avoidance in episode 4. Low contact maintaining if picked up.
B_3	Actively seeks physical contact on reunions, and shows active contact maintenance. Gains comfort from attachment figure and thus soothes after separation and is subsequently able to explore in his/her presence. Little avoidance or resistance.
B_4	Clear contact seeking, especially in reunion episodes, but the contact seeking and contact maintaining behaviours are less active and competent than those of B_3 infants. The infant does not gain sufficient security or comfort from the adult's presence to permit subsequent exploration and affiliation, particularly in the post separation episodes. Seems anxious throughout. May also show some resistance to parent.
C_1	Strong proximity and contact seeking and contact maintaining in reunion episodes, mingled with conspicuously resistant, angry behaviour. High separation distress. Resistance may also be directed toward stranger.
C_2	Extreme passivity, with little exploration even in pre-separation episodes, and little active proximity seeking or contact maintenance although, largely by crying, they manifest a desire to be held. Resistant behaviour not as strong as in C_1 infants.

From Lamb, Thompson, Gardner & Charnov (1985, p. 37).

attachment categories into *'secure'* vs *'insecure'* (with the *'insecure'* classification including both *'ambivalent'* and *'avoidant'* attachment outcomes) (Arend, Gove & Sroufe, 1979; Lewis, Brooks-Gunn, & Jaskir, 1985). Research by Connell (Reported in Lamb et al. 1985) indicated that B_1 and B_4 sub-classifications may be considered *'borderline secure'* attachment outcomes. Connell reported that cluster analysis for his sample demonstrated close similarity between the B_1 and A categories and the B_4 and C categories. Similar findings have been reported by Goldberg et al. (1986) who found that B_1 and B_4 infants, while having many of the *'core secure'* characteristics, differed from B_2 & B_3 *'securely'* attached infants in the expression of avoidance and resistance during reunion episodes. These authors also noted that the mothers of B_2 and B_3 infants were rated as being more sensitive and co-operative with their children while mothers of B_1 and B_4 infants were the "least responsive to their infants". Goldberg et al. (1986) indicated that, within their sample, the inclusion of the B_1 and B_4 sub-categories within the *'secure'* group would have resulted in non-significant results between *'secure'* and *'insecure'* attachment groups on maternal sensitivity. While Goldberg et al. (1986) separated the sub-group B_1/B_4 from the *'core secure'* group, other authors have combined *'avoidant'* infants with the B_1 sub-classification and *'ambivalent'* infants with the B_4 sub-classification, yielding an adjusted A (A~), adjusted C (C~) and with the adjusted B (B~) consisting of the *'core secure'* group (B_2 and B_3) (Shiller, Izard & Hembree,

1986). Connell and Rosenberg (cited by Ainsworth et al., 1978) have also re-classified attachment categories, based on the understanding that B_1 and B_4 attachment subgroups were appropriately considered *'borderline insecure'*. Following Shiller et al. (1986), the present research reclassified attachment categories along the same dimensions ($A^\sim$, $B^\sim$ and $C^\sim$). This allowed for meaningful analysis to be conducted on two groups(*'core secure'* and *'insecure/borderline secure'*) of relatively equal size (20 *'core secure'* and 23 *'insecure/borderline secure'*).

Inter-rater reliability for the attachment assessments was established through the present researcher reliability coding ten assessments from a current Ph. D. research project at Macquarie University. The concordance rate achieved a Kappa of .86 with 9 of the 10 tapes rated having agreement on major attachment classifications. Arrangements for a sample of 10 assessments from this study to be coded for reliability was unable to be finalised in time.

2.2.4. Parent-Child Interaction Assessment.

While the measures used by Ainsworth et al. (1978) related largely to the caretaking style of the mother, the study of play and problem solving behaviours has been considered by many researchers to be another guide in understanding the relationship between the child and the mother (Goossens, & Van IJzendoorn, 1990; Malatesta, Culver,

Tesman & Shepard, 1989; Lewis & Feiring, 1989; Marino, 1988; Frodi, Grolnick & Bridges, 1985). One of the reasons researchers have sought to assess relationships through play rather than home observations is that, within social play interaction between parent and child, there is a need for both parent and child to engage in a process where each contributes to the richness of the task in a manner in which each person is able to stimulate and regulate both their own activity and the other person's involvement (Stern, 1974). Such interactions may not be as easily observed during more functional care arrangements. Researchers who have assessed the attachment quality through play relationships have generally found that among 'secure' relationships there was more mutual involvement, positive affect and turn-taking (Roggman, Langlois & Hubbs-Tait, 1987; Kiser, Bates, Maslin & Bayles, 1986).

The interaction assessment used in this study was the Assessment of Older Infants' Behaviour (A.O.I.B.), or the 'Kangaroo Box' procedure developed by Als and Brazelton (1981). The assessment consists of the parent and the child being introduced into a room which only contains a toy wind-up kangaroo in a perspex box (no other toys are available). The kangaroo is accessible through a port hole in the box with a swing door hinged on the inside. The task "challenges the child's cognitive, social and affective" capacities (Als & Brazelton, 1981). The parent and the child are asked to "play with a small wind-up kangaroo" for 6

minutes, then the parent returns the kangaroo to the perspex box and sits, on the floor, away from the box. During the next 6 minutes the parent does not respond to the child. This is followed by a further 3 minutes reunion episode. The play sequence is video taped using the apparatus explained above in the Strange Situation assessment.

This procedure was designed to assess behavioral organisation in toddlers at 18 months of age. The assessment rates toddlers' competence in their fine-motor, gross-motor, cognitive and affective organisation and social interaction. The toddlers' play is considered in respect of their general competence, self-regulation, the degree of facilitation needed and their demonstrated pride or pleasure in the task. During this assessment the parents are rated on their physical and social input and their acknowledgment of the child's behaviour. The procedure also rates the interactive measures of turn-taking, synchronisation and overall quality of the interaction. These interactive dimensions are aggregated to yield a 'Total Interaction Score'. Ratings are defined on a 5-point scale with the higher ratings indicating a more positive outcome.

Nine of the forty three assessments (21%) were scored by an experienced researcher (Dr. Dolby of Prince of Wales Hospital, Sydney) familiar with the assessment procedure and who had achieved reliability with Dr Als, through training tapes. The rater was unaware of all other data in the study

(the toddler's attachment outcome and the parent's and toddler's temperament rating). The inter-rater reliability ranged from moderate to high (correlation of .81 for 'turn taking' to .916 for overall interaction). Table 2.6 outlines the inter-rater reliability for the interaction measures used.

TABLE 2.6

INTER-RATER RELIABILITY.

BEHAVIOUR	r	p
TURNTAKING	.8102	.004
SYNCHRONISATION	.8725	.001
QUALITY OF INTERACTION	.8453	.002
OVERALL INTERACTION RATING	.9157	.000

2.3. Procedures.

Families involved in this study were interviewed by the researcher prior to any assessment. During this interview the procedures involved were explained to the parents and written consent forms were given to both the mother and the father for completion. Both parents were given, and asked to complete independently, two temperament questionnaires referring to their child (the Toddler Temperament Scale (TTS) and the Dimensions Of Temperament Survey (DOTS-R)). The interview was also used to gather information about the parents' occupations, age, educational background, the number of children in the family and a developmental history of the

child. A questionnaire, rating the level of each parents' involvement in the day to day management of the child (Belsky & Isabella, 1988), was administered during this interview.

Each parent was involved in two assessments at the University. During the first assessment the child's temperament questionnaires (given out at the initial interview) were collected and a second set of two questionnaires were given to the parents for completion. These questionnaires referred to the parents' own temperament (Dimensions Of Temperament Survey - revised (DOTS-R); Windle and Lerner, 1986) and personality (California Psychological Inventory (CPI); Gough, 1988). Once again the parents were asked to complete the questionnaires independently. Families where the first questionnaire had not been completed at the time of the first attachment assessment were given the second set of questionnaires at a later date after the first questionnaires had been collected. The DOTS-R employs the same questions for both parent and child and it was necessary to ensure that both versions of the questionnaire were not available to the parent at the same time in order to avoid contamination of the parent's responses (through the parents having opportunity to compare their ratings of their child with their ratings of themselves). The second set of questionnaires was collected from the parents at the time of the second attachment assessment. Arrangements were made with single parents for the questionnaire to be collected

from their home. One father was unable to complete the California Psychological Inventory before moving from the area.

The order in which the child's attachment to the mother and the father were assessed was randomised, although this was not always possible due to family commitments. The attachment assessments, with the mother and the father, were separated by a minimum of one month, with the average time being 1.9 months. Where the child was older than 16 months at the time of the first assessment, the interaction assessment (Kangaroo Box), with that parent, was arranged between two and three weeks after the attachment assessment. If children were younger than 16 months, the interaction assessment (which is designed for children approximately 18 months of age) was conducted following the second parent's attachment assessment and when the child was as close to 18 months as practical. Developmental assessments (Bayley Scales of Infant Development: Mental Developmental Index) were conducted following the child's first interaction assessment. On six occasions the developmental assessment had to be arranged at a later date and was completed at the family home, as the child demonstrated clear signs of tiredness following the 'Kangaroo Box' assessment.

The attachment and interaction assessments were conducted in a lecture room 6m by 9m, which, with the use of partitions, was arranged into an area 6m by 5.5m. Three

video cameras were placed in the room, with two of the cameras being connected to remote control units allowing both tilt and swivel action. The third camera was fixed above the door to record the child's initial expression when the parent entered the room during the attachment assessment. Camera signals were integrated into a single video tape by means of a special effects generator. All cameras were easily visible to the child and the parent. Because some of the children were distracted by the cameras their movements were minimised to reduce the disruptions in the child's natural responses throughout the assessments. Due to the video requirements of both the attachment assessment (Strange Situation Procedure) and the interaction assessment (Kangaroo Box) the procedures were conducted in the same room.

3. RESULTS.

3.1. Overview of this Sample Compared to Other Studies.

The results are reported in two sections, the first section compares this sample to normative data from other studies. The second section tests the hypotheses proposed in this research.

3.1.1. The Strange Situation Assessment.

The Ainsworth-Wittig Strange Situation procedure assesses the infant/toddler's attachment behaviour over 8 three minute episodes to determine the style of attachment. In this procedure there is a strong emphasis placed on the child's response to the parent during the two reunion episodes (5 and 8), although behaviour in other episodes may also be used in the final determination of attachment classification. A general description of the major classifications and subgroups are presented in Table 2.5, (see p. 120) (Lamb et al., 1985). Those toddlers who are classified at the extreme of either end of the 'secure' classification (B_1 or B_4) have similarities with the 'avoidant' and 'ambivalent' groups respectively and have been referred to by some researchers as 'borderline secure'. The toddlers rated as B_1 tend to use more distal interaction with the parent and on reunion may demonstrate mild avoidance. The toddlers rated as B_4 require substantial physical contact with the parent on reunion, often remaining close to the

parent when the stranger enters the room and may display some resistance towards the parent in the reunion episodes.

Using the traditional classification procedure, (including B_1 and B_4 sub-groups in the *'secure'* classification) the sample in this study was distributed across the major classifications (A, B & C) with 5% being rated as *'avoidant'* *(A)*, 77% being rated as *'secure'* *(B)* and 18% classified as *'ambivalent'* *(C)* (refer to Table 3.1 for comparison with other studies). Low proportions among Australian toddlers classified as *'avoidant'* *(A)* have also been found in a research project being conducted concurrently at Macquarie University (Radajovich, personal communication, November 1991).

TABLE 3.1

DISTRIBUTION OF ATTACHMENT CATEGORIES.

CATE-GORY	AINSWORTH 1978	WATERS et al. 1979	VAUGHN et al. 1989	CURRENT STUDY
A	22%	20%	20%	5%
B	66%	60%	62%	77%
C	12%	20%	18%	18%

In the present study the classifications are altered from the above traditional system to include the B_1 subgroup with the A classification, and the B_4 with the C classification; developing an *'adjusted A'* (A^-), an *'adjusted C'* (C^-) and leaving a *'core secure'* group comprised of B_2 and

B_3, referred to as 'adjusted B' (B^-). As has been done by Shiller et al. (1986) and Hazen and Durrett (1982), the two groups (A^- and C^-) are collectively referred to as 'insecure/borderline secure'. With the adjusted classifications (A^-, B^- and C^-), the proportion of toddlers in each category ('core secure' vs 'insecure/borderline secure') are similar to those reported in Ainsworth et al. 1978 (p. 237) (see Table 3.2). In Ainsworth et al. (1978) the sub-categories B_2 and B_3 represented 52% of the sample (46.5% in the current sample), the remainder of the sample representing 48% (53.5% in the current sample).

TABLE 3.2

DISTRIBUTION OF ADJUSTED ATTACHMENT CATEGORIES.

CATEGORY	AINSWORTH 1978	CURRENT STUDY
B_2 & B_3 (B^-)	52%	47%
A/B_1 & B_4/C (A^- & C^-)	48%	53%

3.1.2. Child Temperament.

Mothers and fathers independently rated the temperament of their child using the Toddler Temperament Scale (Australian Form), originally developed by Fullard et al. (1984). Ratings on this measure indicated that 37% of children were classified as 'easy', 14% as 'difficult', 4% as 'slow to warm up' and 44% as 'intermediate' (High=22% and

Low=22%). These proportions fall within 5% of those found in other studies. Table 3.3 presents this comparison with other studies.
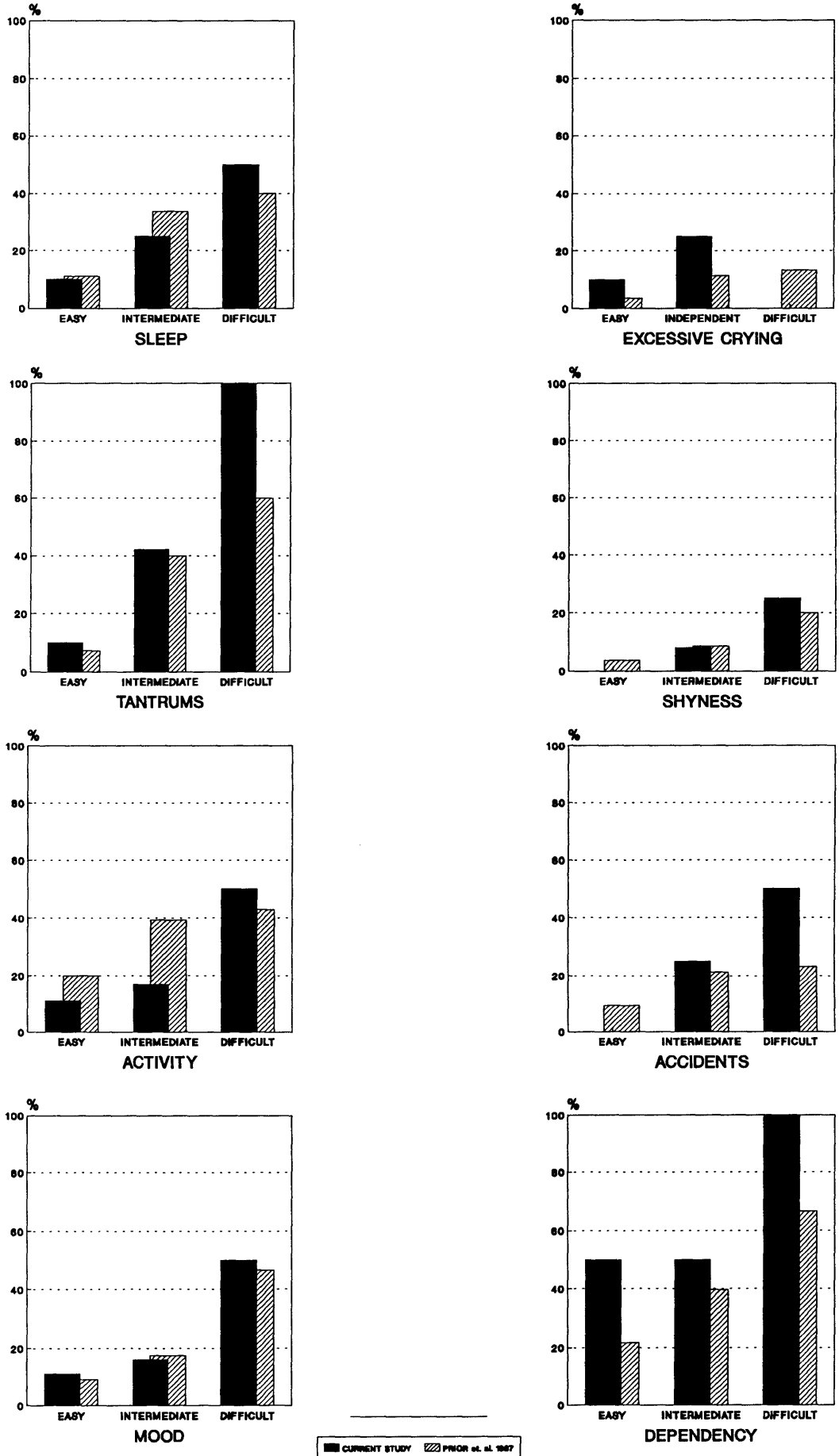
TABLE 3.3

DISTRIBUTION OF TEMPERAMENT CLASSIFICATIONS BASED
ON THE MOTHERS' RATINGS OF THEIR CHILD.

CLASSIFICATION	FULLARD et al. 1984	PRIOR et al. 1987	CURRENT STUDY
EASY	37.9%	35.6%	37.0%
DIFFICULT	12.3%	10.4%	14.0%
SLOW TO WARM UP	6.2%	5.2%	4.0%
INTERMEDIATE (HIGH) (LOW)	43.6% (14.2%) (29.4%)	48.9%	44.0% (22.0%) (22.0%)

The mothers also provided a rating of the extent of their child's behaviour difficulties in eight problem areas (Prior et al., 1987). This measure employs a four point rating scale (none to severe, with a 5th option to indicate "cannot say"). Figure 3.1 presents this comparative data between the present study and the research by Prior et al., (1987). In both this sample and a study reported by Prior et al. (1987), mothers of 'difficult' toddlers reported more sleep problems, temper tantrums, mood swings, and dependency among their toddlers than either the 'intermediate' or 'easy' temperament toddlers. That is, parents with toddlers identified as having a 'difficult' temperament reported the highest percentage of moderate to severe problems; 75.00% in the current sample compared to 53.35% in the Prior et al.

FIGURE 3.1

PERCENTAGE OF CHILDREN IN EACH TEMPERAMENT GROUP WITH MODERATE OR SEVERE PROBLEMS.

SLEEP

EXCESSIVE CRYING

TANTRUMS

SHYNESS

ACTIVITY

ACCIDENTS

MOOD

DEPENDENCY

CURRENT STUDY   PRIOR et. al. 1987

(1987) study. While parents of the *'intermediate'* temperament group reported 33.25% with problems of a moderate to sever nature compared to 32.73% in the Prior et al. (1987) research. As could also be expected toddlers identified as *'easy'* were reported to have fewer problems of a moderate to severe nature. An average of 20.25% of *'easy'* temperament children in this sample were reported to have problems of a moderate to severe nature compared to 12.33% in the Prior et al., (1987) research.

Temperament measures based on parental reports are expected to contain a degree of subjectivity on the basis of the parent's relationship with the child as well as the parent's personality. Hence, mothers and fathers may have differing views of their toddlers' temperament on those dimensions which impact differently on their relationship and/or role with the toddler (such as rhythmicity, distractability, threshold) and similar views on other characteristics (e.g. mood, adaptability and approach). The correlations between the mothers' and fathers' independent temperament ratings of the child is presented in Table 3.4.

The results of the temperament measures indicate that while 7 of the 9 dimensions assessed are significantly correlated, there is some variation in the parents' rating of the same child. On the dimensions of Mood, Activity and Intensity the correlation between the parents are moderately high, accounting for 49%, 48% and 46% of the variance

respectively. The results for the other four significantly correlated dimensions (Adaptability, Rhythmicity, Approach, and Persistance) explained less of the variance (42% to 31%), while Distractability and Threshold were not significantly correlated. As expected, the parents' ratings of the child are therefore reflecting some personal or contextual differences as well as some common observations between them.

TABLE 3.4

CORRELATION BETWEEN THE MOTHER'S AND THE FATHER'S TEMPERAMENT RATING OF THE CHILD.

TEMPERAMENT FACTORS	r N(22)	p
OVERALL TEMPERAMENT$_a$	0.6270	p=.001
ACTIVITY	0.6912	p<.001
RHYTHMICITY	0.6248	p=.001
APPROACH	0.5853	p=.002
ADAPTABILITY	0.6521	p=.001
INTENSITY	0.6784	p<.001
MOOD	0.7006	p<.001
PERSISTANCE	0.5586	p=.003
DISTRACTABILITY	0.3118	p=.079
THRESHOLD	0.0471	p=.418

a Correlation between the overall temperament classifications (Easy, Intermediate Low, Intermediate High, Difficult) based on the mother's rating and the father's rating.

As well as answering specific questions about their child, parents also reported their overall perception of how 'easy' they considered their child to be (on a 5 point rating scale ranging from "much easier than average" to "much more

difficult than average"). A strong correlation between the ratings given by both parents was found on this scale (r=0.6760, p <.001).

The results also indicated a strong reliability for the global TTS measure as a predictor of *'Easy/Intermediate Low'* and *'Difficult/Intermediate High'* categories (r = 0.8045, p<.001).

While parents were asked to complete both the Toddler Temperament Scale (TTS) and the Dimension of Temperament Survey (DOTS-R), parental comments in relation to the DOTS-R indicated that some of the behaviours surveyed on this questionnaire were not appropriate for the toddlers involved. Confidence in the DOTS-R for this study was further eroded by attention being drawn to a review of temperament (Hubert & Wachs, 1982) which noted that the DOTS-R was normed on toddlers with a mean age of 3.97 years, considerably older than the present sample. Prior to the processing of the data, the results of the DOTS-R for the toddler was excluded from the analysis as a result of the concerns raised during the study. In a post hoc analysis the DOTS-R was analysed separately for agreement between the parents. Inter-parent agreement ranged from moderately high for the toddler's 'mood' (r=.67 n=22, p<.001) to low for 'task' (r=.262 n=22, p=.119). Statistical significance for the inter-parent agreement (probability adjusted to .005 to account for the number of correlations performed) was achieved on three of the nine dimensions (Flexibility, Mood and Sleep).

3.1.3. Parent Temperament.

Questionnaires were also used to obtain a global rating for the parents dispositions. Parents were assessed using two self-report measures; The Dimensions of Temperament Survey (DOTS-R) and the factors from the California Psychological Inventory (CPI). Table 2.4 (p. 117) reports the nine dimensions used to derive a Global Temperament Rating (GTR) for the parent.

TABLE 3.5A

CALIFORNIA PSYCHOLOGICAL INVENTORY.
MALE SAMPLE'S MEANS AND STANDARD DEVIATIONS.

	CPI		CURRENT STUDY	
SCALE	MEAN	S.D.	MEAN	S.D.
DOMINANCE	20.89	4.75	22.30	5.86
SOCIABILITY	20.44	5.32	20.59	5.11
SOCIAL PRESENCE	25.42	3.90	25.62	4.81
EMPATHY	20.74	4.86	19.19	3.59
SOCIALISATION	29.92	6.08	32.66	5.43
SELF-CONTROL	20.12	6.62	23.87	5.26
ACHIEVEMENT VIA CONFORMANCE	25.80	5.86	27.41	3.81
ACHIEVEMENT VIA INDEPENDENCE	21.78	6.11	25.11	3.91
PSYCHOLOGICAL-MINDEDNESS	15.53	3.95	17.72	2.64
FLEXIBILITY	14.24	4.26	13.37	4.55
SELF-ACCEPTANCE	17.67	3.50	18.25	3.24
INTERNALITY	17.36	6.05	18.93	6.87

While there are no established population means for the DOTS-R, such data are provided for the CPI. Tables 3.5A (for

males) and 3.5B (for females) compare the current sample with
the normative data of the CPI. The sample in this study was
found to have similar means and standard deviations to the
normative data reported in the CPI manual (Gough, 1988)
across all dimensions of the CPI that were measured.
Therefore, although the scoring of the CPI in this present
study used a percentage rating rather than a straight count
of answers (due to the fact that respondents occasionally did
not complete all questions), the similarity of these results
with the established norms justifies this variation in the
rating procedure.

TABLE 3.5B

	CPI		CURRENT STUDY	
SCALE	MEAN	S.D.	MEAN	S.D.
DOMINANCE	20.08	5.00	20.55	6.43
SOCIABILITY	20.84	5.13	21.47	5.05
SOCIAL PRESENCE	24.57	4.25	24.30	5.07
EMPATHY	20.77	4.98	21.94	4.56
SOCIALISATION	31.33	6.34	31.85	5.68
SELF-CONTROL	21.04	6.59	23.02	6.59
ACHIEVEMENT VIA CONFORMANCE	27.18	5.92	26.94	6.45
ACHIEVEMENT VIA INDEPENDENCE	21.88	6.45	25.98	5.67
PSYCHOLOGICAL-MINDEDNESS	15.30	4.44	15.86	3.98
FLEXIBILITY	14.16	4.09	14.84	4.07
SELF-ACCEPTANCE	17.54	3.50	18.13	3.53
INTERNALITY	18.80	6.05	19.52	8.48

CALIFORNIA PSYCHOLOGICAL INVENTORY.
FEMALE SAMPLE'S MEANS AND STANDARD DEVIATIONS.

3.1.4. Summary.

The sample in this study is within expected ranges for the assessment procedures used; toddler temperament and parent personality factors are all close to the normative data derived from other studies. While the distribution of Attachment classifications has a lower number of *'avoidant'* infants and a corresponding higher number of *'secure'* infants, proportions of B_2/B_3 toddlers to the *'insecure /borderline secure'* group are similar to those reported in the formative analysis by Ainsworth et al. (1978).

3.2. Assessing the Support of the Data for the Hypothesis.

The degree of similarity in temperament within a relationship is expected to generally facilitate strong mutual understanding and a positive interaction between parents and toddlers. This expectation is operationalised in the following hypotheses, which first seek to establish the independence of attachment from either the parent's or the child's temperament on its own. The validity of the proposed idea of 'match' and 'mismatch' is then investigated, initially as a general concept, then more closely, assessing the impact of the direction of the 'match'. It is expected that the toddler's attachment outcome to the mother will be independent of the toddlers attachment outcome to the father if the temperament of the toddler, on its own, is not directly contributing to the attachment outcome.

The relationship of temperamental 'match/mismatch' to the quality of the interaction between the parent and the child is then assessed, using the Kangaroo Box procedure. Attachment quality has been found to be related to parent-child interaction (in research quoted earlier in this paper) and the expectation in this study is that 'match' and 'mismatch' of temperament between the parent and the toddler will be significantly related to differing patterns of interactional styles for the dyads.

Finally, while the child's temperament is not expected to affect the *'secure/insecure' attachment outcome*, it is

expected to influence the *type of 'insecurity'* a child will display.

In the following analysis I have relied upon the use of correlations, chi-square and MANOVA. While multiple regression would have provided a useful statistical method, the sample size (27 families) and the large number of independent variables for this sample would not allow such procedures. Tabachnick and Fidell (1989) suggest that in standard multiple or hierarchical regression the ratio of cases to independent variables should optimally be about 20 to 1. Therefore this study would require 100 to 120 cases to effectively employ a multiple regression procedure.

3.2.1. The Relationship of the Toddler's Temperament and the Parent's Temperament to Attachment Outcome.

The first question which emerged in this study related to the effect that toddlers' temperament (TTS) and parents' temperament (GTR), as individual factors, contributed to the particular attachment outcome for each parent-infant dyad.

HYPOTHESIS 1a.

Toddler Temperament is orthogonal to Attachment Outcome.

Parental ratings of their toddler's temperament are outlined in Figure 3.2. Among the mother-toddler dyads, *'securely'* attached (B~) toddlers were found to have an

average TTS rating of .283 (s.d. = .704), while the
insecure/borderline secure (A~ & C~) group were found to
have an average TTS rating of -0.056 (s.d.= .638). Both the
secure and *insecure* attachment groups for mothers and
fathers individually were found to have similar
distributions. Those infants who are *secure* with their
mothers, were also rated by those mothers as slightly, but
not significantly, more positive in their global temperament
(TTS) than the *insecure/borderline secure* group or either
of the paternal dyads combinations (*secure* or
insecure/borderline secure).

FIGURE 3.2

MEAN AND S.D. FOR THE TODDLER
TEMPERAMENT SCALE (TTS)
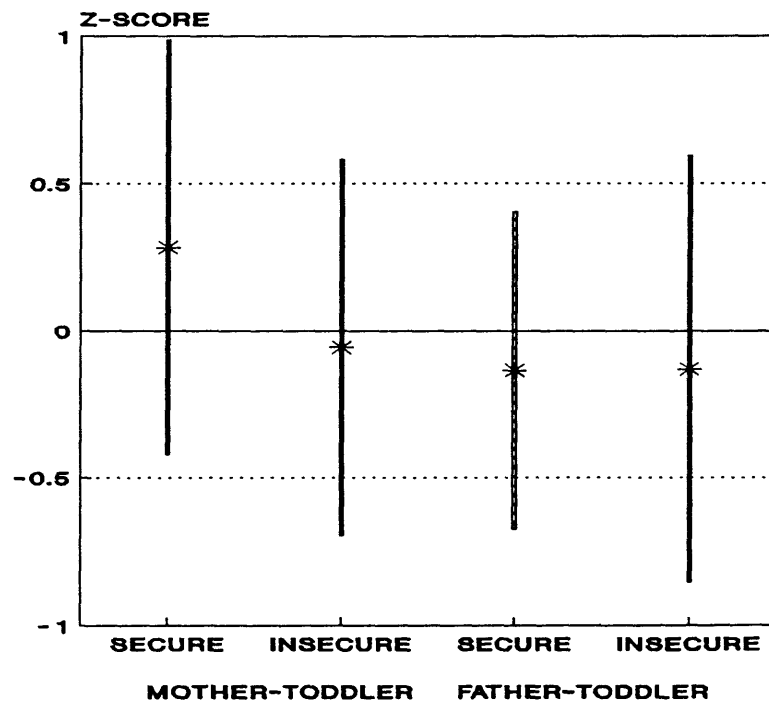
This study found that the correlation between attachment outcome and temperament for the total population (44) was not significant ($r=.1521$, $p=.162$) (point bi-serial correlation with attachment categories of *'core secure'* with *'insecure /borderline secure'*.) Correlations were also used to evaluate the relationship between toddlers' attachment outcome and temperament separately for both the mother-toddler and father-toddler relationships; these correlations were also not significant (mother-toddler, $r=.2532$ $p=.101$; father-toddler, $r=.0041$ $p=.494$). These findings are consistent with results reported in Vaughn et al. (1989), who concluded that "temperamental difficulty and attachment security are not directly related" (p. 734). While temperament has not been found to predict the attachment outcome, Vaughn et al. (1989) indicated that temperament did influence the infant's reactions in the Strange Situation assessment. The infant's distress at the separation from the mother (but not in the reunion episodes), was related to temperament factors; they speculated that "emotional distress in the reunion has different external determinants than separation distress".

Having found that toddlers' temperament was not significantly correlated with attachment outcome in this sample, neither for the group as a whole nor for mothers or fathers separately, it was important to evaluate the significance of the parents' temperament (GTR) with attachment outcome to see if this factor in isolation will be predictive of attachment outcome.

HYPOTHESIS 1b.

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┌─────────────────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────────────────┐ │
│ │  Parent Temperament is orthogonal to Attachment Outcome.│ │
│ └─────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────┘
```

The results of the analysis of the parental GTR, outlined in Figure 3.3, are similar in pattern to the results reported above for the TTS ratings and attachment. Parental GTR for both mothers and father presented similar means and standard deviations. This pattern did not alter when attachment security was considered.

FIGURE 3.3

MEAN AND S.D. FOR THE PARENTAL GTR.
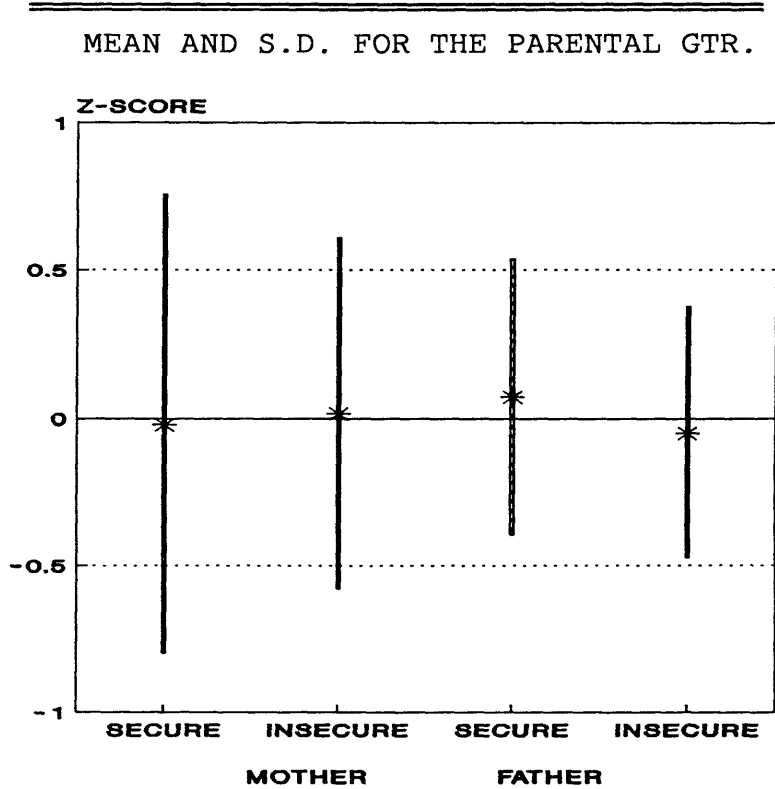
Using the adult global measure of temperament (GTR) for the combined sample of mothers and fathers, the correlation

between parental temperament and toddler attachment was not significant (r=.0294, n=43 p =.462). Similar to the above analysis for toddler temperament, correlations for the mothers and fathers (as separate groups) were conducted and also found not to be significant (mothers r=-.0616, n=27 p=.380; fathers r=.0582, n=16 p=.415).

TABLE 3.6

CORRELATIONS BETWEEN ATTACHMENT OUTCOME AND
THE TODDLER'S TTS AND THE PARENT'S GTR.

	TEMPERAMENT MEASURE	
	TTS_a	GTR_b
PARENTS n=43	.1521	.0294
MOTHERS n=27	.2532	.0616
FATHERS n=16	.0041	.0582

a. correlation of the parents/mother/father rating
   of the toddler and the toddler's attachment
   outcome with that parent.
b. correlation of the parents/mother/father rating
   of their own temperament and the toddler's
   attachment outcome with that parent.

What the above results (see Table 3.6 for a summary) show is that neither the parent's temperament (GTR) nor the toddler's temperament (TTS), as **single** factors, influence attachment security. The lack of a significant finding in hypothesis 1a and 1b strengthen the importance of any interactional relationships emerging in the following hypothesis.

3.2.2. A Test of the Temperament 'Fit' Hypothesis.

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.*

Central to this hypothesis is the expectation that 'matching' dispositions between parents and their toddlers will contribute to the establishment of a *'secure'* relationship and that **'mismatch'** will yield a lower proportion of *'secure'* relationships (B^-) and an increase in *'insecure'* relationships (A^- and C^-) (i.e. *'insecure /borderline secure'*). Parental GTR and the toddler temperament ratings (TTS) were each divided into two groups (High and Low, based on the average for the sample); the combinations of these were used to identify **'match'** and **'mismatch'** among the parent-toddler dyads. Refer to Table 3.7 for an outline of how these interactions are combined in the design.

These combinations were then collapsed into a 2 cell design, allowing the parent-toddler dyads to be classified into **'match'** (those dyads where both the parent and the toddler were rated in the same direction) and **'mismatch'** (those dyads where either the parent was above the mean on

the parent GTR and the toddler was below the mean on the TTS or vice versa).

TABLE 3.7

INTERACTION BETWEEN PARENTAL
GTR AND TODDLER TTS.

		CHILD	
		HIGH	LOW
PARENT	HIGH	MATCH	MISMATCH
	LOW	MISMATCH	MATCH

Note: Those ratings above the mean (Z–score >0) were considered 'High', while those falling below the mean are considered 'Low' for that factor.

Seventeen of the **'matched'** dyads were rated as having a *'core secure'* attachment and twelve were rated as *'insecure/borderline secure'* attachment outcomes. The **'mismatched'** dyads showed a contrasting pattern with only 3 dyads having *'core secure'* attachment outcomes and 11 showing *'insecure/borderline secure'* outcomes (see Table 3.8 for details of the distribution). The distribution of *'core secure'* and *'insecure/borderline secure'* relationships for temperament **'match'** and **'mismatch'** was evaluated using a chi-square analysis. In this analysis an overall significance was found in the differences between the **'matched'** and **'mismatched'** groups ($X^2=3.8612$, df=1 p<.05).

TABLE 3.8

DISTRIBUTION OF TEMPERAMENT PROFILE & ATTACHMENT OUTCOME
ALL PARENTS.

| | | ATTACHMENT | | ROW |
		INSECURE	SECURE	TOTAL
TEMPERAMENT PROFILE	MISMATCH	11 78.6%	3 21.4%	14 32.6%
	MATCH	12 41.4%	17 58.6%	29 67.4%
	COLUMN TOTAL	23 53.5%	20 46.5%	43 100%

This analysis was then repeated for the mothers and the fathers (separately) to determine if this pattern was attributable to either mothers or fathers individually. The ratio of 'match' to 'mismatch' was consistent (2:1) for both mother-toddler and father-toddler dyads. Analysis of the mothers' relationships with their toddler indicated a similar but stronger finding to the overall sample (X^2=6.71669, df=1, p<.01 and a Somers 'D of 0.63158). For mothers, the 'matched' group was found to have a higher than expected number of *'core secure'* attachment outcomes and a lower than expected number of *'insecure/borderline secure'* outcomes. 'Mismatched' dyads also evidenced results in the expected direction with all 8 dyads showing *'insecure/borderline secure'* attachment outcomes. (Table 3.9 below gives details of the mothers' results.)

TABLE 3.9

DISTRIBUTION OF TEMPERAMENT PROFILE & ATTACHMENT OUTCOME MOTHERS ONLY.

TEMPERAMENT PROFILE		ATTACHMENT		ROW TOTAL
		INSECURE	SECURE	
	MISMATCH	8 100%	0 0%	8 29.6%
	MATCH	7 36.8%	12 63.2%	19 70.4%
	COLUMN TOTAL	15 55.6%	12 44.4%	27 100%

TABLE 3.10

### DISTRIBUTION OF TEMPERAMENT PROFILE & ATTACHMENT OUTCOME FATHERS ONLY.

TEMPERAMENT PROFILE		ATTACHMENT		ROW TOTAL
		INSECURE	SECURE	
	MISMATCH	3 50%	3 50%	6 37.5%
	MATCH	5 50%	5 50%	10 62.5%
	COLUMN TOTAL	8 50%	8 50%	16 100%

The data for the fathers was analysed using Fisher's

Exact Test (because the N in this analysis was less than 20

and a 2x2 Design was employed, a Chi-Square was not appropriate). The distribution for both 'match' and 'mismatch' was as chance would predict (Table 3.10 above gives details of the fathers' results).

FIGURE 3.4

COMPARISON OF REUNION EPISODES (5 & 8) FOR
MATCHED/MISMATCHED MOTHER-TODDLER DYADS.

MATCHED DYADS   MISMATCHED DYADS
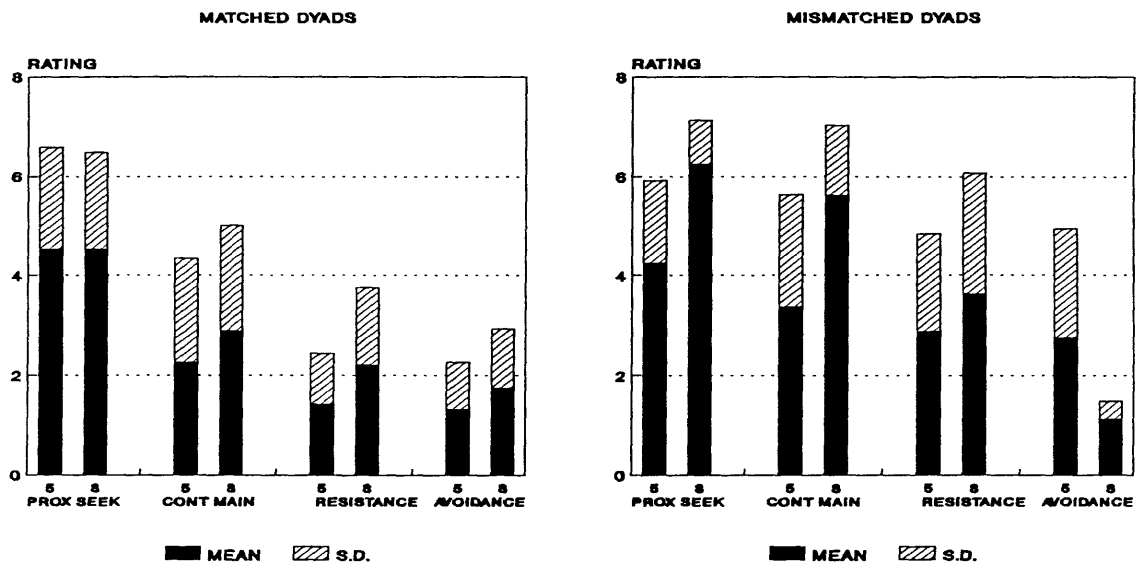
Having found significant differences in attachment outcomes between 'match' and 'mismatch' dyads for mother-toddler relationships only, a closer investigation of the toddlers' behaviour during the reunion episodes with the mothers was warranted. There are four behaviours measured in the attachment assessment (proximity seeking, contact maintaining, resistance and avoidance) and for the 'matched' group there were minor variations in mean and standard deviation across the two reunion episodes, while the 'mismatched' group evidenced consistently larger fluctuations on each behavioural index (See Figure 3.4 above).

Contact maintaining and Proximity seeking in episode 8 was significantly less for those toddlers who were in the 'matched' group than that observed for the 'mismatched' group (point bi-serial correlation, r =-.444, p=.01 (correlation of contact maintaining with 'match/mismatch'), r=-.4138, p=.016 (correlation of Proximity seeking with 'match/mismatch')). T-tests in Table 3.11 comparing the mother-child groups ('match' and 'mismatch'), indicate significant differences between the toddlers' responses in the 'matched' and 'mismatched' groups on factors of Proximity Seeking (p<.05) and Contact Maintaining (p<.005) in the second reunion.

TABLE 3.11

COMPARISON OF MATCHED AND MISMATCHED GROUPS IN THE SECOND REUNION OF THE STRANGE SITUATION ATTACHMENT ASSESSMENT.

| VARIABLE | DYAD | | | | t(25) |
| | MATCH | | MISMATCH | | |
	MEAN	S.D.	MEAN	S.D.	
PROXIMITY SEEKING	4.525	1.954	6.25	0.886	2.37*
CONTACT MAINTAINING	2.895	2.105	5.625	1.408	3.35**
RESISTANCE	2.211	1.548	3.625	2.446	.82
AVOIDANCE	1.737	1.195	1.125	0.354	1.71

Based on two-tail test for significance.
* p <.05
** p <.005

3.2.3. Analysis of Types of Match and Mismatch Patterns.

As a result of the significant difference in Attachment outcome patterns that was found between 'matched' and 'mismatched' dyads for the mothers, it was of interest to look more closely at the particulars of the mother-child temperament 'fit', i.e. to compare the 'positive' mother-child 'match' with the 'negative' mother-child 'match' as well as the combination of 'mismatched' relationships. Hypotheses 3 to 5 detail precise expectations for these particular combinations of parent and child temperament 'Fit'.

In this analysis mother and toddler temperament ratings were grouped into **positive 'match'** (where both parent and toddler were rated as having *'positive'* GTR and *'easy'* temperament respectively), and **negative 'match'** (the mother being rated on the GTR as below the sample mean and the child as tending to be *'difficult'* in temperament). Two other sub-categories of this factor are derived from the possible combination of **'mismatch'** between mother and toddler ratings. The results of this analysis (see Table 3.12 for the distribution of the sample over the total of 8 groups) indicate that the distribution of the mother-toddler dyads were in the expected direction ($X^2 = 9.122$, df=3, $\underline{p} = .0277$). The sample distribution size and the number of cells in the design resulted in six of the eight cells having an expected frequency of less than 5.

TABLE 3.12

DISTRIBUTION OF MOTHERS' AND TODDLERS' TEMPERAMENT
PROFILES & ATTACHMENT OUTCOMES.

ATTACHMENT

|		INSECURE	SECURE	ROW TOTAL
	−MOTHER +CHILD	3 100%	0 0%	3 11.1%
TEMPERAMENT PROFILE	+MOTHER −CHILD	5 100%	0 0%	5 18.5%
	−MOTHER −CHILD	2 40%	3 60%	5 18.5%
	+MOTHER +CHILD	5 35.7%	9 64.3%	14 51.9%
	COLUMN TOTAL	15 55.5%	12 44.5%	27 100%

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.*

Mothers who rated themselves above average on the GTR and their toddlers as above average on the TTS (that is *'easier'* than average for this sample) had a higher proportion of relationships (64.3%; 9 of the 14) classified as *'core secure'* attachments. This is higher than for any

other group. Among the 'core-secure' group seven of the nine toddlers were found to have TTS ratings of at least .5 standard deviations above the mean (temperamentally 'easier' toddlers) while only one of the five toddlers in the 'insecure/borderline secure' group had a TTS rating of greater than .5 standard deviation above the mean. Comparisons of the toddlers' TTS rating and the maternal GTR rating for each of the attachment groups is presented in Figure 3.5.

FIGURE 3.5

GTR AND TTS Z-SCORES FOR POSITIVE MATCH DYADS.
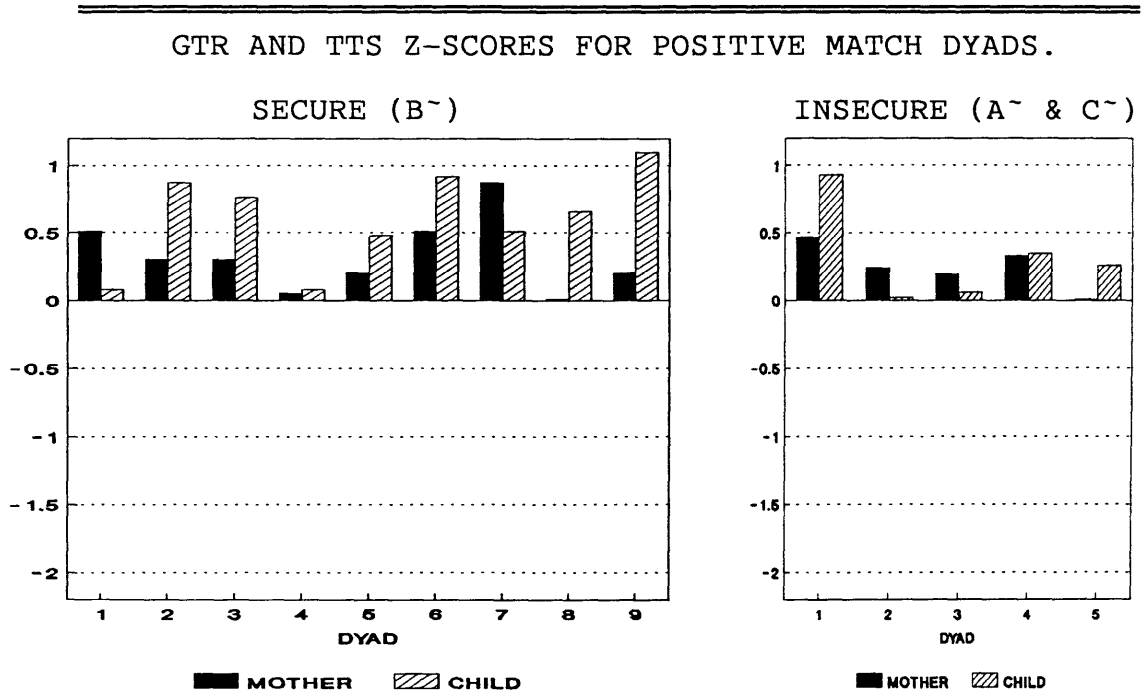
HYPOTHESIS 4

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 'negative match' mother-child relationships the mother's GTR and the child's temperament (TTS) were both

rated as below average. That is, the toddler was rated as more *'difficult'* than average for the sample and the parent was self-rated as less positive. Low ratings on the GTR would on the basis of the descriptors be similar in characteristics to a *'difficult'* toddler (refer to table 2.1 and 2.3). In this case the frequency of *'secure'* and *'insecure'* attachment outcomes were close to even (3 dyads had toddlers rated as *'core secure'* and 2 dyads with toddlers rated as *'insecure/borderline secure'*). A secondary investigation of the data was performed to identify if there were any distinguishing patterns for either *'core secure'* or *'insecure/borderline secure'* dyads. Comparative data for maternal and toddler dyads is presented in Figure 3.6.

FIGURE 3.6

GTR AND Z-SCORES FOR NEGATIVE MATCH DYADS.

SECURE (B⁻)   INSECURE (A⁻ & C⁻)
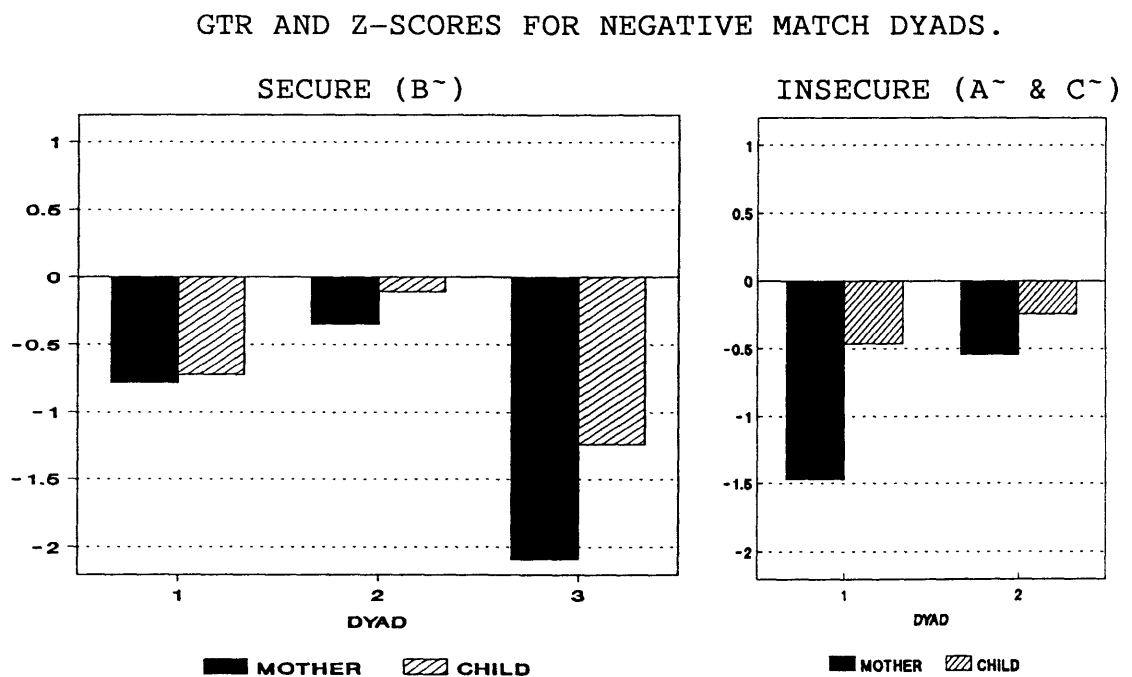
Among this group there is no clear pattern distinguishing attachment groups. In both attachment groups all the mothers obtained a comparatively more negative rating (GTR) than their toddler (TTS). The lack of distinction between the attachment groups may be attributable to other contextual variables (reported earlier in the review section of this paper) but not assessed in this study due to the already heavy commitment from the parents involved.

HYPOTHESIS 5

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

The most striking result is within the 'mismatched' group. In this sample all 8 dyads were found to have *'insecure/borderline secure'* attachment outcomes. In five of the eight relationships mothers were found to have a positive GTR rating with their toddlers being rated as more *'difficult'* than average, while in the remaining three 'mismatched' dyads the toddlers were rated as *'easier'* than average. Figure 3.7 provides a clear overview of the dyads in the 'mismatched' group in which five of the eight dyads evidenced differences between maternal GTR and toddler TTS ratings greater than or equal to .75 standard deviations.

FIGURE 3.7

GTR AND TTS Z-SCORES FOR MISMATCHED DYADS.

INSECURE (A~ & C~)
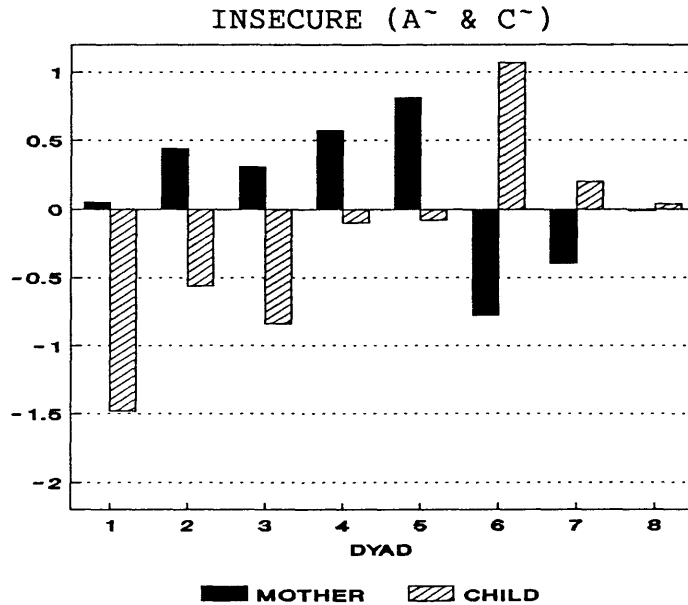
The results reported to this point in the analysis suggest strongly that the significance observed in the data relates to the mother-child temperament fit, as opposed to the father-child relationship, as the central predictors of attachment outcomes.

3.2.4. The relationship of the Child's Attachment to the Mother and to the Father.

HYPOTHESIS 8

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

The majority of researchers who have debated the relationship between temperament and attachment have argued that these are independent and that the quality of the attachment is dependent on the responsiveness of the parent

rather than on the temperament of the child (Sroufe, 1977; Ainsworth et al., 1978; Egeland & Farber, 1984). In the present study there are 17 families where both parents were involved. In 6 of the families the toddler's attachment outcome to one parent was observed to be identical (in sub-category) to their attachment classification to the other parent. An additional 9 of the remaining 11 children were found to have attachment classifications within one subgroup of their attachment to the other parent (refer to Table 3.13), showing a relatively close relationship between the child's attachment to each parent. The high degree of similarity between the toddler's attachment to the mother and the toddler's attachment to the father was unexpected, and contrary to the central assumption that the toddler's attachment would reflect the degree of *'match'* or *'mismatch'* of temperament between themselves and each parent individually.

TABLE 3.13

COMPARISON OF ATTACHMENT OUTCOMES FOR
MOTHERS AND FATHERS.

ATTACHMENT SUB-CATEGORY

Identical sub-category	+/- 1 sub-category	+/- 2 or more sub-category
6	9	2

It was not possible, with the sample size involved in the study, to conduct an analysis on the full group of eight sub-categories, hence the toddlers' attachment outcome with

the mother and the father were grouped into the adjusted classifications (A~, B~ and C~). Chi-Square analysis indicated that the toddler's attachment outcome with the mother was significantly related to the attachment outcome with the father (X^2= 11.4007, df=4, p= .0224). While the Somers 'D (.67033) suggests a high level of confidence in the results, the large number of cells with expected frequencies of less than five indicates the need to accept the result with some caution. For comparison with other studies, the data was then re-analysed using the Ainsworth traditional major classifications of A, B and C. The results of this analysis continued to yield a significant result (X^2=18.557 df=3, p=.001). However, the significance remains tentative given the sample size.

3.2.5. The Relationship of Attachment Outcome to Behaviour Observed in the 'Kangaroo Box Procedure'.

Attachment outcomes have been linked to the quality of parent-child interaction, particularly for infants and children under 12 months of age. In this study, this relationship between the attachment outcome and the quality of the toddler-parent interaction was investigated using the 'Kangaroo Box' procedure (Als and Brazelton, 1981); a semi-structured play situation.

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).

Within this measure, the ratings of the parent's 'facilitation' and 'regulation' of the task as well as the overall interactive rating which comprises the measures of 'turntaking', 'synchronisation' and the 'quality of interaction' were assessed using Multivariate Analysis of Variance, MANOVA. There were no significant relationships between the factors measured in the 'Kangaroo Box' interaction assessment and either the toddler's attachment outcome (F $(3,38)$= .53107, $p<.664$), temperament (F $(6,74)$= 1.9405, $p<.085$) or 'match/mismatch' grouping (F $(3,38)$= .45424, $p<.716$).

3.2.6. The Relationship of Infant Temperament to their Style of Insecurity.

The temperament perspective of attachment which has been proposed by Belsky (1989), states that the child's temperament may not be related to attachment outcome ('secure' or 'insecure') but that it may affect how a child with an 'insecure' attachment expresses this 'insecurity'.

While research investigating Belsky's concept of how temperament impacts upon attachment is relatively recent, the results of such studies have been encouraging. The design of the current study offers an opportunity to assess the relationship between temperament and attachment among toddler's with *'insecure'* attachment outcomes.

HYPOTHESIS 9

> Toddlers who are identified as both Insecure/Borderline-Secure and classified as Difficult on the Temperament measure will evidence a high 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.

Toddlers identified as having an *'easy'* or *'difficult'* temperament and *'insecure'* attachment (A^- or C^-) will respectively display a propensity for *'avoidance'* or *'ambivalence'* in their attachment. In this study the sample of *'insecure/borderline secure'* toddlers were evaluated for the interaction between temperament and style of security. Twenty three dyads were identified as having an *'insecure /borderline secure'* attachment (see Table 3.8, p. 148). Those children identified as having a *'Slow to Warm Up'* temperament were excluded, as it is unclear if such children tend towards *'easy'* or *'difficult'* categories, leaving a sample size of 20.

TABLE 3.14

DISTRIBUTION OF TODDLER TEMPERAMENT & TYPE OF INSECURITY

| | | TYPE OF INSECURITY | |
		A~	C~
TEMPERAMENT	EASY	0	9
	DIFFICULT	5	6

The 2x2 design for this analysis was found to have a significant overall effect between the factors (Fishers exact test p= 0.0298). Contrary to expectations, these results indicate that toddlers classified as having an *'easy'* temperament but *'insecure'* attachment outcome (A~ or C~), were consistently classified as having a B_4/C attachment, that is, all 9 of these *'easy'* toddlers were classified into the *'ambivalent'* attachment style. Furthermore, toddlers who were identified as having a *'difficult'* temperament by their parents were equally present among the A/B_1 and B_4/C (Table 3.14). Such children were predicted to exibit a B_4/C attachment outcome.