

Does temperament influence the parent-child attachment relationship?

Julie Karen Butler

A dissertation submitted to

Auckland University of Technology

in partial fulfillment of the requirements for the degree of

Masters of Health Science – Child Psychotherapy

2010

School of Psychotherapy

Primary Supervisor: Carol Shinkfield

Table of Contents

Attestation of Authorship.....	v
Acknowledgements.....	vi
Abstract.....	vii
Chapter 1 – Introduction.....	1
Clinical experience.....	5
Structure of dissertation.....	9
Chapter 2 – Methodology.....	10
Aim.....	10
Systematic literature reviews.....	12
Modified systematic literature review.....	13
Undertaking a systematic literature review.....	13
Chapter 3 – Temperament.....	17
History of temperament.....	17
Defining temperament.....	21
Revival of temperament to understand infant behaviour.....	22
Temperament classifications.....	24
Temperament theorists.....	26

Neural development, neuroscience and temperament.....	29
Summary.....	32
Chapter 4 – Attachment.....	33
Historical underpinnings of attachment theory.....	33
Attachment theory.....	36
Secure base and attachment behaviours.....	37
Strange situation procedure	39
Attachment classifications.....	42
Internal working models.....	43
Neuro-scientific understanding of attachment.....	45
Summary.....	48
Chapter 5 – Temperament and attachment - A synthesis.....	50
The debate in context for this dissertation.....	50
Temperament and attachment contributory factors explored.....	52
Child as active participant.....	54
Child’s individual temperament as contributor.....	55
Parental influence as contributor	56
Parental sensitivity mediates infant’s emotions and regulation.....	59
Temperament and attachment - bi-directional.....	62

Reciprocity.....	63
Interactive experiences and infant regulation.....	64
Temperament and attachment - a goal-directed partnership.....	67
Summary.....	68
Chapter 6 – Implications for child psychotherapy.....	70
Clinical implications.....	71
Affective interaction.....	72
Reparation.....	72
Clinical models for working with the parent–child dyad.....	75
Goodness of fit – poorness of fit.....	76
Watch, wait and wonder.....	77
Circle of Security protocol.....	78
PACT – Parent and child therapy.....	80
A reflective relationship-based approach.....	81
Conclusion.....	82
Strengths, limitations and further research.....	83
References.....	87

List of tables

Table 1: Temperament dimensions and classifications 3.1.....	24
Table 2: Traditional attachment table 4.1.....	41
Table 3: Attachment classifications according to SSP 4.2.....	43

List of figures

Figure 1: Limbic brain diagram 4.1.....	46
Figure 2: Goodness of fit diagram 6.1.....	78
Figure 3: Circle of Security 6.2.....	79
Figure 4: Circle of Repair 6.3.....	79

Attestation of Authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or another person (except when explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

Signed: _____ Date: _____

Acknowledgements

There are several people I need to mention who have played a crucial role in the undertaking and completion of this dissertation journey. First and foremost are my three children - Benjamin, Jade, and Ethan. It was their uniqueness and individual temperament styles that spurred me into investigating this topic. Also for the culinary delights Jade prepared on the many occasions my stretched study brain was rendered incapacitated and unable to comprehend preparing even a simple meal. For Benjamin's aptitude with computers and the ease and efficiency he demonstrated when assisting me with the creation of tables and diagrams for implementation in this study. For Ethan's continued patience and understanding when I was glued day after day to my computer screen, and for the cuddles he gave freely when he knew I was stressed. And for our pet dog Louis, who at times was a welcome distraction and whose antics made me smile when I wanted to cry. I wish to express my deep gratitude to my parents for their unwavering support and for the secure base they provided me throughout this lengthy journey. I especially want to acknowledge my fellow students and particularly Geraldine who has been my friend, confidante, and whose words of encouragement and wisdom I will always be profoundly grateful for. My special friends Heather and Bette for their support, kind words, and laughter when it was much needed. A special thanks to my supervisor Carol Shinkfield for her

suggestions, motivation, her feedback, and empathic words when at times things felt too difficult. I would like to thank Stephen Appel for his valuable contributions in the early months of getting this dissertation into perspective. A final thank you goes to my psychotherapist Deborah Heays, who has sat patiently over the years, held my many tears, dispersed my fears, nurtured and cherished my hopes for the future.

Abstract

This dissertation explores whether individual temperament influences the development of the parent-child attachment relationship. Temperament theory and attachment theory are explored, and neuro-scientific research is investigated in relation to the origins and impact of temperament and attachment in infant brain development. The research method used in this study is a modified systematic literature review, with the findings summarised but not quantified, as is the case in a more traditional literature review. A considerable amount of the literature clearly delineated each construct as a separately operating entity in the development of the infant. However, many researchers have investigated these constructs simultaneously and established that temperament and attachment are in fact interwoven and are bi-directional in nature; in other words, both exert their influence on development. This study shows that both parent and child are active participants in the parent-child attachment relationship, each bringing their individual contributions to bear on its development. The research implies that temperament does, therefore, exert its influence on the development of the parent-child attachment relationship. Furthermore, the findings clearly highlight that the parent/s have the greater resolve within the relationship and that difficulties in individual temperament styles are able to be mediated through a

parent's sensitivity and responsiveness to the infant's signals and developmental needs.

Chapter 1 - Introduction

The focus of this dissertation is to determine whether individual differences in temperament may influence the development of the attachment relationship between a parent and a child. The precursor for this study on the effect of individual differences in temperament and the emerging attachment relationship began with my own early experiences of being a parent. It was from these early experiences that my thoughts were set in motion as I considered the individual and unique nature of each of the relationships I had with my three children. It was after the birth of my second child that I became acutely aware that infants exhibit their own distinctly different temperament style. These differences were particularly pronounced in their mood, emotionality, level of intensity, and reactivity. Several years later I found myself pondering the impact these differences had on my ability to accommodate their individual needs, and the consequential effect this may have had on the development of our attachment bond. As many parents would agree, parenting can be a richly rewarding experience; however, it is not without its demands and can at times be challenging even for the most well-meaning parent. My interest is to explore what occurs when differences in temperament style are a factor between infant and parent. Can temperament differences create difficulties within the parent-infant dyad as early as birth, such that a parent may struggle to be appropriately

responsive and sensitive to their infant's signals and needs? Do these differences then have the propensity to impede the promotion of felt-security within the parent-child dyad and, therefore, have a negative impact on the emerging attachment relationship?

It was during my study to become a child psychotherapist that I came across references in the reading material that similarly allude to the differences that parents encountered between their offspring: differences that had the potential for the parent to consciously respond to their child's need or unconsciously react to their children's differences. It is the latter that may pose a problem for the development of a secure attachment relationship. It was Donald Winnicott, a well-known pediatrician, child psychiatrist, and psychoanalyst, who wrote from his clinical experiences with parents and their infants, "We hear it said that it is strange that children can be so different from each other when they have the same parents and are brought up in the same house and in the same home" (Davis & Wallbridge, 1981, p91). Winnicott proposed that the actual conception and pregnancy experience played an important role in the nature of attachment the parents formed with the child (Davis & Wallbridge, 1981). He believed that the majority of parents set out to provide their child with the special environment needed at the beginning of their infant's life, "one in which the environment can

evolve according to the inherited (or inborn) pattern of the individual” (Winnicott, 1984), temperament.

Parents that have several children are often heard to comment that each child arrived in the world with their own distinctive personality (Gowen & Nebrig, 2002). Characteristics of their babies are often described in such terms as easy, fussy, active, and sensitive (Thomas & Chess, 1977). In the early days of psychoanalysis and behaviourism the assumption was that a newborn infant was seen as a ‘tabula rasa’ or blank slate, and their personalities were etched by environmental experiences. In more recent times it is acknowledged that the infant arrives with innate biological predispositions (temperament) to behave in certain ways. Currently the nature-nurture perspective views the development of personality as the interaction of biological tendencies and environmental factors. Each child is essentially unique and dynamic in the unfolding of their individual personality development dependent on a combination of heritable biology and environmental experiences (Gowen & Nebrig, 2002).

Winnicott referred to mothering and environmental experience as needing to be simply “good enough” (1984). He believed that the provision of a “good enough” environment facilitates the maturational processes of the infant and its psychological development of the self. These processes encompassed the

provision of regular day-to-day care including bathing, feeding, regulation, warmth and love; factors he considered important in his concept of “good enough”. He maintained that failures in the environmental provision to adapt to the infant’s needs could interfere with the establishment of an individualised self. Additionally, he wrote that the subtle qualities such as sensitivity, emotional involvement and responsiveness among other interactive behaviours expressed by the adult also had an impact on the development of attachment security (Davis & Wallbridge, 1981). These qualities and parent-infant interaction will be expanded on in Chapter 5, which seeks to integrate the concepts of attachment and temperament, viewed through the lens of shared interactivity rather than separate entities that operate in isolation. A synthesis of the literature seeks to establish whether individual differences in temperament have the capacity to affect the development of attachment security. If so what exacerbates and ameliorates potential difficulties?

For a parent, juggling each infant’s differing temperamental traits and their varied and complex responses and signals can denote a fine balance between what constitutes an appropriate and sensitive response to each child; after all, what may appease one child may not necessarily appease another. In my earlier reading, the literature indicated that a parent who is able to attend and adapt to

the demands of their infant and make reparation when things do not go so well has the capacity for the establishment of secure attachment relationship (Bowlby, 1979; Stern, 1985; Walbridge & Davis, 1981; Winnicott, 1984). These are areas that will be explored further in this dissertation.

Clinical experience

My interest in the temperament-attachment domain was again brought to the forefront of my thinking when I embarked on study to become a child and adolescent psychotherapist. My clinical experience allowed me the opportunity to work with children and their families from many diverse social and cultural backgrounds. Some of the children I worked with presented with the characteristics of insecure attachment, mostly in the appearance of ambivalence or avoidance. Each child's presentation was observed with particular attention placed on what behaviour they exhibited at times of separation and reunion with their parent/s or caregiver/s. In conjunction with the observations developmental history details are also taken. Development history is gathered by the clinician during an initial interview with parent/s. The analysis of the data assists the clinician in gaining a clearer understanding of the child's early experience with its caregivers, and provides sufficient information for the clinician to reach an informed opinion as to the child's likely attachment classification. The data can

provide insight as to how the parent/s may experience their relationship with the child, even as early as pre-conception (by this I refer to the parental fantasies and imaginations of what the child might be like in appearance and character prior to conception and during pregnancy). Parental responses noted during the taking of the developmental history, and observations in subsequent meetings can enable the clinician to speculate to some degree on each parent's attachment style. The collation of this information then provides the clinician with an overall picture of how the family operates and functions as a system.

While undertaking my study and working therapeutically with children and their families, I found myself contemplating whether there was a link between individual differences in temperament style between a mother and her child and attachment insecurity. If so how might this be determined? Could temperament therefore play a critical role in the emerging attachment relationship? If so, does the infant's temperament exert a stronger influence, or is the parent's temperament* more influential?

**n.b.1. I use the term 'temperament' rather than 'personality' for the adult, as this study is interested in the emotional content of first early relationships as implied by 'temperament'.*

Can the attachment relationship modify temperament style, or vice versa?
How might this be addressed in my profession and practice as a child
psychotherapist?

Escalona (as cited in Stern, 1985) stressed the importance of the connection between infant and maternal temperaments and how well they 'fit'. Stern (1985) proposed that from a clinical viewpoint it is essential that consideration be given to the interaction between temperament and the concept of fit. This might be expressed in an infant's tolerance for stimulation and ability to self regulate, which may be impinged on by excessive arousal or expectation from a parent/s that exceeds the infant's threshold in these areas. The opposite can also be true, in that the infant experiences a lack of stimulation or deficient parental attunement or sensitivity in his or her achievement of self-regulatory habits. According to Stern (1985), there is worth in the exploration of temperamental differences such as variances in arousal and the relevance this may have in the development of the psychological self.

Stern's suggestion has clear clinical relevance: as therapists we keenly observe a child's levels of excitation, arousal, activity, vigilance, tension, and their capacity to regulate these aspects of self while in the therapeutic environment and during the times they are in the company of their parent/s. It was during my

clinical experiences that I noted in several parents their inability to appropriately and sensitively 'fit' or 'attune' to their child's arousal states. Instead, the parent tended to overact to their child's displays of behaviour or seemed oblivious to it. In both instances a misattuned or ill-fitting response only served to increase the child's disruptive behaviour. This perceived lack of parental sensitivity or responsiveness to their child's signals may have the potential to interfere in the child's capacity to engage in age-appropriate developmental processes and the achievement of internalised self-regulatory systems. If this is the case, then one could extrapolate that it also has the potential to influence attachment security. A premise of attachment security is that a child comes to expect that its needs will be reliably and predictably met by its caregiver/s (Bowlby, 1979; Winnicott, 1984).

In summary, it is personal experience, the scrutiny of my clinical casework, along with observations of other relationships and numerous discussions with friends and colleagues on the subject of temperament and attachment that prompted me to investigate this subject further, culminating in the formulation of the research question: "Does temperament influence the development of the parent-child attachment relationship?"

Structure of dissertation

The present chapter introduced the topic to be researched; Chapter 2 will discuss the methodology to be implemented in carrying out the research. Chapter 3 will explore temperament, including historical influences and more recent advances in the understanding of individual differences in temperament, and concludes with consideration of temperament from the neuro-scientific perspective. Chapter 4 will discuss attachment theory, assessment of attachment, attachment classifications, and will conclude with current neuro-scientific research in relation to attachment and early infant brain development. Chapter 5 provides a synthesis of the data gathered in the process of completing the systematic literature review. The findings are presented in terms of responding to and answering the research question. This chapter endeavours to look at these two constructs in a way that they can dovetail and support each other. Chapter 6 considers the implications and possibilities this research has for the profession and practice of child psychotherapy and other professionals in the fields that work with children and families. The chapter also discusses the strengths and limitations of the current study, in addition to other areas of research for consideration in the advent of future investigation in this area and concludes this research project.

Chapter 2 – Methodology

This chapter discusses the aim and methodology used in the present dissertation and provides a brief conceptual overview of the chosen methodology and of evidence based practice.

The chosen methodology for this research is a modified systematic literature review. The systematic literature review has been modified to best answer the research question, and the rationale for the adaptation will be discussed. To ensure the modified systematic literature review meets the research criteria, the six-step method as devised by Dickson (1999) was employed. Dickson's step-by-step approach provides a clear and logical format in completing systematic reviews.

Aim

The aim of this dissertation is to investigate whether individual temperament characteristics have the propensity to influence the development of the attachment relationship between the infant and the caregiver. The research will investigate the theoretical paradigms of temperament and attachment in the context of infant development. Within Chapters 3 and 4 the concepts of temperament and attachment will be examined to provide the reader with a clear understanding of each paradigm. Chapter 5 will address the research findings

and through the process of assimilation and synthesis will endeavour to answer the research question identified in Chapter 1.

A finding on attachment theory research is that attachment security is detectable as early as the first year of life (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982; Carlson, Sampson, & Sroufe, 2003). Temperament theorists postulate that individual temperament characteristics are observable from early infancy (Gowen & Nebrig, 2002; Kagan, 1994; Kagan & Snidman, 2004; Kazdin, 2000; Kristal, 2005; Rothbart, et al, 2000; Thomas & Chess, 1989; Wachs, 2006). Taking into account the comparative nature of these basic principles, this systematic review of literature will be focused on the first three years of an infant's development. Furthermore the review will be modified to explore attachment theorist's view that the first three years of an infant's life are a crucial timeframe in the development and maintenance of the parent-child attachment relationship (Sroufe, et al, 2003). And investigate temperament theorists view that as the infant develops he/she becomes engaged in wider socialisation and increases his/her cognitive abilities, which enables the infant to modulate his/her behaviour (Kagan, 1982; Kagan & Snidman, 2004).

A tenet of this research review is to access available knowledge and utilise it to inform the professional practices of those working in the fields of family, infant and child mental health, such as child and adolescent psychotherapists,

psychologists, family therapists, and social workers; and to provide more in-depth understanding of individual temperament dynamics and how they might impede or promote the development of attachment security.

Systematic literature review

Systematic literature reviews are considered invaluable in their capacity to provide data sourced from an extensive amount of existing information that has been efficiently integrated (Mulrow, 1994). The gathered data is appraised and synthesised, a process that is deemed to limit bias, improve reliability and accuracy (Dawes, 2005; Dickson, 1999; Mulrow, 1994). The data is investigated and appraised for its consistency and whether it can be generalised across various settings and varied populations. Furthermore, Mulrow (1994) points out that systematic literature reviews are a “fundamental scientific activity” (p. 597) in that the effective reduction of large amounts of information into smaller, more meaningful portions enables the information to be more easily digested. The author does, however, caution that in order for the data collected to be meaningful, it will be dependent on what was done, what was found, and the clarity of the results presented. This, in turn, will also depend significantly on the quality of the studies included. Following Mulrow’s premise the studies included in this review have therefore been appraised for their reliability, consistency, and whether they can be applied across a variation of contexts.

Modified systematic literature review

In keeping with the focus of the research question, this review has been modified. The value in the modified systematic literature review from a clinical perspective is that it is not confined to randomised control trials (RCT) and scientific quantitative data. This research approach allows for the inclusion of important data available in qualitative studies that might otherwise be missed (Pearson, 2004). The aim is to retrieve the best-evidenced information and knowledge available with the intent to better inform the clinical practice of child psychotherapy. As the field of psychotherapy has its empirical basis in clinical situations, a modified systematic literature review is often seen as a preferred research method (Fonagy, 1982). In particular, this approach can greatly assist the clinician in being able to keep up with the most recent and best available research within their specialty area, as well as gain ready access to other areas of similar interest. Furthermore, it can indicate or alert the researcher to extended areas of research that have or have not been considered (Moher, Liberati, Tetzlaft, & Altman, 2009).

Undertaking a systematic literature review

In undertaking the process of a systematic literature review Dickson (1999) points to several key areas. First is the definition of the research question;

this was addressed in the previous chapter. Second is the method and steps employed to identify research studies. A search of appropriate databases was carried out including, though not limited to, PsychInfo, PEP, Psychology and Behaviour Science, Expanded Academic, AUT Library Catalogue, Proquest Dissertations and Theses. Journal searches included *Child Development*, *Journal of Personality and Social Psychology*, *Infant Mental Health Journal*, *Journal of Behaviour and Development*, *American Psychologist*, and *Developmental Psychology*. Websites searched were, www.zerotothree.org. and www.naturalchild.org.

A non-systematic search was carried out via a manual search of AUT Library including the serial *Zero to 3*; further articles and books were retrieved from the reference lists in journal articles and from books in my possession. Further searches undertaken were of authors cited in articles and prominent in the domains related to temperament, attachment and infant development. A search of Google Scholar failed to identify articles that were not available through previously searched databases as outlined above.

The third of Dickson's key steps is the basis on which studies are selected and the criteria for inclusion or exclusion of these articles. As this dissertation is specifically focused on the first three years of an infant's development, articles

were confined to this age range, unless a review of the abstract led me to consider the article had some merit for the research being undertaken. Studies beyond this age group, such as school-aged children and adolescents, were therefore excluded. Articles pertaining to the development of psychopathology and temperament, and psychopathology and attachment were excluded, as they were deemed outside the parameters of this dissertation, as were articles that extended temperament to include personality development. Steps four and five entail the appraisal and quality of the studies identified and the process of extracting the relevant data from these articles. Due to the extensive literature on the phenomenon of temperament and the variation of theoretical definitions of temperament, articles were selected and assessed to best meet the research objective. In-depth exploration of the literature highlighted that a majority of studies were based on the mother-infant or mother-child dyad, and maternal sensitivity. A wider search was undertaken in attempt to identify studies that incorporated fathers and studies that included both parents. It seemed critically important to include fathers in this research as Belsky and Barends (2002, as cited in Kochanska, et al, 2004) and other relatively studies suggest that fathers have come to play a significantly more active role in childrearing (Burney & Leerkes, 2002; Kochanska, Friesenborg, Lange, & Martel, 2004; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokowski, 2007; Seifer & Schiller, 1995). Earlier

studies tended to exclude fathers, viewing mothers as taking the primary role in the development of the early attachment relationship (Bates, Maslin, & Frankel, 1986; Goldsmith & Alansky, 1987; Kochanska, 2004; Nichols, Geregely, & Fonagy, 2001). In general, articles investigating 'personality characteristics' were aimed at adult development while articles investigating 'temperament characteristics' were directed towards infant development. As personality formation extends to include cognition, motivation, personal experience (Kagan & Snidman, 2004; Kristal, 2005), and other trait patterns such as the "big five" (extraversion, agreeableness, conscientiousness, neuroticism, openness) (Kochanska, et al, 2004), it is beyond the scope of this paper. Articles including personality traits were therefore appraised for their reference to temperament and relevance to the research objective. The sixth and final step of this review process involves the integration and synthesis of the research findings, as addressed in Chapter 5.

Chapter 3 - Temperament

This chapter begins with a historical account of temperament including its ancient origins, its decline in popularity, its renaissance, and the influx of research that occurred as a result of its revival. A definition of temperament and the controversy over an accepted definition is examined. Temperament classifications and associated behaviour characteristics are explored, followed by a discussion of those theorists prominent in the field of temperament and infant development. Consideration of neuro-scientific research in the area of temperament and neural development concludes this chapter.

History of temperament

Temperament has its roots in the ancient Graeco-Latin medicine theory and related the four humours or fluids; blood, phlegm, black and yellow biles. The word temperament originated from the Roman word 'temperamentum' (Rothbart, Ahadi, & Evans, 2000) and its Latin equivalent 'temperare' which translates as 'to mix' (Kagan, 1998; Kazdin, 2000; Kristal, 2005). The theoretical idea of temperament dates back 2000 years to the discoveries of two ancient physicians, Hippocrates in Greece and Galen in Rome (Kagan, 1982; Kagan & Snidman, 1991; Kazdin, 2000; Kristal, 2005; Rothbart et al; 2000). They believed primarily temperament referred to the biographical characteristics of action and emotion,

and that the individual's temperament determined behavioural leanings, emotional tendencies, and their susceptibility to particular diseases. Galen believed temperament was a mix of the four bodily humours; phlegm, blood, and the black and yellow biles, and from these identified four temperament types: melancholic; sanguine; phlegmatic; and choleric. Temperament was seen to be rooted in the individual's physiological constitution, and when in balance was recognised as the ideal. Galen further suggested external events had the capacity to shape a person's temperament style in particular diet (warm and cold foods) and climate (seasons), as well as other environmental factors (Goldsmith, Buss, Plomin, Rothbart, Chess, Hinde, & McCall, 1987; Kagan, 1982, 1998; Kagan & Snidman, 1991; Kazdin, 2000; Rothbart, Ellis, Posner, 2004; Vaughan & Bost, 1999).

The idea that bodily fluids controlled behaviour was eventually disregarded; however, temperament theory remained popular until the latter half of the 19th century, until the emergence of two new schools of thought (Kagan, 1998; Kazdin, 2000). These new schools were psychoanalysis and behaviourism. They were quick to ascend in popularity and became widely accepted as a new means to explain behaviour. The rapid rise in status of these schools within the scientific research communities meant that the relevance of temperament was soon minimised (Kazdin, 2000; Kristal, 2005). Freud, in the psychoanalytic camp,

attributed temperament differences to the excitability of the nervous system and libidinal energies available to the infant. He went on to suggest that the infant was a 'tabula rasa' or blank slate and, therefore, biological differences in behaviour were negligible (Chess, 1989; Kagan & Snidman, 1991; Mangelsdorf & Frosh, 2000). The behaviourist view formed by the likes of Skinner (Kristal, 2005) and Watson (Karen, 1994) considered that the infant's early conditioning shaped behaviour, while Bandura (Kristal, 2005) proposed that a child's behaviour was attributed to learned experiences in social situations.

Behaviourism and psychoanalysis were to be challenged by two American psychiatrists: Alexander Thomas and Stella Chess (Karen, 1994; Thomas & Chess, 1989; Mangelsdorf & Frosh, 2000). They were skeptical of the behaviourist notion that personalities were entirely shaped by their environmental experiences (Gowen & Nebrig, 2002; Karen, 1994) and were unconvinced by the prevailing view of the time that the etiology of behaviour problems and disorders in children was a result of "inadequate or inappropriate parenting" (Wach, 2006, p.28). It was their dissatisfaction over the premise that parenting was the problem that prompted them to revive the concept of temperament (Kristal, 2005; Wachs, 2006; Thomas & Chess, 1989). In 1956 Thomas and Chess embarked on what became known as the New York longitudinal study (NYLS) comprising 130 babies and their parents (Chess, 1991; Gowen & Nebrig, 2002; Thomas &

Chess, 1989). Their intention was to record the potential of biologically based individual differences in children's behaviour styles and temperament characteristics. Their groundbreaking study perpetuated a flood of research over ensuing decades, resulting in varied theoretical ways of viewing, determining, and describing temperament (Goldsmith, et al, 1987; Gowen & Nebrig, 2002; Kagan 1982; Kagan & Snidman, 1991; Karen, 1994; Wachs, 2006).

Theodore Wachs (2006), a temperament researcher, believed a consequence and limitation that came about as a result of the NYLS was that in the years that followed, researchers chose to focus on temperament in isolation viewing it as a main effect predictor and outcome. In his view, although these studies provided a great deal of information about temperament and its role in personality development, they failed to help resolve more pressing issues. He argued for the importance of temperament to be understood as part of a system connected to multiple influences and outcomes. That by employing a systemic approach to temperament it would extend to other important areas, such as: developmental areas of motivation and cognition; family and environmental context; quality of familial relationships; cultural values and beliefs that promote or inhibit different characteristics of the child; age, gender, biomedical and nutritional status; and the structure and function of the nervous system. Wachs suggested this would give practitioners and professionals working in the areas of

child and family an added advantage in gaining a comprehensive picture as to what extent the role variables in individual temperament differences may play in behaviour, infant and child development, and their attachment relationships (2006).

Defining temperament

The disagreement over what constitutes an accurate definition of temperament stems from the multiple areas of research involved in the temperament domain, including personality, psychology, psychopathology, adult development, and has resulted in several variations (Goldsmith, et al, 1987; Kagan & Snidman, 1991, 2004; Kazdin, 2005; Wachs, 2006). The present study is guided by a definition that best explains temperament in the context of infant development:

Temperament is the constellation of inborn traits, a combination of psychobiological features that have moderate stability over time and situations, under some genetic influence and usually appearing during infancy (Gowen & Nebrig, 2002; Kagan, 1982; Kagan & Snidman, 2004; Kazdin, 2000; Kristal, 2005; Rothbart, et al, 2000; Thomas & Chess, 1989; Wachs, 2006), determined a child's unique behavioural style in the way he or she experiences and reacts in the world (Thomas & Chess, 1989).

It is important to mention that recent evidence suggests that differing contextual factors can influence the expression of different temperaments; it is therefore generally accepted that there is only moderate trait stability throughout development (Wachs & Kohnstamm, 2001).

Revival of temperament to understand infant behaviour and development

The NYLS primary objective was to ascertain and explain temperament differences in infants (Kagan & Snidman, 2004; Kristal, 2005; Thomas & Chess, 1989; Chess, 1991, 1997). Thomas and Chess set about gathering data through the implementation of parental report questionnaires and trained observer reports as a means to record infant behaviour characteristics (Gowen & Nebrig, 2002; Kristal, 2005; Thomas & Chess, 1977, 1989). The results identified nine temperament behaviour qualities or dimensions (Kazdin, 2000; Thomas & Chess, 1977; Wachs, 2006). From a mix of these nine dimensions they were able to differentiate three broad temperament classifications. The three classifications are easy, difficult, and slow-to-warm-up (these will be discussed in more detail later in this chapter). Throughout their research Thomas and Chess (Kristal, 2005) emphasised that developmental factors and individual temperament differences needed to be understood within the context of one's environment, and the impact temperament differences had on behaviour. This was a crucial

area of their work in what came to be referred to as 'goodness of fit'. This model is discussed in Chapter 6.

Follow on studies continued this thread and looked at the joint contributions of temperament and contextual factors and applied these to developmental research. This research then extended to temperament and attachment, temperament and behaviour disorders, temperament and adult personality development, and temperament and infant cognitive performance. Temperament research has assisted in the greater understanding of the nature of individual temperament, different dimensions of temperament and their development, and the contribution temperament has on later development (Goldsmith, et al, 1987; Wachs, 2006; Sroufe, 1985, 2000).

A further result of the NYLS study was the investigation into variables of specific dimensions in temperament which raised questions as to whether individual differences were heritable, or whether they were stable across time and whether classifications of attachment can be reflected in different temperaments (Chess, 1977, 1991; Gowen & Nebrig, 2002; Kagan, 1982; Kagan & Snidman, 1991, 2004; Karen, 1994; Kristal, 2005; Lieberman, 1995; Mangelsdorf & Frosch, 2000; Ofosky, 1979; Thomas & Chess, 1997; Vaughn & Bost, 1999). This study also prompted the consideration of whether individual differences in child temperament had the capacity to influence parental behaviour

(Kochanska, Aksan, & Carlson, 2005), and whether there were links between a child's early temperament and later personality development (Kochanska, Friesenborg, Lange, & Martel, 2004; Vaughn & Bost, 1999; Wach's, 2006).

Temperament classifications

The three temperament classifications of easy, difficult, slow-to-warm up (see Table 3.1) are defined from a mix of nine behaviour dimensions (Chess, 1979, 1991; Gowen & Nebrig, 2002; Kagan, 1982; Kagan & Snidman, 2004, 1991; Karen, 1994; Kristal, 2005; Lieberman, 1995; Ofosky, 1979; Thomas & Chess, 1997). The nine behaviour descriptors consist of approach/withdraw, distractibility, activity level, quality of mood, attention focus, rhythmicity/self-regulation, threshold of responsiveness, adaptation, and reaction intensity. Chess discovered (Chess, 1997; Kristal, 2005) that behaviour traits clustered together in either positive or negative expression, for example, a child who was regular in bodily functions, was responsive to stimuli, approached new situations and unfamiliar people with minimal fear, expressed a generally positive mood/affect, moderate to low intensity was considered 'easy'. Whereas the child who is irregular in bodily functions, is wary of new places and people, expresses a predominantly negative mood or affect, was slow to adapt, was irritable, and high intensity would be considered 'difficult'. The child, who demonstrated fearfulness,

Temperament dimensions describing behavioural style:

(derived from the NYLS, Thomas and colleagues (adapted from Kristal, 2005, p14-15):

Sensory threshold describes the level of stimulation necessary to evoke a response.

Activity level is the child's general level of motor activity when awake and asleep.

Intensity is the reactive energy of a response, whether happy sad or angry; how expressive a child is.

Rhythmicity determines the predictability of bodily functions such as appetite, sleep/wake cycle, and elimination patterns.

Adaptability describes how easily a child adjusts to changes and transitions.

Mood is the basic quality of disposition. It may be more positive (a happy or cheerful child) or more negative (cranky or serious child).

Approach /withdrawal is the child's initial response to novelty: new places; people; situations; or things.

Persistence describes the ability to continue an activity when it is difficult or when faced with obstacles; "stick-to-it-iveness."

Distractibility is the ease with which the child can be distracted by extraneous stimulation; the level of concentration focus.

The varying degrees to which children exhibit the nine dimensions determine the children's temperament, different patterns of behaviour are produced through a combination of these traits, variations are potentially unlimited. However, Thomas and Chess devised three distinct patterns: *easy, difficult and slow-to-warm-up*.

withdrew in novel situations, is very shy with unfamiliar people, is slow to regulate bodily functions, showed a predominantly negative affect or mood, and had low intensity of expression was defined as 'slow-to-warm-up' (Chess, 1997; Kazdin, 2000; Kristal, 2005).

Notable researchers in the field of temperament, such as Jerome Kagan, chose to develop their own categories. Kagan (Kagan, 1982; Kagan & Snidman, 1991, 2004) proposed the opposing concepts of 'inhibition' and 'uninhibition' to explain temperament differences in behaviour, while H. Goldsmith in collaboration with Joseph Campos proposed temperament as individual differences in the experience and expression of arousal and primary emotion (Kristal, 2005). Buss and Plomin, investigators of temperament and personality development, identified three traits that they believed constituted temperament, these were: emotionality in all its extremes; activity involving vigour and tempo; and sociability (the preference for being in the company of others rather than being alone) (Goldsmith, et al, 1987; Kristal, 2005). Mary Rothbart, a prominent temperament researcher, and her colleagues (Kagan & Snidman, 2004; Rothbart, Ahadi, & Evans, 2000) looked at individual differences in reactivity and self-regulation, and proposed that temperament is not limited purely to the domains of emotion but includes activity level, attention focus, and orientation which are imperative in the infant's development of self-regulation and autonomy.

Temperament researchers have challenged the usefulness of several of the original nine dimensions suggesting there are similarities, overlaps, and that they are cumbersome in their application (Goldsmith & Harman, 1994; Kristal, 2005; Rothbart, et al, 2000; Wachs, 2006). For example, disagreement was sparked by the investigations of Rothbart, et al (2000; Rothbart, Ellis, & Posner, 2004), who noted that several of the dimensions had been generalised to all areas of an individual's behaviour. In their findings they observed that although the infant might exhibit a particular behaviour, such as fearfulness in certain stressful situations, he/she did not necessarily show the behaviour across all situations. Furthermore, their findings indicated that several of the nine temperament dimensions overlapped and were, therefore, deemed unnecessary. They proposed a reduction or amalgamation of some dimensions to promote clarity and ease in temperament assessment.

Temperament theorists

The theoretical paradigms outlined here are by no means an exhaustive approach in the investigation of temperament. However, due to the limited scope of this study only theories grounded in infant development have been implemented. For the most part, researchers have continued to use or have modified and expanded on the original findings of Thomas and Chess's NYLS

(Vaughan & Bost, 1999; Goldsmith, 1987; Kagan, 1989; Kagan & Snidman, 2004; Robinson, Kagan, Reznik, & Corely, 1992). Vaughan and Bost (1999) suggested that temperament theories could be grouped into four main perspectives: Behavioural Style; Emergent Personality; Emotional/Physiological Regulation; Temperament as Social Construction. Each theoretical perspective has points of difference (Vaughan & Bost, 1999), such as the number and nature of temperamental dimensions, techniques used to measure temperament, consideration of biological factors, and developmental trajectories. However, aside from this, each approach shares important common themes with the others that have merit in understanding individual temperament. Each look to levels of observable behaviour, for example, tendencies toward negative and positive affect and how this is expressed reactively in the context of one's environment; the quality of exchange between the infant and its caregivers and others in the environment; psychomotor activity/reactivity and arousal states characterised in the capacity to self-regulate. Most importantly, each approach is in agreement that individual differences in temperament are detectable in early infancy (Goldsmith, et al, 1987; Vaughan & Bost, 1999). The contribution of these theoretical approaches provides understanding of qualities and variations in the expression of temperament differences in behaviour and how these are

expressed in the context of the environment, and in the interactivity between an infant and its caregivers (Rothbart, et al, 2000; Vaughan & Bost, 1999).

The theoretical ideas of Mary Rothbart and her colleagues have dominated the infant temperament arena over the past 20 years (Kagan & Snidman, 2004). Rothbart, et al (2000) focused their research on the development of temperament during infancy into toddlerhood. They discovered connections between temperament and biology and linked temperament to constitution and disposition. From these findings they devised two primary temperament dimensions - reactivity and self-regulation - and proposed individual differences in these dimensions. By reactivity they referred to the responsiveness, excitability, and arousability of the behavioural and physiological systems within the infant. They proposed the ease of arousal of these systems and the levels of activity and emotionality that were of interest. By self-regulation (Kagan & Snidman, 2004; Rothbart, et al, 2000) they referred to the neural and behavioural processes that serve to modulate reactivity in relation to attention focus, approach or withdrawal, restraint, and the capacity to self-regulate. They observed that infants high in reactivity exhibited intense and prolonged crying behaviours and used vigorous and continuous limb movements, often in response to unfamiliar stimuli. An infant that regularly engaged in these types of

behaviour was described as temperamentally 'difficult'. In contrast, low reactive infants exhibited minimal limb movement, low activity, cried less, showed minimal distress, and were seen as 'slow-to-warm-up'. The infant that was able to modulate his/her behaviour, was easily soothed or developed the capacity to self sooth (regulate) was seen as having an 'easy' temperament.

The theoretical ideas of Rothbart et al (2000) and those of Thomas and Chess (1977; Chess 1989) established an understanding of individual differences, temperament characteristics and their complex variations, levels of activity and arousability (including qualities of positive and negative affect), and how these characteristics manifest in an individual's behaviour. The question is whether these differences in temperament behaviour, within the context of the environment and subsequent interaction between infant and caregiver, have the potential to influence the development of the attachment relationship.

Neural development, neuroscience and temperament

There has been considerable evidence documenting the influence of the central nervous system and the contributions of the autonomic nervous system to individual differences in temperament (Kagan, 1982; Kagan & Snidman, 2004; Wachs, 2006). The recognition of the biological basis for differences in

temperament brought those in the field of temperament and investigators of early brain development together in a comparatively new field, affective neuroscience (Gowen & Nebrig, 2002). Those engaged in the research believed that individual differences arise from the ease with which various emotional systems in the brain are activated (arousal states) and proposed that such individual differences are present from birth (Todd & Dixon, 2010). According to Todd and Dixon, those infants with easy temperament, or who are 'uninhibited' as proposed by Kagan (1982), expressed more positive affect and were emotionality predisposed for social engagement, in contrast to the emotionally negative, difficult, slow-to-warm-up (Thomas & Chess, 1989) or 'inhibited' (Kagan, 1982, Kagan & Snidman, 1991, 2004) infants who compromised their quality of social engagement.

Physiological studies and tests show that the variations in temperament categories, such as easy and difficult for example, differ in a significant component in the function of the brainstem. However, as yet, researchers have not been able to clearly define explicitly what neural components are triggered to create these variations in behaviour (Woodward, McManis, Kagan, Deldin, Snidman, Lewis, & Kahn, 2001). One suggestion has been that the primitive fear circuit (inferior colliculus), which receives projections from the control centre responsible for memory and emotional reactions (amygdala), is consistently more

impulsive and volatile in children who are high in reactivity. These findings indicate that highly reactive infants, often classified as difficult in the Thomas and Chess temperament scale (1977; Chess, 1989), have lower thresholds of activation in the central areas of the amygdala. This information has been regarded as beneficial in determining infants that might be at risk of later developing anxiety, neurosis, or other social anxiety disorders (Woodward, et al, 2001).

Carlson, Sampson, and Sroufe (2003) proposed that the interactive experiences between the infant and the primary caregiver during the early weeks and months promoted development in neural pathways in the form of experience-expectant systems. The infant's behaviour response would thereby be dictated by the numerous reoccurring experiences within its environment. Comparatively, research in infant mental health has come to acknowledge that there are strong links between the interactivity of inborn biological differences and the effect of the environment on behaviour. The influence of one's environment combined with individual temperament traits produces each distinct individual and associated behaviour (Kristal, 2005).

Current research in infant development explores the prospect of understanding temperament from birth by investigating neo-natal pain cries. Jong, Kao, Lee, Huang, Lo, and Wang (2010) cited that for the infant "crying is a

direct and obvious behaviour through which they can express feelings towards their environments” (p. 266). They proposed that exploring different characteristics in crying may provide a link between an infant’s cries and temperament.

Summary

This chapter explored the origins of temperament theory and defined temperament in terms of infant development. The results of the NYLS identified three temperament classifications: easy; difficult; and slow-to-warm-up, and examined the nine behaviour descriptors associated with each classification. Several of the nine descriptors were investigated by temperament theorists in an attempt to reduce the number of them and to gain a clearer understanding of behaviour in early infancy. Temperament has been linked in recent neuro-scientific research with variations of infant crying behaviours, and in connection to areas of the brain responsible for storing memory and activating arousal states. Furthermore early infant-caregiver interaction and the environment have been attributed to behaviour responses in the infant.

Chapter 4 - Attachment

The previous chapter identified that, primarily, temperament refers to emotional individuality, which varies considerably from infant to infant. In this chapter the concept of early infant attachment is explored and notable similarities between attachment and temperament are identified. The chapter commences with an overview of the origins of attachment theory, then addresses concepts key to attachment in the context of the child's first relationship. This is followed by an explanation of the strange situation procedure (SSP) used for assessing attachment, and attachment classifications are defined and examined. Lastly, the concept of the internal working model (IWM) is discussed. The chapter concludes with neuro-scientific research into attachment, early care experiences, and early brain development.

Historical underpinnings of attachment theory

Attachment theory originated from the theoretical formulations of John Bowlby (Bowlby, 1988; Cassidy, 1999; Cicchetti, Toth, & Lynch, 1995; Holmes, 1993; Karen, 1994; Mercer, 2006). Bowlby had become dissatisfied with the traditional theories of the time that emphasised the importance of intra-psychic 'drives' or learning theories to explain a child's behaviour (Cassidy, 1999). In formulating his theory of attachment Bowlby incorporated ideas from a variety of

viewpoints and research paradigms, including evolutionary theory, ethology, developmental psychology, object relations theory, and psychoanalysis. From these paradigms he devised the term 'attachment' (Bowlby, 1988; Cassidy, 1999, Cicchetti, et al, 1995). Bowlby (1979) felt that 'attachment' best described the human desire to form strong affectional bonds and gave understanding to the complex developmental process that occurs between a mother and her infant in the development of an affective emotional and psychological connection. He further explained that any disruption to this affectional bond, for example during times of separation and loss, would result in emotional distress (Bowlby, 1971; Cicchetti, et al, 1995; Egeland & Erickson, 1999; Karen, 1994; Mercer, 2006).

Bowlby's attachment theory was to be widely criticised by the school of psychoanalysis, which was the dominant behaviour theory of the time (Fonagy, 1999). They saw attachment theory as mechanistic, reductionist in its approach, and based in evolution theory, and therefore thought that it ignored human complexities. Attachment theory was further criticised for its failure to take into account the unconscious motivations that underpin behaviour, and for not recognising caregiver projections and early internalisations. It was felt that the focus on neglect and separation and loss of the caregiver ignored other human affective states. However, Bowlby's 'internal working model' concept belies the

assertion that attachment theory did not account for early internalisations. Much of this early critique is now considered outdated and born out of misinformation and misapprehension, as attachment theory has since generated considerable clinical and empirical research that supports its hypothesis (Fonagy, 1999).

Other authors questioned attachment theory's overuse of the strange situation procedure (SSP), in particular, the SSP focus on the distress experience of the infant during separations as a means to assess attachment security (Belsky, 1991; Fish & Belsky, 1991). The SSP test has created criticism from both temperament and attachment researchers. Temperament researchers felt that infants considered temperamentally high in reactivity or withdrawal would be undoubtedly prone to excessive distress in the types of situations that SSP assesses in determining quality of attachment (Vaughn, Stevenson-Hinde, Waters, Kotsaftis, Lefever, Shouldice, Trudel, & Belsky, 1992; Wachs & Desai, 1993).

Although most attachment researchers have adhered to Bowlby's original theory (Goldsmith & Harman, 1994), it has been criticised more recently for its failure to take into account ever-changing times, in that in modern times the infant will often form multiple attachments with multiple caregivers (Mercer, 2006). Mercer (2006) proposed that attachment theory could no longer be restricted to the mother-infant dyad as it was initially intended. She believed that

contemporary attachment theory needed to consider other social domains, with particular emphasis on peer relationships, familial and other close relationships as a means to understanding infant behaviour.

Attachment theory

Central to attachment theory (Bowlby, 1979, 1988; Marvin, Cooper, Hoffman, & Powell, 2002) is the human need for contact, reassurance, and comfort when ill or injured or at times of perceived danger. At these times the caregiver serves as a secure base from which the infant can explore and retreat to when fearful, threatened, or hyper-aroused (Bowlby, 1982, 1988; Cassidy, 1999; Karen, 1994; Holmes, 1993; Nichols, Gergely, & Fonagy, 2001; Seifer & Shiller, 1995). It was ascertained in Chapter 3 that arousal states have links to the temperament dimensions of reactivity and rhythmicity/self-regulation. In terms of attachment theory it is suggested that arousal states are seen to be mediated by the presence of the caregiver or secure base. However, when the secure base is unavailable or is experienced as unpredictable the infant's arousal state is heightened, if prolonged the infant develops hyper-vigilance and is distressed and anxious (Bowlby, 1988; Holmes, 1993; Karen, 1994).

Secure base effect and attachment behaviours

Ainsworth used the term 'secure base' to describe the "ambience created by the attachment figure for the attached person" (Holmes, 1993, p.70). The secure base is representative of the availability, responsiveness, and sensitive interaction provided by the caregiver for the infant. The familiarity and predictability of interactive experiences with caregiver/s are consolidated by the infant in the acquisition of a secure base (Nichols, Gergely, & Fonagy 2001; Waters & Cummings, 2000). The secure base effect engenders the infant with a sense of felt security and encompasses the core quality of the attachment relationship. This in turn reportedly leads to security of attachment for the infant and is shown to predict favourable outcomes in social, emotional and cognitive functioning in later development (Pierrehumbert, Miljkovitch, Halfon, & Ansermet, 2000; Porter, 1993; Schore & Schore, 2007). However, earlier research indicated that infants who were temperamentally predisposed towards shyness, distress or anxiety were prone to develop insecure attachment regardless of caregiver responsiveness (Vaughan & Bost, 1999). This finding was supported by Kagan and Snidman (2004) when they argued their research had shown that temperament biases are not easily eradicated by the presence of environmental factors, whether favourable or otherwise.

Secure base behaviours consist of exploration and supervised (caregiver present) activities, both of which provide the infant with opportunities for learning (Bowlby, 1988; Cassidy, 1999). Exploration enables the infant to have interactive experiences with inanimate objects and engage in socialisation processes with others in the near environment. In turn, the infant's capacity to achieve eventual mastery of these domains promotes the development of self-regulation and enhances the infant's innate ability to establish autonomy (Porter, 1993; Schore & Schore, 2007). Over an extended period, the infant will eventually be able to modulate and regulate his/her behaviour and cope with separations from the attachment figure in the promotion of autonomy and individuation (Nichols, Gergely, & Fonagy 2001).

According to Bowlby the development of self-autonomy and the capacity for self-regulation were factors implicitly linked to the interactions between caregiver and infant in the promotion of attachment security (Bowlby, 1979, 1988). Comparatively, attachment proponent Alan Sroufe (2000) formulated the concept of dyadic regulation to describe parent and child interaction. Other theorists have used similar terms; for example, Tronick (1989) devised the term 'affective communication' and Schore' (2007) proposed 'affect regulation' to explain the interaction that transpires between a parent and child in the establishment of a secure base. Earlier research carried out by Isabella and

Belsky (1991) applied the term 'interactional synchrony' to describe the shared interaction within the parent-child dyad, and suggested that this interaction had the capacity to promote security of attachment.

However, not all researches agreed that the provision of the secure base and shared interactive experiences guaranteed positive attachment outcomes. Kagan (1982; Kagan & Snidman, 2004) has argued that research findings have found that temperamentally irritable and fearful infants react with intense anxiety, and even if they have been met with consistent and sensitive care-giving (secure base) they are likely to remain insecurely attached. Seifer and Shiller (1995) and Vaughn, Stevenson-Hinde, Waters, Kotsaftis, Lefever, Shouldice, Trudel, and Belsky (1992) similarly reported that infants prone to distress and anxiety were more likely to develop insecure attachment regardless of environmental conditions.

Strange situation procedure

The strange situation procedure (SSP) was devised by attachment theorist Mary Ainsworth (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1982; Cassidy, 1999; Karen, 1994; Sroufe, 1985) as an empirical measure for determining attachment security and quantifying variations in attachment quality. The SSP

has also been implemented in numerous studies to establish whether individual differences in temperament play a role in the development of attachment quality (Egeland & Erickson, 1999; Goldsmith & Harman, 1994; Isabella & Belsky, 1991; Schore & Schore, 2007; Weber, Levitt, & Clark, 1986). The SSP is a laboratory procedure that involves infants being subjected to a series of short interactions with a stranger, separations from their caregiver, followed by reunions with the caregiver (Ainsworth, et al, 1978; Fish & Belsky, 1991; Goldsmith & Harman, 1994; Kristal, 2005; Weber, et al, 1986).

Variations of attachment security and attachment quality are determined by the scores recorded in the application of the SSP in relation to the infant's ability to engage in exploration, their orientation to new situations, and the infant's use of the caregiver as a secure base for comfort on reunion. Attachment classifications are divided as follows: secure (B); insecure avoidant (A); insecure ambivalent (C). Main and Soloman (Ruth & Jacobitz, 1999) conceptualised a further classification to describe disorganised attachment behaviours that were considered outside the normal secure/insecure parameters of the SSP. They came up with the classification of disoriented /disorganised (D). This classification generally denotes the potential for later psychopathology (Brisch, 2002; Ruth & Jacobvitz, 1999) and is therefore beyond the scope of this study.

The following table (4.1) sets out the traditional attachment classifications derived from SSP findings (adapted from Ainsworth, et al, 1978, Karen, 1994).

A	Insecure Avoidant	Infant is detached on separation, avoids caregiver on reunion and engages in disinterested in exploration.	Caregiver is insensitive to infant's signals and deflects proximity seeking.
B	Secure	Infant engages in exploration, is upset when separated but gives a positive response to caregiver on her return with a quick return to exploration.	Caregiver is consistently responsive and sensitive to infant's signals and needs.
C	Insecure/ Anxious Ambivalent	Infant is preoccupied with caregiver availability. Shows distress or is anxious on separation and anger/ambivalence on reunion and is difficult to comfort.	Caregiver is unpredictable and inconsistent in response to infant. May vacillate between insensitive and intrusive.

Table 4.1

Goldsmith and Alansky (1987) scrutinised the SSP in their meta-analytic review of maternal and infant temperamental predictors of attachment. They questioned the stressful nature of the SSP and the potential for carryover effects, and the predominant use of the SSP model. They also proposed that the heavy

reliance on signs of insecurity during the SSP is likely to be misleading in some cases. Others argued that those infants temperamentally prone to distress and irritability and who have low stress thresholds would react with intensity during the separation from the caregiver during the SSP, and that this would effect their attachment classification (Kagan, 1982; Mangelsdorf, Gunnar, Kestenbaum, Lang & Andreas, 1990).

Attachment classifications

Ainsworth's (Ainsworth, et al, 1978) attachment classifications of secure and insecure are based on the quality of functioning in the infant-caregiver dyad in accordance with (SSP) assessment scores. Those infants assessed as secure were deemed to have experienced their caregiver as responsive, predictable and sensitively attuned to their needs, resulting in internalised feelings of warmth and security. Securely attached infants were recognised as curious, self-assured, enthusiastic, competent and able to cope with disappointment (Sroufe, 1985, 2000). Those infants classified as insecure were deemed to have experienced unpredictable and unresponsive care-giving, with their needs either being unmet or misread. Insecure infants tended to vacillate between dependency and rejection of their caregivers, and their behaviour was observed as irritable, angry and fearful (Bowlby, 1979, 1988; Karen, 1994; Holmes, 1994). These infants

were seen not to function as well as their counterparts (Sroufe, 1985, 2000). See table 4.2 for attachment classifications and associated behaviours.

It is noteworthy at this point to consider that the three attachment classifications of secure B, insecure-avoidant A, and insecure ambivalent C bear resemblances to the three temperament classifications of easy, difficult and slow-to-warm-up (see previous chapter). For example, secure and easy classifications are comparable, while the insecure attachment classification of avoidance might be compared with slow-to-warm-up; and insecure-ambivalent shares similarities with the temperament category of difficult.

Internal working models

Bowlby developed the internal working model (IWM) construct to take into account the infant's experiences in the external world via internalised representations of self, others, and their interrelationship (Holmes, 1993, Bretherton & Munholland, 1999). The internalised representations become organised into patterns of behaviour that are based in the repeated interactions between self and others and become generalised across situations and relationships (Bretherton & Munholland, 1999; Holmes, 1993; Stern, 1985; Waters & Cummings, 2000). The stored representations of events and

ATTACHMENT CLASSIFICATIONS: (adapted from: Ainsworth, et al, 1978; Karen, 1994; Lyons-Ruth & Jacobvitz, 1999).

Typical patterns of secure and insecure attachment

SECURE INFANTS

Secure 'B'

Explores using mother as a secure base, compliant, cries the least, seeks mother if distressed, readily comforted.

Flexible, resilient, adaptable, easily regulates.

INSECURE INFANTS

Avoidant 'A'

Seeks little physical comfort, randomly angry, unresponsive when held but upset when put down, does not show distress, withdraws when in pain.

Minimal displays of affect.

Isolated, aggressive.

Ambivalent 'C'

Cries a lot, clingy, demanding, often angry, upset by small separations, chronically anxious, limited exploration, difficult to soothe. Signals for contact and then arches away.

Fretful, anxious.

Disorganised 'D'

Exhibits frozen watchfulness, wary, appears disoriented and dazed, slowed movements, strong avoidance followed with strong contact seeking, rapid changes in affect.

Hyper-vigilant, trancelike expression.

experiences are used to predict and relate in the world. For example, the insecure-ambivalently attached infant exhibits on the one hand dependent clingy behaviour, but can resort to rejecting and angry behaviour. It is suggested that his/her internal working model is that of being unlovable and unworthy, and he/she will come to view others as unreachable and yet desirable. These infants are likely to experience the world as dangerous and unpredictable and, as a result, these experiences will be brought to bear in all relationships. In contrast, the securely attached infant will have stored an internal working model of a responsive, reliable and loving caregiver, and will experience himself or herself lovable, worthy of attention and supported, and will carry this into all forms of relating.

It is suggested that infants classified as insecure have internal working models that are considered faulty (Bretherton & Munholland, 1999, Holmes, 1993; Karen, 1994) based on inaccurate representations of self and other, and this, therefore, has led to ambivalent, avoidant, or at worst disorganised attachments. The detrimental effects of faulty internal working models has been linked to poor adaptation, difficulties in self-regulation, negative mood and affect, persistent feelings of hate and abandonment, and impinges on the child's emotional developmental (Holmes, 1994; Pierrehumbert, Miljkovitch, Halfon, & Ansermet, 2000; Waters & Cummings, 2000). Empirical studies have shown that

security of attachment is predicted by parents' internal representations of their own attachment experiences, and the parents' ability to respond sensitively to their infants needs in the first year of life. Mothers with insecure infants tended to mask their emotions or overemphasised them, while mothers who expressed emotion and communicated openly with their infants promoted security in their infants (Mein, 1999; Pauli-Pott & Mertesacker (2008).

Neuro-scientific understanding of attachment

In recent years there has been a growing interest in early social, emotional, psychological and cognitive development from a neuro-scientific perspective. In particular, the interplay between biology and the impact of environmental experiences has become the focus of research in infant brain development (Porter, 1993; Schore, 2001). According to the findings of Porter (1993) and more recently Schore (2001), during the first two years of life the infant's brain grows at an accelerated rate that will not be repeated again throughout the rest of the lifespan. It is a critical period in the infant's brain development and the achievement of maturational processes. The achievement of maximum maturation in brain functioning will be determined by sufficient nutrition and the quality of the infant's interpersonal experiences with caregivers. A large amount of the increased energy is directed to the right side of the brain,

which is connected to the sympathetic and parasympathetic nervous systems. This area of the brain, labelled as the control centre, connects to the limbic system - the neurological seat of all emotions. It houses the amygdala and hippocampus, both of which are closely linked to storing memory and are responsible for the regulation of all emotional states. In recent decades the introduction of MRI, PET, and EEG scanning equipment has allowed researchers in the attachment field to observe the interplay between the areas of biology and social experiences. The evidence collected suggested that stress and trauma in early life and less than optimal interactive experiences with caregivers impairs brain development (Perry, 2006; Porter, 1993; Schore & Schore, 2007).

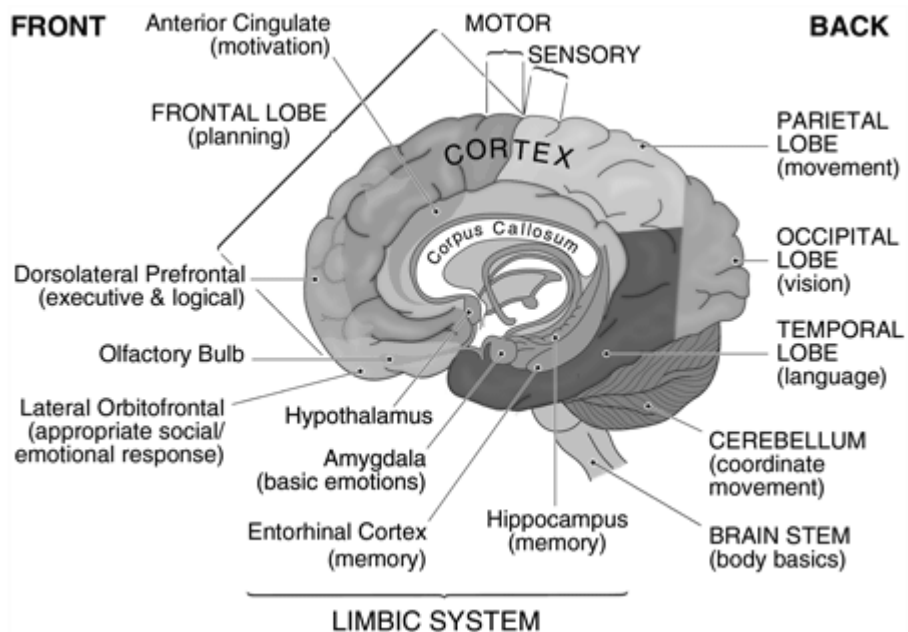


Figure 4.1 Limbic brain (Bragdon & Gamon, 2010)

According to Perry (2006), a prominent researcher in the field of neurodevelopment and child development, the lower area of the brain (brainstem) continually receives and stores information from internal (temperament) and external environment (attachment) experiences (see diagram above 4.1). This information is processed and stored in sensory neurons as patterns of activity with no conscious perception attached. Messages are then sent from the lower brain to the limbic (emotional control centre) and cortical areas (behaviour and social adaptation) of the brain. Repeated messages, such as experiences of threat and danger, as is the case in traumatised, abused, neglected, and maltreated children, are stored in the senses and memory of the brain. When a memory is constantly triggered it sets off alarm responses in the brain, and the child remains in a state of perpetual arousal (hypervigilance). Persistent states of heightened arousal interfere with the child's capacities to develop self-regulation and increase the child's reactivity toward external stressors.

Schore (2001) reported the negative effects of neglect, abuse, and traumatic attachments on brain development and infant mental health. Trauma experiences impair the infant's regulatory systems located in the right frontal and orbitofrontal cortex. These areas of the brain generate fearfulness, irritability, withdrawal, and hyper-vigilance, and are responsible for reading social cues and

adapting behaviour to social norms (Gerhardt, 2004). Field (1985) referred to this as psychobiological attunement, the capacity to pick up on others' states through emotional information. Effectively this means, for the infant who is insecurely attached due to trauma or maltreatment, emotions are denied access. As development progresses they are unable to read or retrieve information into their own internal states or those of others, either repressing feelings or expressing them without thought for others, inhibiting both empathy for others or the capacity for reciprocal interactions (Gerhardt, 2004).

Summary

In this chapter the basic tenets of attachment theory and the importance of the attachment figure as the secure base for optimal emotional and social development has been discussed. The SSP model for measuring attachment, though criticised by some, remains the dominant tool for assessing attachment quality. Bowlby's construct of an internal working model was explored in an attempt to explain organised patterns of behaviour that are carried into all relating, and how the infant comes to view the world via early interaction with caregivers. The chapter concluded with discussion of the investigation of neuroscientific research and the impact traumatic attachments have on brain development and subsequent impairment on emotional and social development.

It seems evident from the neuro-scientific perspective on development that, when we consider attachment (external) and temperament (internal) and brain development, arousal states and the capacity for self-regulation are intertwined.

Chapter 5 - Temperament and attachment – A synthesis

This chapter integrates studies that have investigated the contributions and associations between temperament and attachment paradigms. As there has been considerable debate between these two domains of child development, an overview of the controversy begins the chapter. This is followed by an examination of contributory factors in relation to temperament and the development of the attachment relationship, including the child and the child's temperament, parental influences, and parental sensitivity. These factors were identified in the research as having important implications for practitioners in the fields of infant and child development and family systems work.

The debate in context for this dissertation

Attachment theorists conceptualised security of attachment as a relational construct that is determined by the infant's interpersonal experiences with parents or caregivers (Sroufe, 1985; Vaughan, et al, 1992). Attachment proponents (Mangelsdorf, et al, 1990; Sroufe, 1985, 2000) have argued that while temperament may influence behaviour it does not interfere with the organisation of attachment security. Attachment theorist Alan Sroufe (1985, 2000) has been the most vocal in emphasising the premise that parental child-rearing practices promote security of attachment and, therefore, should mediate

temperamental differences. On the other hand, temperament theorists (Thomas & Chess, 1977, 1989; Goldsmith & Alansky, 1987; Kagan, 1982; Rothbart, et al, 2000) proposed that an infant's temperament plays as much a part in interpersonal experiences with parents (attachment) as it does in behaviour. Temperament researchers Kagan, Thomas and Chess, Rothbart and colleagues suggest there is "an interaction between temperament and experience or environmental factors" (Pierrehumbert, et al, 2000, p.18). Other researchers proposed there are interactive effects that influence the attachment system, including maternal sensitivity; infant temperament influence on the mother's thoughts, feelings and perceptions; co-parenting style; and marital quality (Crockenberg, 1987; Leerkes & Crockenberg, 2006). These studies prompted a growth of interest in the role of parent-child interaction and the infant's capacity to influence parental behaviour (Belsky, et al, 2005; Burney & Leerkes, 2010; Ispa, et al, 2002; Laible, 2004; Pierrehumbert, et al, 2000; Schoppe-Sullivan, et al, 2007).

Although an accepted conclusion has yet to be reached between these two domains of child development, a positive spinoff has been the amount of research that has been undertaken. With particular focus in the areas of infant temperament and infant attachment (Wachs & Desai, 1993; Wachs, 2006), infant

temperament and maternal/parental sensitivity, parental sensitivity and the development of the attachment relationship (Ispa, Fine, & Thornburg, 2002; Mangelsdorf, Gunnar, Kestenbaum, Lang & Andreas, 1990), quality of co-parenting, parent-child interaction, and infant temperament and attachment development (Ispa, Fine, & Thornburg, 2002; Schoppe-Sullivan, Mangelsdorf, Brown & Solowski, 2007; Warren, Gunnar, Kagan, Anders, Simmens, Rones, Wease, Arron, Dahl, & Sroufe, 2003).

Temperament and attachment contributory factors explored

There was strong evidence in the research that supported the premise that individual differences in temperament and attachment outcomes can be mediated by parental influences, particularly parent responsiveness and sensitivity (Bates, Maslin, & Frankel, 1996; Chess, Goldsmith & Alansky, 1987; Ispa, Fine & Thornburg, 2002; Kochanska, Aksan, & Carlson, 2005; Kochanska, Friesenber, Lange, & Martel, 2004; Kristal, 2005; Lieberman, 2008; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andrea, 1990; Nichols, Gergely, & Fonagy, 2001; Pauli-Pott & Mertesacker, 2008; Seifer & Shiller, 1995; Sroufe, 1985, 2000; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007; Tronick, 1989; Van den Boom, 1994; Weber, Levitt, & Clark, 1986). However, there was evidence that countered this and suggested it is the individual temperament characteristics of

the infant that play a role in parental sensitivity and responsiveness and that are predictive of attachment outcomes (Crockenberg, 1983; Kagan, 1982; Rothbart, Ahadi, & Evans, 2000; Snidman & Kagan, 2004; Thomas & Chess, 1977).

Further findings indicated that the personality characteristics of the parent/s were also found to be a factor in the development of the infant's security/ insecurity of attachment (Thomas & Chess, 1977; Kochanska, et al, 1997; Seifer & Shiller, 1995).

Temperament theorist Jerome Kagan (1982) argued that parental sensitivity will not modulate individual temperament characteristics, particularly with infants who have a predisposition toward shyness (inhibited) or who are prone to distress. This was confirmed in studies investigating possible connections with temperament and attachment. They found distress-prone infants became inconsolable during times of separation in the strange situation procedure (SSP), even when they had scored as securely attached on other aspects of the SSP. This indicated that distress at times of separation was linked with infant temperament tendencies rather than caregiver influences (Fish & Belsky, 1991; Kagan 1982; Kagan & Snidman, 2004; Mangelsdorf, et al, 1987; Weber, et al, 1986). Comparatively, Kochanska, et al (2005) reported that temperamentally anger-prone infants tended to incite harsher disciplinary actions

from parents, as they are experienced as resistant, thus resulting in impairments to the attachment relationship.

Child as active participant

The infant as active participant in the establishment of the attachment relationship is echoed throughout recent research findings. It has been reported that the infant exerts its influence on its parents from the moment it is born and is therefore actively involved in its continued development (Burney & Leerkes, 2010; Kochanska, Friesenborg, Lange, & Martel 2004; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007). Decades earlier, Bell (1968, as cited in Kochanska, et al., 2005) had proposed that the child's qualities were a significant influence in the development of the emerging parent-child relationship. He observed infants' responses to tactile, visual, and auditory stimuli provided by the parent, such as smiling, vocalising and the offering of objects of interest. The responsiveness of the infant to the stimuli offered was found to affect the development of the mother/parent-infant attachment relationship. Others have since noted the complex and individualised temperament patterns observable from birth, such as activity and reactivity, and recognised them as coinciding, impinging upon and affecting maternal/paternal interests (Kochanska, Clark,

Goldman, 1997; Kochanska, et al, 1997; Kochanska, et al, 2005; Osofsky & Connors, 1979; Seifer & Shiller, 1995).

Child's individual temperament as contributor

When considering the child as an active participant in the development of the parent-child attachment relationship it seemed critical to investigate whether particular infant temperament characteristics exerted more of an influence than others. Recent studies (Durbin, Hayden, Klein, Olino, 2007; Kochanska, et al 2004; Kochanska, et al, 2000; Kochanska, Aksa, Carlson, 2005) examined relationship dimensions of shared positive affect, attention focus (following and watching), and responsiveness to ascertain child contributors in attachment outcomes. Infant temperament measures included joy, fearfulness, anger, and focused attention. The infant's proneness to fearfulness and joyfulness were associated with more positive affect responses from parents, whilst the infant's proneness to anger and distress was linked to less positive affective responses from parents. This coincided with the earlier findings of Scarr and McCartney (1983), where they found affectively positive, easy babies were more likely to elicit more positive responses from parents than angry or emotionally negative, difficult babies. Kochanska, et al (2005) found aspects of temperamentally 'difficult' infants, such as proneness to anger for example, were observed to be

associated with negative and less responsive care giving, and invoked punitive or harsh responses from caregivers.

Furthermore, Kochanska et al (2004) found that the development of attachment security was more pronounced with infants who showed more positive affect and were more joyful when they received more responsive care from their mothers. Importantly, they noted that mothers who were considered empathic were responsive to their infants regardless of their infants' temperament presentations (Kochanska, 2004; Laible, 2004). Kochanska et al (2004) claimed empathy to be a crucial component in the development of the attachment relationship, especially where the infant is temperamentally prone to distress, anger, or considered difficult. These findings resonated with current research carried out by Bigelow, MacLean, Proctor, Myatt, Gillis, and Power (2010), which concluded that those parents who are able to consider the infant's perspective and effectively read the infant's signals facilitated the development of security of attachment.

Parental influence as contributor

Early research carried out by Crockenberg (1987) and Mangelsdorf, et al (1990) found that aside from infant temperament, parental characteristics and environmental and social supports can play a significant role in the establishment

of security of attachment. Crockenberg's (1987) research had shown that reactivity and infant irritability were associated with negative affect in the mother and had the capacity to increase harsh maternal control, thus impairing the attachment relationship. More recently, Kochanska, et al (2004; 2005) investigated whether parent personality influences the emergence of the early infant-parent attachment relationship. They found parental expectations had the capacity to create resistance in the child and promote conflict in the development of the child-parent relationship, which impinged on attachment security.

Ispa, Fine and Thornburg (2002) investigated links between an infant's difficult temperament and attachment security, and the mother's capacity to be moderator. They found that individual differences in temperament, especially intensity and reactivity in either the parent or the child, can influence a child's developmental trajectory. For example, a temperamentally difficult infant evokes dissatisfaction in parents and caregivers. The difficult infant reacts to the parents' negative response, which reinforces a negative behaviour cycle and sustains or magnifies the infant's difficult tendencies. The cycle of reactivity, once set in motion, is detrimental to the development of security in the parent-child attachment relationship and has an impact on future forms of relating and overall development.

Ispa, et al (2002), similarly to Crockenberg (1987) and Mangelsdorf, et al (1991) noted that negative parental behaviours became exacerbated when parent/s were beleaguered by emotional stress and had insufficient social supports. Alicia Lieberman's (2008) research also showed the effects of parental influences, infant temperament, and early relationship patterns of attachment quality. She suggested that parents were the primary contributors to a child's behaviour and development. She proposed that the explicit and implicit messages projected by parent/s could impinge on a young child's psychological wellbeing and lead to impairments in the attachment relationship. Furthermore, that active parental negative emotion including impatience, irritability, anger, hostility and punitive actions, or passive emotions of sadness, lethargy and indifference are communicated to the infant. For example, an infant who may be considered temperamentally difficult will usually have difficulty modulating and regulating their emotional responses, and might evoke distancing and rejection or punitive reactions from their parents.

In a review carried out by Belsky and Barends (as cited in Kochanska, et al, 2004) of historic and current research in the role of parenting and personality, they found there had been a lack of attention given to temperament characteristics in relation to the development of interpersonal relationships. It was

recognised that more research was needed to understand determinants of parental influences, such as responsiveness, to moderate the negative effects of difficult, anger prone infants and improve security of attachment and other areas of a child's development.

Parental sensitivity mediates infant's emotional arousal and regulation

It is evident from the research findings that self-regulation, whether it is viewed through the lens of temperament or attachment, has important implications for an infant's optimal development. Hinde (1982) proposed that for the infant to attain self-regulation and establish attachment security would be entirely dependent on parental sensitivity. According to the findings of Finzi-Dottan, Manor, and Tyano (2006) infant temperament and parental sensitivity influence the child's ability to regulate his/her emotional reactivity, which in turn affects security of attachment.

Parental sensitivity is described as a technical construct that encompassed alertness to, and prompt response to, the unique signals of the infant; appropriate response and interpretation of infant signals; adaptability to infant attention and behaviour; suitable level of control; and conflict negotiation. The parent's actions need to be well attuned to the infant's specific states (attachment needs) and levels of emotional arousal (temperament), and be

appropriate to the developmental stage of the infant (Hinde, 1982; Seifer & Schiller, 1995). In addition, Seifer and Schiller (1995) proposed that interactive skills and affective positive behaviour from the parent toward the infant in the form of affection and warmth enhances the success of the child-parent attachment relationship. This coincides with Bowlby's claim (Bowlby, 1988; Karen, 1994) that paternal attributes of love and warmth were important qualities needed in the development of the early attachment relationship.

Attachment proponent Sroufe (1985, 2000) and other researchers (Tronick, 1989) proposed that to become regulated the infant needs considerable assistance from caregivers, because effectively infants unable to regulate their own arousal or emotional states independent of the context. Sroufe (2000) believed that during early infancy the caregiver is solely responsible for the implementation and maintaining of regulation for the infant, that provision of attentive care is needed to keep arousal states within reasonable limits, effectively "imbuing primitive infant behaviours with meaning" (Sroufe, 2000, p.68).

De Gangi, Di Pietro, Greenspan, and Porges (1991) found that temperamentally difficult infants were unable to tolerate too much stimulation

either in the form of touch or other soothing type behaviours (vocalisations), while irritable infants were observed to respond by becoming less irritable when touched or soothed. However, Van den Boom (1994) reported in her findings that in the case of some fussy, irritable infants the reverse is true, and they can become more irritable. Emde (1983) had earlier proposed that most mothers have the ability to separate their infant's affective states of anger, joy, surprise, sadness, interest, and fear. He claimed that mothers respond to these emotions by using vocalisations and facial expressions that they discern to be appropriate in assisting their infant's emotional and social development. Recent research carried out by Bigelow, et al (2010) reached similar conclusions, with a particular focus on the mothers' smiling and vocalising behaviours in the moderating of infant emotional affects (temperament) that assist self-regulation processes.

Comparatively, Papousek, Bornstein, Nuzzo, Papousek, and Symmes, (2000) wrote of the importance of what they described as the 'vocal empathy' that occurs within the infant-parent dyad. They reported in their findings that the shared vocalisations within the parent-infant dyad have the capacity to soothe, dampen or escalate regulation processes. For example, a temperamentally fussy, distressed, and crying infant who is met with distress and exasperation from the parent shows an increase in distress, as do the parents. Calming, melodic tones are more likely to soothe a fussy infant's distress and maintain

calm within the parent. This is reflected in the later findings of Beebe (2005), where infants' temperaments were examined from as early as three months; and it was noted that problems with self-regulation capacities were interwoven with interactive regulation issues in the infant-parent dyad.

Temperament and attachment - bi-directional

Several researchers have acknowledged (Kochanska, et al, 1997; Seifer & Shiller, 1995; Thomas & Chess, 1977) that the early attachment relationship is bi-directional in nature, in that the infant brings itself to the relationship as does the parent(s). In other words, infant temperament, parental influences, and the shared interaction that occurs between child and parent have an impact on the development of the attachment relationship. This coincides with Bowlby's (1979) claim that infant responses are interwoven with maternal responses and become important in relation to the mother's feelings and her behaviour toward the infant, and that they consequently have an effect on the infant's development.

Osofsky and Connors noted that "infant temperament is a characteristic that can affect the mother-infant relationship beneficially or detrimentally" (1979, p. 525) and suggested that the hopes, expectations, experiences, and attitudes of the mother, as well as the style, characteristics, and disposition of the infant

play a very significant role in the type of relationship that will develop, and the process that will be involved in forming the attachment relationship.

Research findings of Malatesta and Izard (1984) showed that when the infant expresses anger or sadness similar affective responses are produced in the mother. Laible, Panfile, and Marakiev (2006) similarly discovered child temperament characteristics, such as anger or joy, evoked particular emotional responses from caregivers as much as it influenced the child's own emotional outcomes. These findings coincide with recommendations made by Greenberg (1999), and more recently by Wachs (2006), where they suggested the need to consider the interaction of temperament, attachment, parental strategies, and the respective moderating or precipitating effect each has on the other.

Thomas and Chess (1997) formulated the 'goodness of fit' model to explain the bi-directional interaction that occurs between infant/child and parent/caregiver. For a diagram demonstrating the 'goodness of fit' model and the bi-directional nature of temperament and attachment see figure 6.1. An overview of the goodness of fit model is presented in Chapter 6.

Reciprocity

Studies undertaken by Maccoby (1983) noted that reciprocity and a shared positive mutuality within the infant-parent dyad engendered parental

responsiveness, and Emde, Biringen, Clyman and Oppenheim (1991) found that if parents were demonstrably responsive and supportive the child would willingly comply and form a close alliance with them. Recent evidence has shown that reciprocity, or 'affective ambience' as suggested by Kochanska, et al (2005) between the infant-parent dyad had adaptive consequences for several areas of a child's development. Parent-infant dyads whose interactive experiences were more positive were reported to be strongly associated with later attachment security (Goldsmith & Alansky, 1987; Holmes, 1993; Isabella & Belsky, 1991; Kochanska, et al, 2005), and led to healthier social, emotional, and moral development (Kochanska, et al, 2004). Isabella and Belsky (1991) earlier claimed that the quality of interaction, in what they described as "interactional synchrony", evidenced in responsiveness and mutual involvement between dyads was an outcome predictor in the development of attachment security. Laible (2004) also suggested the importance of the quality of interaction between child and parent in the development of emotional understanding and fostering of self-regulatory behaviours that shape attachment relationships.

Interactive experiences and infant regulation

The evidence suggested that infant self-regulation is to a greater degree dependent on the emotional availability and supportive capacities of the caregiver

(Hinde, 1982; Lieberman, 2008; Sroufe, 2000). However, there was evidence that emphasised the interactive and bi-directional nature of attachment, environment and infant temperament. For example, Fogel (as cited in Sroufe, 2000) and Tronick (1989) proposed that the infant is incapable of self-regulation and only of “co-regulation” or “mutual regulation”. Mutual regulation refers to the dyadic interaction that occurs between the parent and the infant and enables the infant’s development of regulation, which shares links with temperament and attachment processes. Numerous studies highlighted the dyadic interaction that occurs between infant-parent dyads, such as interactional synchrony (Isabella & Belsky, 1991); affective ambience (Kochanska, 2005); affective attunement, mutual regulation, and shared adaptation (Tronick, 1989); behavioural synchrony (Emde, 1993); attunement (Stern, 1985); goodness of fit (Thomas & Chess, 1977); and reciprocal exchange (Sander, 1975). Each of these terms symbolises the operating dynamic of a shared interactivity that transpires within the parent-infant dyad.

According to Tronick (1989) it is the function of dyadic mutuality that enables the infant to progressively establish competence in self-regulation within the context of a secure and holding relationship (attachment). It is within the holding capacity of the attachment relationship that the infant comes to learn

about holding themselves (self-soothing), focusing attention, containing behaviour, and attaining emotional regulation.

Tronick (1989) reported that eventual achievement of self-regulation leads to positive emotions (temperament) and has been associated with positive development for the infant in the promotion of attachment security. He proposed the fundamental nature of the parent-child dyad is interactive and indicates that the infant is not entirely dependent on the caretaker to control his/her affective experiences, as the infant, too, is invested in the development of the relationship. The infant's engagement in coping type behaviours (self-soothing, i.e., thumb-sucking) enables the reduction of stress; brings calm; transforms negative emotions into more positive emotions; and promotes the infant toward self-regulation (Rothbart, et al, 2000, Rothbart et al, 2004), autonomy and psychological health (Stern, 1985).

More recently, Beebe (2005) reported that, essentially, self-regulation refers to the infant's ability to maintain alertness, quell positive and negative emotions when faced with overstimulation, inhibit and control behaviour, and manage arousal states. Beebe claimed that the capacity for the infant to self regulate is observable in early infancy and is intrinsically connected with interactive experiences (attachment) for either positive or negative. However, he found it difficult to distinguish whether infant difficulties in organisational

processing are present at birth, such as individual temperament characteristics, are a result of problematic interactive patterns with caregivers.

Temperament and attachment – goal-directed partnership

Tronick (1989) proposed that the caregiver facilitates the infant's successes by assisting him or her to attain their goals while simultaneously altering the infant's behaviours and emotional states (temperament), e.g. when a toy is out of reach and the caregiver reads the infant's signals of struggle, the caregiver moves the toy within reach of the infant so the infant can achieve his or her goal. This mutual interaction results in the expression of positive affect (joy), within the dyad. If, on the other hand, the infant's signalling is ignored and his or her goals are thwarted by the caregiver's lack of response, negative affect associated with attachment insecurity is promoted.

Van den Boom (1994) investigated the influences of temperament, maternal factors, attachment, and exploration. In her findings she acknowledged goal achievement as an important indicator of security of attachment. Her study, aimed at temperamentally irritable infants, found that those relationships where mothers were less involved with their infants resulted in the infants becoming more irritable and difficult to soothe. She also discovered that infants who struggled to master developmental tasks functioned less optimally, were less

effective in interpersonal relations, were unable to self regulate, tended to develop behaviour problems as a result, and had insecure attachments. She proposed that further research was needed to look beyond the characteristics of the infant and the mother and instead focus on what transpires in the interaction between them.

Kochanska, et al (2005) similarly found that goal fulfilment for the infant provides a sense of accomplishment and engenders positive affect and feelings of security, which serve to encourage further engagement with caregivers. Conversely, if the infant is unable to achieve the goal directive and fails to overcome what is blocking their success, the infant is likely to experience negative emotions, such as anger or sadness, resulting in disengagement and withdrawal and feelings of insecurity.

Summary

In evaluating the research presented in this chapter it is evident that parental sensitivity and empathic responsiveness to the infant's temperament needs and signals have considerable bearing on the development of the attachment relationship. Shared positive affect between the parent–infant dyad was identified as a preventive factor in the attachment relationship being compromised by individual differences in temperament.

A main effect predictor for the establishment of security of attachment was determinable by the quality of shared interactive experiences, such as shared vocalisations between the infant and the caregiver, with particular focus on the parent's ability to provide the holding environment (secure base), and sensitively and appropriately respond to the infant regardless of temperament differences (Belsky & Isabella, 1991; Belsky, Jaffee, Sligo, Woodward, Silva, 2005; Burney & Leerkes, 2010; Emde, 1993; Gerhardt, 2004; Kochanska, et al, 2004; Mercer, 2004; Sander, 1975; Tronick, 1989; Thomas & Chess, 1989, Wachs, 2006).

The majority of researchers reviewed in this paper embraced the view that both the child and the parent are active participants in shaping their relationship. In other words, infant temperament and parental influences are interwoven in the rich tapestry of their attachment relationship. It was generally agreed across studies that shared positive affect, affective communication, reciprocity, or interactional synchrony - the times when both parent and child experience positive emotions - is an important factor in the development of attachment security and that this also extends to other areas of an infant's development.

Chapter 6 - Implications for child psychotherapy

The findings in the previous chapter indicated that the constructs of temperament and attachment are interwoven and bi-directional in nature. It was evident that although these two constructs are used to describe, explain, and understand behaviour in distinctly different ways they both exert their influence in the establishment and interaction that transpires in the parent-child attachment relationship (Kochanska, Clark, & Goldman, 1997; Kochanska et al, 2004; 2005; Osofsky & Connors, 1979; Seifer & Schiller, 1995; Thomas & Chess, 1977). Greenberg & Mitchell (1983) described this most eloquently:

“Each baby brings to its encounter with caretakers his own particular rhythm of engagement, level of activity, distinct affective and behavioural displays. Each caretaker brings to his encounter with the baby his own style and intensity of responsiveness, attention span, level of interest, anxieties, and so on.” (p. 228)

In other words, a child’s behaviour has an impact on its parents and a parent’s behaviour has an impact on their child (bi-directional) in what is termed as ‘dyadic interaction’.

This final chapter considers the clinical implications that emerged from the research and the subsequent models of working therapeutically with parent-child dyads that have evolved as a result. The chapter concludes with a look at some

of the strengths and weaknesses that were identified in the process of completing this dissertation and considers areas for further research.

Clinical implications

In referring to the research findings, which are discussed in previous chapters, problems in attachment relationships have been attributed to disruptions and/or misattunements that occur in the shared affective interaction in the parent-child dyad. A consequence of these findings, which dates back to Thomas and Chess's (1977) NYLS study, has been the development of several clinical models that have focused on assisting parent-child dyads in repairing past disparities, resolving relational conflicts, and introducing new ways to negotiate interactional difficulties as they arise. This chapter offers an overview of some models that have been widely implemented in parent-child clinical work.

Central to working clinically with parent-child dyads in promotion and maintenance of healthy attachment relationships are the concepts of affective (emotional) interaction and reparation (Emde, 1983; Gowen & Nebrig, 2002; Lieberman, 2008; Marvin, Cooper, Hoffman, & Powell, 2002; Tronick, 1989).

Affective interaction

Emde (1983) devised the term 'affective interaction' to describe the emotional flavour within the parent-child relationship. He claimed it encompassed qualities of mood and the positive and negative affect states that have an impact on both child and parent. According to Emde "the infant comes to the world preadapted for participating in human interactions" (1983, p, 170). He believed infants have the capacity to initiate, maintain, and terminate interactions from the time they are born and that parents also carry out these functions, albeit often automatically and out of one's conscious awareness. He referred to this as "behavioural synchrony", which implied "... the biological predisposition of parent and infant to mesh their behaviours in a timed mutual interchange during social interaction" (p, 171). Papousek, Bornstein, Nuzzo, Papousek, and Symmes (2000) described this as "intuitive parenting."

Reparation

Reparation has been reported to have important implications in the transformation of insecure attachment into secure attachment (Lieberman, 2008; Tronick, 1989.) The Circle of Security protocol (COS) developed by Marvin, Cooper, Hoffman, and Powell (2002), which will be discussed later in this chapter, recognised that reparation was imperative in the achievement and

maintenance of secure attachment relationships. Tronick reported that reparation of interactive errors allowed for the shifting of negative affects into more positive affects within the parent-child dyad attachment relationship (1989). Emde (1983) and Tronick (1989) shared the view that the function of affective communication within the parent-child dyad enabled them to mutually regulate their interactions. A critical factor of the interaction that occurs between the infant and the caregiver is their capacity to change the behaviour and emotional experience of the other. For example, when errors occur and are experienced by the infant as intrusive, unresponsive, or as resistance by the adult, these errors, if left unchecked, can lead to the development of insecure attachment. The implementation of emotional reparative experiences such as engagement in dyadic-based parent-child therapy has the potential to mediate the negative effects of past errors and promote attachment security.

In more recent writings, Lieberman (2008) proposed that emotional reparation to the infant's perceptions are needed to create and restore increased levels of affect regulation, mutuality and developmentally appropriate interaction. By repairing emotional disparities it equips the child and parent with psychological resources to maintain a healthy relationship. A child's healthy development is dependent on exploration, learning, and individuation, which

require the support of the parent to protect, teach and socialise. Lieberman maintained that when the parent functions effectively within the dyad he/she can guide and promote the child's healthy development. Central to maintaining a healthy relationship in the parent-child dyad is the resolution of past difficulties, conflicts, and old hurts. This then enables the developing child to become more assertive and autonomous as he/she individuates. Alternatively, the child who grows up feeling misunderstood or perceives him/herself as difficult develops a negative self-concept. Bowlby (1988) alluded to similar concerns in the destructive nature of maladaptive internal working models of relating, and the adverse effects this can have in all subsequent relationships and on a child's overall emotional development.

A further concern of Lieberman's (2008) was that differences in temperament between infant and parent, without awareness from either parent, have the potential to later develop into anxiety disorders, personality disorders, or other mental illness in the child. She proposed that the provision of education about temperamental differences in infants provides parents with the opportunity to begin to understand that their infants are not simply being deliberately difficult, nor that they themselves are ineffective parents, ill equipped to cope with such a

trying infant, but instead can provide new ways to bridge the temperament-attachment gap.

Clinical models for working with the parent–child dyad

The underlying premise of parent-child dyad clinical interventions is the promotion of security of attachment, and establishing the parent as the secure base for the child to explore and return to. The establishment of security of attachment has shown to have an overarching positive influence on all areas of the child's development. The interventions discussed in the following paragraphs focus on encouraging parents/caregivers to look at their child's behaviour from the viewpoint of the child. Sorensen (2005) stated it succinctly, "to look through the child's eyes" (p.153). Assisting the parent to be able to look beyond the child's difficult behaviour, to wonder instead at what the child is expressing emotionally, and what he/she is attempting to communicate by his/her behaviour, enables the parent to become attuned to the child's needs. The therapeutic aim for the dyad is to enhance the parent's empathic capacities by understanding that different children have different needs (which may be related to temperament), and if the parent attends the child's needs with sensitivity, the child will be more likely to experience feelings of security (attachment), and consequently their behaviour can be modified.

Goodness of fit – poorness of fit

Chess and Thomas's (Chess & Thomas, 1999; Chess, 1991) goodness of fit model came about as a consequence of the NYLS (see Chapter 3). Goodness of fit denoted the compatible interaction between the infant and caregiver and their adaptation to the circumstances and demands of the environment. The authors also devised the term 'poorness of fit', which signified that the demands of the individual (infant) and the environment (caregiver) are incompatible. They suggested that a child's temperament needs can elicit different/negative reactions in the parent, and that these reactions might not be experienced by the parent with their other children; in other words:

“How easy it is to care for a child, how well his temperament dovetails with the parents', how well his behaviour fits with their prior expectations will all influence their behaviour and their attitude toward the child.” (Karen, 1994, p. 285)

Chess (Chess & Thomas, 1999) believed a child's behaviour could be modulated if the environment assisted the child in this endeavour. For developing a goodness of fit, for example, the parent needs to recognise how a child responds in different environments and in new situations and assist the child in adapting to these changes. A slow-to-warm-up or difficult child will need parent/s who can demonstrate patience and encouragement toward the child's predicament and

temperament tendencies. To achieve a goodness of fit the infant's/child's temperament style must first be identified and then suitably adaptive strategies must be implemented. Adaptive strategies will involve the establishment and maintenance of a positive environment to support healthy relationship development (attachment) and improve developmental outcomes for the child.

Kristal (2005) found that the establishment of goodness of fit during infancy has shown to be a determinant in positive developmental outcomes and to prevent later behaviour problems. For a diagram showing the bi-directional nature of 'goodness of fit' see diagram 6.1.

Watch, wait and wonder

Watch, wait and wonder (Muir, Cohen, & Lojkasek, 1999) is a child-led psychotherapeutic approach that is aimed at enhancing caregiver sensitivity and responsiveness toward the infant. Emphasis is on the child's spontaneous activities during a set play period in which the caregiver is also involved. The therapist observes the interaction that occurs within the dyad during the play and at the end of the play period engages the caregiver to discuss their experience. The therapist encourages the caregiver to reflect on thoughts and feelings that arise during the session and bring to light conscious/ unconscious struggles observed in the parent-child interactions. The therapeutic environment allows the

working out of relational difficulties within the parent-child dyad in the promotion of attachment security. The infant develops self-efficacy, emotional regulation, strengthens their sense of self, and improves developmental outcomes. The parent experiences a new sense of confidence and efficacy as a central figure in the child's overall development and develops greater awareness of their own early attachment experiences and the impact this may have on their current parenting behaviour.

Circle of Security protocol

The Circle of Security protocol (COS) (Marvin, Cooper, Hoffman, & Powell, 2002) is a parent-education, psychotherapy-based, intervention programme aimed at creating changes in early parent-child interaction. It is grounded in attachment theory and child development theories, with the specific goal of helping disturbed or at-risk attachment caregiver-child dyads to develop more adaptive developmental pathways. The programme has three main objectives, which are based primarily on the concepts of attachment interaction and, in particular, the secure-base effect (Bowlby, 1988):

1. Increase caregiver sensitivity and encourage appropriate responsiveness to the child's needs and signals within the attachment relationship, such as

GOODNESS OF FIT – POORNESS OF FIT

Bi-directional nature of temperament and environment - link to attachment

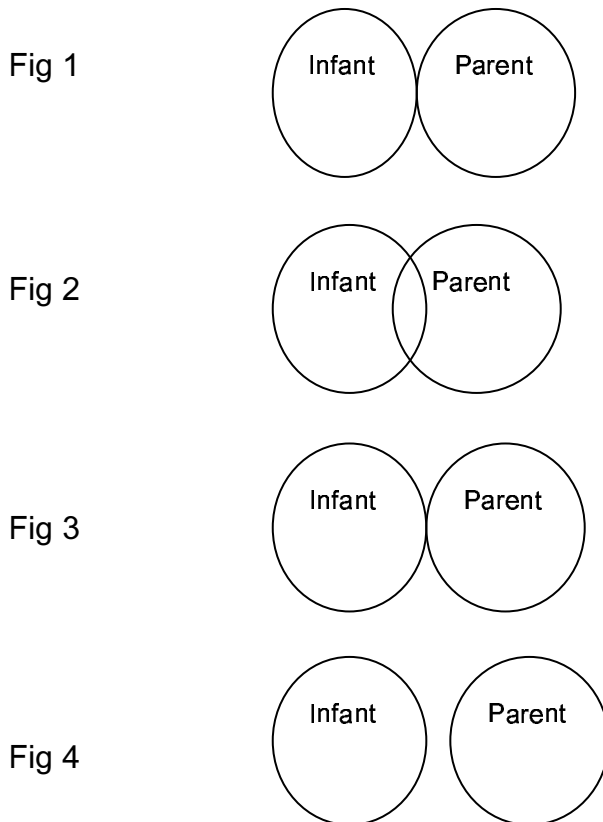


Figure 1: Caregiver sensitivity and attunement to child's individual temperament needs - child responds and adapts to the environment – promotes security of attachment. In this dyad the caregiver/s are able to manage and meet the needs and demands of their infant – even if the infant is considered temperamentally difficult, i.e., irregular feeding and sleep cycles, prone to distress or anger, fussy, inflexible, negative mood. Over time child's temperament is modified by environment and self-regulation capacities are promoted.
Goodness of fit - child uses caregiver as secure base and over time develops self-autonomy.

Figure 2: Caregiver is non-reflective and misattuned to child's individual temperament needs, is unpredictable and/or intrusive, and has own unresolved grief or loss. Child's needs are in conflict with the demands and expectations of the environment. Infant reacts with anger, distress, frustration, or withdrawal. Caregiver feels at a loss or experiences feelings of anger toward the infant. The infant becomes more withdrawn, angry or distressed as a result. Repeated interactive patterns of this nature result in the child

experiencing anxiety – seeking contact and rejecting it simultaneously. Insecure-attachment is promoted – likely insecure ambivalent. Caregiver and child needs are enmeshed.
Poorness of fit – caregiver unable to provide secure base for infant.

Figure 3: Child individual temperament style allows adaptation to caregiver expectations and environment demands – promotes security of attachment. Child's temperament classified as 'easy'; i.e., flexible, adaptable, positive affect/mood, regular sleep-feed cycles, approaching.
Goodness of fit – child is able to use caregiver as secure base and over time develops self-regulation and autonomy.

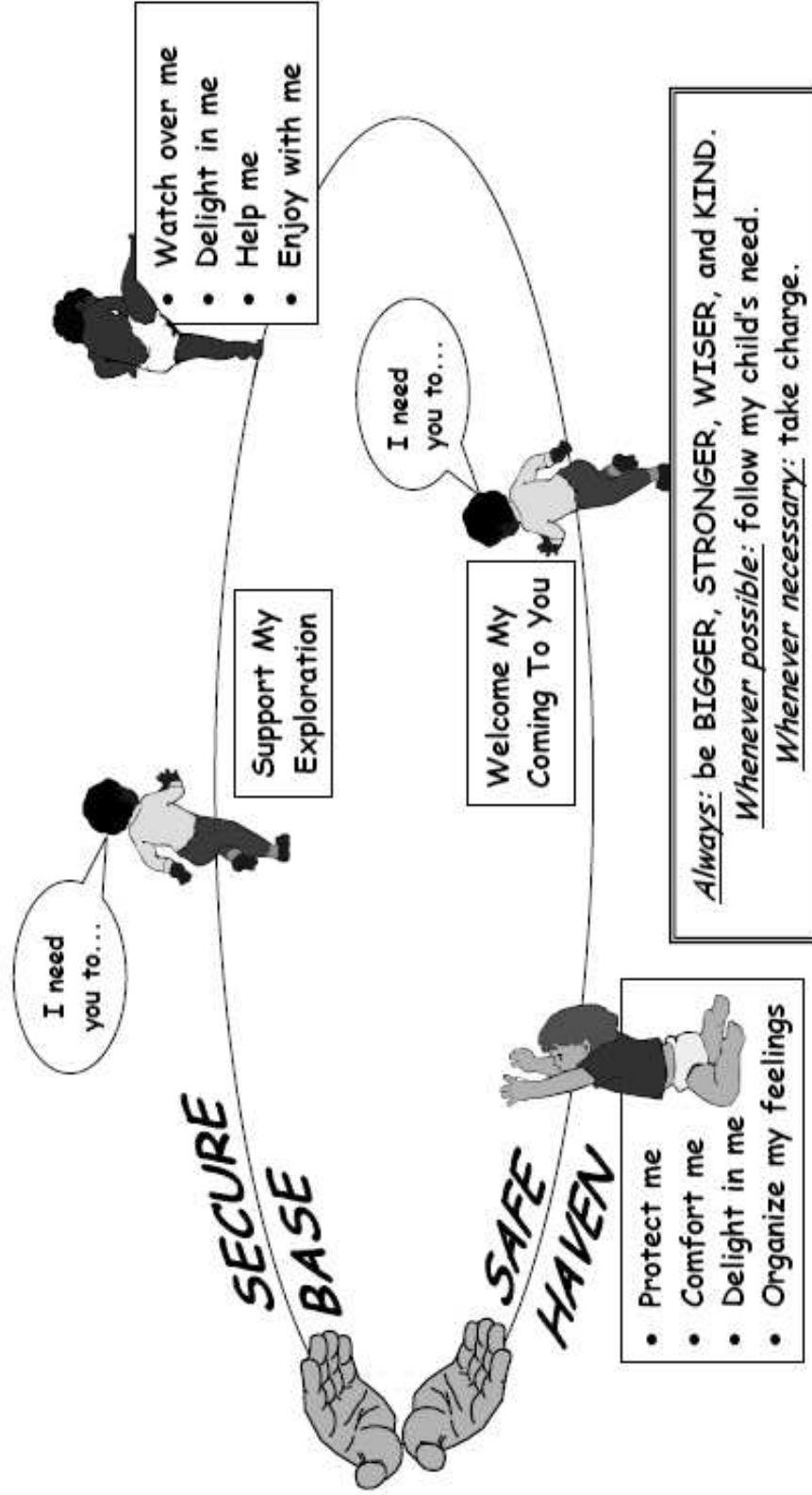
Figure 4: Caregiver – child's temperament needs are in conflict with parent, neither able to adapt - linked to avoidant or at worst disorganised attachment.
Temperament characteristics of infant: withdrawn, high reactivity, negative mood, biologically irregular.
Personality of caregiver: depressed, intrusive and unpredictable/unavailable, unresolved grief, other psychopathology indicated. Results in insecure attachment – avoidant/disorganised.
Poorness of fit – caregiver cannot provide secure base for infant.

2. exploration and reconnecting for soothing and comfort (secure-base effect).
3. Increase caregiver abilities to reflect on their child's behaviour and what the child is communicating, as well as reflecting on their own feelings, thoughts and behaviour in their interactions within the attachment relationship.
4. For the caregiver to reflect on their own attachment history and how that may have affected/influenced their interaction in the attachment relationship with their child.

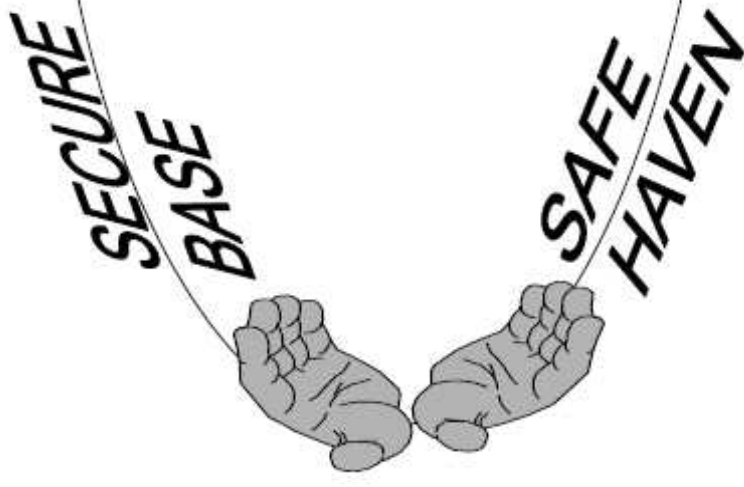
At the core of the COS are the ideas of Ainsworth et al (1978) and their assessment of the secure base. The intervention is individualised to each caregiver-child dyad and their specific attachment pattern. Individual treatment goals are formulated from the information observed in video tapes of parent-child dyad interaction. Important areas considered in the intervention goals are emotional regulation; capacities for reflection; interactive synchrony; shared consciousness - affect and perspective; thinking around attachment and intimate relationships; and reparation of interactive exchanges (Marvin, et al, 2002). See diagram 6.2 and 6.3.

CIRCLE OF SECURITY

PARENT ATTENDING TO THE CHILD'S NEEDS



Mom/Dad, when I get upset (frustrated, withdrawn, whiney, demanding, out of control):



My behavior actually means that I need you.

- I need you to:
- Be calm
 - Take Charge
 - Be kind
 - Stay with me until we both understand this feeling that seems too much for me alone
 - Help me return to what I was doing, with a new option

"I don't know what to do with how I'm feeling."



CIRCLE OF REPAIR

Helping My Child Trust that Our Relationship Will (Almost) Always Set Things Right

PACT – Parent and child therapy

Parent and child therapy (PACT) (Chambers, Amos, Allison, & Roeger, 2006) is an attachment-based intervention focused on parent-child dyads that have experienced severe disturbances in their relationship, often in the form of abuse or neglect. Central to the outcome of PACT is changing the behaviour of both the parent and the child by addressing the internalised patterns of behaviour and the child's internal working model that has developed as a result of the early interaction within the attachment relationship. These patterns are often maladaptive and disorganised and are highlighted in attachment disturbance and manifest in externalised behaviours. Therapy is undertaken with two therapists who will assist the parent and child to view each other in more adaptive ways and find the good intent in one another. The therapists act as the secure base by supporting both the parent and child individually as well as their shared relationship. The primary task is for the parent to begin seeing the child and for the child to be felt to be seen by the parent. The work is largely dyadic and is focused on the attachment relationship between parent and child with the view to making repairs to the disruption and creating adaptive and healthier ways of relating.

A reflective relationship-based approach

A reflective relationship approach supports parent-child relationships that have become difficult due to early disruptive events, such as separations or illness, or when parental expectations of the child impinge on the development of the parent-child relationship (Gowen & Nebrig, 2002). A central premise of this approach is focused on establishing the individual strengths of the child and of the parent. Gowen and Nebrig (2002) proposed that the building, maintaining, and nurturing of relationships between the parent and child, therapist and child, and the therapist and the parent is an ongoing process that requires continual reflection. This requires the professional/therapist and the parent to have wonderings about what is happening in the relationship between the child and parent, and to identify and explore ways to help and encourage new, healthier ways of relating within the dyad. Continued reflection assists parents and professionals in being more responsive and less reactive in their interaction, an essential component in a relationship-based approach. Egeland, Weinfield, Bosquet, and Cheng (2000, as cited in Gowen & Nebrig, 2002) found that fostering individual strengths and self-sufficiency in dyadic interventions, rather than looking at weaknesses and difficulties, supported emotional development and promoted the development of a secure infant-parent attachment relationship.

Conclusion

It is evident from the literature examined in this research study that an infant's temperament can exert its influence on the development of the attachment relationship as much as the attachment figure can exert his/her influence in modifying the infant's temperament. Several studies acknowledge the bi-directional nature of temperament and the environment, in that both parent and child are active participants in the development of the attachment relationship.

Assessment scores of infants in the strange situation procedure (SSP) reviewed by Goldsmith and Harman (1994) Goldsmith and Alansky's meta-analytic review (1987) of maternal and infant temperament as attachment predictors, and a review of 50 studies by Beebe (2005) all showed similar findings, which strongly suggested that individual temperament characteristics biased attachment assessments and vice versa. Beebe's extensive review found, as did Goldsmith and Alansky (1987), that the emotional availability of the parent is a critical factor in the security of child attachment, regardless of temperament differences. This coincided with studies completed by Bigelow, et al (2010) and Kochanska, et al (2005) that found parental empathy had positive outcomes for temperamentally difficult infants and promoted attachment security. Beebe's

review also identified that the full understanding of attachment origins is yet to be achieved, and that its modes of transmission and the role infant temperament plays in this process is still an area that needs further exploration.

Strengths, limitations and further research

A limitation of this study is the age criteria of 0 to 3 years. Early childhood, school age, gender, siblings, extended family, and peer relationships were beyond the scope of this dissertation. Peers and siblings would be a fruitful area of research to ascertain the moderating effects these may have on temperament and attachment outcomes. A further limitation was the exclusion of disorganised attachment classifications, later behaviour problems, and psychopathology; these areas were outside the boundaries of this paper. There appears considerable research investigating the effects of temperament difficulties and insecure attachment and the impact this has on later behavioural and developmental outcomes. Due to the size restrictions of this study, this area was not expanded on. It is however considered that further research in this area may give rise to determinants associated with later behaviour problems and the development of psychopathology, and whether different temperament characteristics or insecure attachments are indicated in certain disorders. Also, does the quality of

attachment play a mediating or contributing factor in difficult temperaments and the development of later behaviour problems, and vice versa?

Field (1996) suggested that observations in non-stressful situations, as opposed to the SSP, and observations of the interaction between infant and caregiver would provide a broader understanding of attachment relationships and attachment quality. Belsky (1999), a prominent researcher in the field of attachment and temperament, proposed other avenues of research, emphasising the need to observe both the infant and the parent in the unfolding of the relationship. The author maintained that in order to achieve a better assessment of the infant parent relationship, interaction of what transpires minutely within the dyad needs to be observed first hand. Furthermore that this should be done in a realistic and naturalistic observational setting. Belsky (1991) felt this would provide more accurate data and a deeper understanding about the emerging infant-parent dyad, as opposed to the SSP and parent observer questionnaires that currently dominate the temperament and attachment assessment research to date.

Kochanska, et al (2005) suggested that more research is needed to establish connections in extremes of temperament, such as distress or anger-prone infants, and attachment outcomes. While Goldsmith and Harman (1994) proposed more research is needed in relation to extremes of temperament

(difficult, distressed infants) and extremes of attachment (the impact of abuse or neglect). More recently, Perry (2006) suggested more research is needed in relation to difficult attachment relationships and their impact on brain development, particularly in instances of abuse, trauma, and neglect.

This dissertation identified several models that focus on parent-child interaction, emotional quality of the attachment relationship, and the secure base effect. These models are applied in the repair of disrupted or maladaptive parent-child dyads and in supporting healthier attachment relationships. The models presented in this paper are by no means an exhaustive list.

It is my opinion that this literature review has provided an increased understanding as to the influence of temperament on the attachment quality between a child and parent. The research findings highlighted that regardless of temperament and attachment operating as separate entities they interact and are interwoven during early infant development. The research also identified that the child is an active participant in the emerging attachment relationship, as is the parent; however, ultimately it is the parent who has the greater resolve to shape and guide the quality of the attachment relationship. This dissertation reinforced the importance of dyadic interventions as a therapeutic means to assist parents in understanding their temperamentally difficult infant's behaviour, to learn

healthy ways that can help in modifying these behaviours, and not to experience the difficult temperament as a reflection on their parenting abilities or as the child behaving badly.

Reference

- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Balter, L. & Tamis-LeMonda, C. (Eds.). (2006). *Child psychology. A handbook of contemporary issues* (2nd ed). New York, NY: Psychology Press.
- Bates, J., Maslin, C., & Frankel, K. (1996). Attachment security, mother-child interaction and temperament as predictors of behavior-problem ratings at age three years. *Monographs for the Society for Research in Child Development, 61*, 167-193
- Baumeister, R. & Leary, M. (1997). Writing narrative literature reviews. *Review of General Psychology, 1*(3), 311-320.
- Beebe, B. (2005). Mother-infant research informs mother-infant treatment. *The Psychoanalytic Study of the Child, 60*, 7-46.
- Beebe, B. & Lachman, F. (2003). The relational turn in psychoanalysis: A dyadic systems view from infant research. *Contemporary Psychoanalysis, 39*, 379-409.
- Belsky, J., Jaffee, S. R., Sligo, J., Woodward, L. & Silva, P. (2005). Intergenerational transmission of warm-sensitive-stimulating parenting: A prospective study of mothers and fathers of 3-year-olds. *Child Development, 76*(2), 384-396.
- Berlin, L., Amaya-Jackson, L., & Greenberg, M. (Eds.) (2005). *Enhancing early attachments. Theory, research, intervention, and policy*. New York, NY: Guilford Press.

- Bigelow, A., MacLean, K., Proctor, J., Myatt, T., Gillis, R., Power, M. (2010). Maternal sensitivity throughout infancy: Continuity and relation to attachment security. *Infant Behavior & Development, 33*, 50-60.
- Blackwell, P. (2004). The idea of temperament: Does it help parents understand their babies? *Zero To Three, 37-41*.
- Bouchard, T. & Loehlin, J. (2001). Genes, evolution and personality. *Behavior Genetics, 31*(3), 243-273.
- Bowlby, J. (1979). *The making and breaking of affectional bonds*. New York, NY: Routledge.
- Bowlby, J. (1982). *Attachment and loss. Vol. 1: Attachment*. New York: Basic Books.
- Bowlby, J. (1988). *Secure base: Parent child attachment and healthy human development*. New York, NY: Basic Books.
- Bragdon, A. & Gamon, G. (2010). Minding your memory. Your brain and what it does. Retrieved, 11, November, 2010, from http://www.brainwaves.com/images/brain-basic_and_limbic.gif
- Bremner, G. & Fogel, A. (Eds). (2001). *Blackwell handbook of infant development*. Massachusetts: Blackwell.
- Bremner, G. & Slater, A. (Ed's). (2004). *Theories of infant development*. Malden; MA : Blackwell.

- Bretherton, I. & Munholland, K. (1999). Internal working models in attachment relationships. A construct revisited. In J. Cassidy & P. Shaver (Eds.), *The handbook of attachment: Theory, research and clinical applications*, (pp. 89-111). New York, NY: Guilford Press.
- Brisch, K. (2004). *Treating attachment disorders: From theory to therapy*. New York, NY: Guilford Press.
- Burney, R. & Leerkes, E. (2010). Links between mothers' and fathers' perception of infant temperament and coparenting. *Infant Behavior & Development*, *33*, 125-135.
- Carlson, E., Sampson, M. & Sroufe, L. (2003). Implications of attachment theory and research for development-behavioral pediatrics. *Developmental and Behavioral Pediatrics*, *24*(5), 364-379.
- Cassidy, J. (1999). The nature of the child's ties. In J. Cassidy & P. Shaver (Eds.), *The handbook of attachment: Theory, research and clinical applications*, (pp. 3-20). New York, NY: Guilford Press.
- Chambers, H. Amos, J., Allison, S. & Roeger, L. (2006). Parent and child therapy: An attachment based intervention for children with challenging behavior problems. *Australia and New Zealand Journal of Family Therapy*, *27*(2), 68-74.
- Chess, S. (1989). Temperament and its functional significance. In H. Pollock, S. George & S. Greenspan. *The course of life Volume 2*. Madison, CO: International University Press.

- Chess, S. (1991). Temperament and the concept of goodness of fit. In J. Strelau & A. Angleitner. *Explorations in temperament: International perspectives on theory and measurement*, (pp.163-227). London, UK: Plenum Press.
- Chess, S. (1997). The temperament program. In J. K. Zeig. *The evolution of psychotherapy: The third conference*, (pp.323-336). New York, NY: Bruner/Mazel.
- Chess, S. & Thomas. A. (1999). *Goodness of fit: Clinical applications from infancy to adult life*. Philadelphia, PA: Bruner/Mazel.
- Cicchetti, D., Toth, S. & Lynch, M. (1995). Bowlby's dream comes full circle: The application of attachment theory to risk and psychopathology. In. T. Ollendick & R. Prinz. (Eds). *Advances in clinical child psychology, (Volume, 17)*, (pp.1-66). New York, NY: Plenum Press.
- Crockenberg, (1987). Predictors and correlates of anger toward and punitive control of toddlers by adolescent mothers. *Child Development, 58*, 964-975.
- Davis, M & Wallbridge, D. (1991). *Boundary and space: An introduction to the work of D. W. Winnicott*. London, England: Karnac Books.
- De Gangi, G., Di Pietro, J., Greenspan, S., & Porges, S. (1991). Psychobiological characteristics of the regulatory disordered infant. *Infant Behavior Development, 14*, 37-50
- Dickson, R. (1999). Systematic reviews. In S. Hamer & G. Collinson (Eds.) *Achieving evidence based-practice: A hand book for practitioners (2nd ed., p. 3-13)*. Edinburgh, Great Britain: Bailliere Tindall Elsevier.

- Durbin, C., Hayden, E., Klein, D., & Olino, T. (2007). Stability of laboratory-assessed temperamental emotionality traits from ages 3 to 7. *American Psychological Association, 7*(2), 388-399.
- Egeland, B. & Erickson, M. (1999). Attachment theory and research. *Zero to Three Journal, 20*(2), 1-10.
- Emde, R., Biringen, Z., Clyman, R., & Oppenheim, D. (1991). The moral self of infancy: Affective core and procedural knowledge. *Developmental Review 11*(2), 251-270.
- Emde, R. (1983). The pre-representational self and its affective core. *The Psychoanalytic Study of the Child, 38*,165-192.
- Field, T. (1985). *The psychobiology of attachment and separation*. New York, NY: Academic Press.
- Field, T. (1996). Attachment and separations in young children. *Annual Review of Psychology, 47*, 541-562.
- Finzi-Dottan, R., Manor, I. & Tyano, S. (2006). ADHD, temperament, and parental style as predictors of the child's attachment patterns. *Child Psychiatry Human Development, 37*,103-114.
- Fish, M. & Belsky, J. (1991). Temperament and attachment revisited: Origin and meaning in separation intolerance at age three. *American Journal of Orthopsychiatry, 61*(3), 418-427.

- Fonagy, P. (1982). The integration of psychoanalysis and experimental science: A review. *International Journal of Psychoanalysis, 9*, 125-145.
- Fonagy, P. (1999). Points of contact and divergence between psychoanalytic and attachment theories: Is psychoanalytic theory truly different. *Psychoanalytic Inquiry, 19*, 448-480.
- Gerhardt, S. (2004). *Why love matters: How affection shapes a baby's brain*. New York, NY: Brunner-Routledge.
- Goldsmith, H. (1986). Heritability of temperament: Cautions and some empirical evidence. In G. Kohnstamm. *Temperament discussed*. Berwyn, PA: Swets & Zeitlinger.
- Goldsmith, H. & Alansky, J. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 55*, 805-816.
- Goldsmith, H., Buss, A., Plomin, R., Rothbart, M. Thomas, A., Chess, S., Hinde, R., & McCall, R. (1987). Roundtable: What is temperament? Four approaches. *Child Development, 58*, 505-529.
- Goldsmith, H. & Harman, C. (1994). Temperament and attachment; Individuals and relationships. *American Psychological Society 3*(2) 53-57.
- Gowen, J. & Nebrig, J. (2002). *Enhancing early emotional development: Guiding parents of young children*. Baltimore: Paul H Brookes.
- Greenberg, J. & Mitchell, S. (1983). *Object relations in psychoanalytic theory*. Massachusetts. Harvard University Press.

- Grossman, K. (1995). The evolution and history of attachment research and theory. In S. Goldberg, R. Muir & J. Kerr (Ed's). *Attachment theory: Social development, and clinical perspective*. Hillsdale, NJ: The Analytic Press.
- Holmes, J. (1993). *John Bowlby and attachment theory*. London, England: Routledge.
- Hyde, J., Else-Quest, N., Goldsmith, H. & Biesanz, J. (2004). Children's temperament and behavior problems predict their employed mothers' work functioning. *Child Development, 75*(2), 580-594.
- Ijzendoorn, M. (1995). Of the way we are: On temperament, attachment, and the transmission gap: A rejoinder to Fox (1995). *Psychological Bulletin, 117*(3), 411-415.
- Isabella, R. & Belsky, J. (1991). Interactional synchrony and the origins of infant-mother attachment: A replication study. *Child Development, 62*, 373-384.
- Ispa, J., Fine, M. & Thornburg, K. (2002). Maternal personality moderator of relations between difficult infant temperament and attachment security in income families. *Infant Mental Health Journal, 23*(1-2), 130-144.
- Izard, C., Haynes, M., Chisholm, G. & Baak, K. (1991). Emotional determinants of infant-mother attachment. *Child Development, 62*, 906-917.
- Jong, J., Kao, T., Lee, L., Huang, H., Lo, P. & Wang, H. (2010). Can temperament be understood at birth? The relationship between neonatal pain cry and their temperament: A preliminary study. *Infant Behavior and Development, 33*, 266-272.

- Kagan, J. (1982). *Psychological research on the human development: An evaluative summary*. New York, NY: W.T. Grant.
- Kagan, J. & Snidman, N. (1991). Temperamental factors in human development. *American Psychologist, 46* (8), 856-862.
- Kagan, J. & Snidman, N. (2004). *The long shadow of temperament*. Cambridge, Massachusetts: Belknap Press of Harvard University.
- Karen, R. (1994). *Becoming attached: First relationships and how they shape our capacity to love*. New York, NY: Warner Books.
- Kazdin, A. (Ed). (2000). *Encyclopedia of psychology*. Washington. D.C.: Psychology Association.
- Kochanska, G., Clark, L. & Goldman, M. (1997). Implications of mother's personality for their parenting and their young children's developmental outcomes. *Journal of Personality, 65*(2), 387-420.
- Kochanska, G., Friesenborg, L., Lange, L., & Martel, M. (2004). Personality processes and individual differences. Parents' personality and infants' temperament as contributors to their emerging relationship. *Journal of Personality and Social Psychology, 86*(5), 744-759.
- Kochanska, G., Aksan, N., & Carlson, J. (2005). Temperament, relationships, and young children's receptive cooperation with their parents. *Developmental Psychology, 41*(4), 648-660.

- Kristal, J. (2005). *The temperament perspective: Working with children's behavioral styles*. Baltimore, Maryland: Paul H Brookes.
- Laible, D. (2004). Mother-child discourse in two contexts: Link with child temperament, attachment security, and socioemotional competence. *Developmental Psychology, 40*(6), 979-992.
- Laible, D., Panfile, T. & Makariev, D. (2008). The quality and frequency of mother-child conflict: Links with attachment and temperament. *Child Development, 79*(2), 426-443.
- Leerkes, E. & Crockenberg, S. (2006). Antecedents of mother's emotional and cognitive responses to infant distress: The role of family, mother and infant characteristics. *Infant Mental Health Journal, 27*(4), 405-428.
- Lieberman, A. (1995). *The emotional life of the toddler*. New York, NY: Free Press.
- Lieberman, A. (2008). *Psychotherapy with infants and young children: Repairing effects of stress and trauma on early attachment*. New York, NY: Guilford Press.
- Mangelsdorf, S. & Frosch, C. (2000). Temperament and attachment: One construct or two? In H.W. Reese. *Advances in child development and behavior*. San Diego, CA: Academic Press.
- Mangelsdorf, S., Gunnar, M., Kestenbaum, R., Lang, S., & Andrea, D. (1990). Infant proneness-to-distress temperament, maternal personality, and mother-infant attachment: Associations and goodness of fit. *Child Development, 61*, 820-831.

- Marvin, R., Cooper, G., Hoffman, K., & Powell, B. (2002). The circle of security project: Attachment-based intervention with caregiver- pre-school child dyads. *Attachment and Human Development, 4*,107-124.
- Mein, E. (1999). Sensitivity, security and internal working models: Bridging the transmission gap. *Attachment and Human Development, 1*(3), 325-342.
- Mercer, J. (2006). *Understanding attachment: Parenting, childcare and emotional development*. Westport, CO: Praeger.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. (2009). Research methods and reporting. Preferred reporting items for systematic review and meta-analyses: The PRIMA statement. *British Medical Journal 339*.
http://www.bmj.com/cgi/content/full/339/jul21_1/b2535?
- Muir, E. Cohen, N. & Lojkasek, M. (1999). *Watch, Wait and Wonder: A manual describing a dyadic infant-led approach in infancy and early childhood*. Toronto, ON: Hincks-Dellscrest.
- Mulrow, C. (1994). Systematic review: Rationale for systematic reviews. *British Medical Journal, 309*, 597-599.
- Osofosky, J. (ed). (1979). *Handbook of infant development*. New York, NY: John Wiley & Sons.
- Pauli-Pott, U. & Mertesacker, B. (2009). Affect expression in mother-infant interaction and subsequent attachment development. *Infant Behavior and Development, 32*, 208-215.

- Papousek, M., Bornstein, M., Nuzzo, C., Papousek, H., & Symmes, D. (2000). Infant responses to prototypical melodic contours in parental speech. In Muir, Darwin (Ed); Slater, Alan (Ed). *Infant development: The essential readings*. Malden: Blackwell.
- Pearson, A. (2004). Balancing the evidence. Incorporating the synthesis of qualitative data into systematic reviews. *Joanna Briggs Institute Reports*, 2, 45-64.
- Perry, B. (2006). Applying principles of neurodevelopment to clinical work with maltreated and traumatized children. In N. Webb (Ed). *Work with traumatized youth in child welfare*. New York, NY: Guildford Press.
- Pierrehumbert, B., Miljkovitch, B., Halfon, O., & Ansermet, F. (2000). Attachment and temperament in early childhood: Implications for later behavior problems. *Infant and Child Development*, 9, 17-32.
- Porter, L. (1993). The science of attachment: The biological roots of love. Retrieved, 16th September, 2010, from, <http://www.naturalchild.org>
- Robinson, Kagan, Reznik, Corely (1992). The heritability of inhibited and uninhibited behavior: A twin study. *Developmental Psychology*, 28(6), 1030- 1037.
- Rothbart, M., Ahadi, S. & Evans, D. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology*, 78(1), 122-135.

- Rothbart, M., Ellis, L. & Posner, M. (2004). Temperament and self regulation. In R. Baumeister & K. Vohs (Eds.) *Handbook of self regulation: Research, theory, and application*. New York, NY: Guilford Press.
- Lyons-Ruth, K. & Jacobvitz, D. (1999). Attachment disorganization. In J. Cassidy & P. Shaver (Eds.) *The handbook of attachment: Theory, research and clinical applications*, (pp.520-554). New York, NY: Guilford Press.
- Sander, L. (2000). Where are we going in the field of infant mental health? *Infant Mental Health Journal*, 21, 1-18.
- Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype-environment effects. *Child Development*, 54, 424-435.
- Schoppe-Sullivan, S., Mangelsdorf, S., Brown, G. & Sokolowski, M. (2007). Goodness-of-fit in family context: Infant temperament, marital quality, and early coparenting behavior. *Infant Behavior & Development*, 30, 82-96.
- Schore, A. (2001). The effects of secure attachment relationships on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22, 7-66.
- Schore, A. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22(1-2), 201-269.
- Schore, J. & Schore, A. (2007). *Modern attachment theory: The central role of affect regulation in development and treatment*. Northridge, CA: Yellowbrick Leadership.

- Seifer, R., Sameroff, A., Barrett, L., & Krafchuk, E. (1994) Infant temperament measured by multiple observations and mother report. *Child Development, 65*, 1478-1490.
- Seifer, R. & Schiller, M. (1995). The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. *Monographs of the Society for Research in Child Development, 60*, 146-174.
- Sorensen, P. (2005). Changing positions: Helping parents look through the child's eyes. *Journal of Child Psychotherapy, 31(2)*, 153-168.
- Sroufe, A. (1985). Attachment classification from the perspective of infant-caregiver relationships and infant temperament. *Child Development, 56*, 1-14.
- Sroufe, A. (2000). Early relationships and the development of children. *Infant Mental Health Journal, 21(1-2)*, 67-74.
- Sroufe, A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment and Human Development, 7(4)*, 349-367.
- Steele, H., Steel, M. & Fonagy, P. (1996). Associations among attachment classifications of mothers, fathers and their infants. *Child Development, 67*, 541-555.
- Stern, D. (1985). *The interpersonal world of the infant: A view from psychoanalysis and developmental psychology*. New York, NY: Basic Books.

Thomas, A. & Chess, S. (1977). *Temperament and development*. New York, NY: Brunner/Mazel.

Todd, J. & Dixon, W. (2010). Temperament moderates responsiveness to joint attention in 11-month-old infants. *Infant Behavior and Development, 33*, 297-308.

Tronick, E. (1989). Emotions and emotional communication in infants. *American Psychologist, 44*(2), 112-119

Van den Boom, D. (1994). The influence of temperament and mothering on attachment and exploration: An experimental manipulation of sensitive responsiveness among lower-class mothers with irritable infants. *Child Development, 65*, 1457-1477.

Van Hulle, C., Lemery-Chalfant, K. & Goldsmith, H. (2007). Genetic and environmental influence on socio-emotional behavior in toddlers: An initial twin study of the infant-toddler social and emotional assessment. *Journal of Child Psychology and Psychiatry 4*(10), 1014-1024.

Vaughn, B. & Bost, K. (1999). Attachment and temperament. Redundant, independent, or interacting influences on interpersonal adaptation and personality development? In J. Cassidy & P. Shaver (Eds.) *The handbook of attachment: Theory, research and clinical applications*, (pp.198-225). New York, NY: Guilford Press.

Vaughn, B., Stevenson-Hinde, J., Waters, E., Kotsaftis, A., Lefever, G., Shouldice, A., Trudel, M. & Belsky, J. (1992). Attachment security and

- temperament in infancy and early childhood: Some conceptual clarifications. *Developmental Psychology*, 28(3), 463-473.
- Wachs, T. (2006). The nature, etiology, and consequences of individual differences in temperament. In L. Balter, & C. Tamis-LeMonda (Eds.) *Child psychology: A handbook of contemporary issues* (2nd ed). New York, NY: Psychology Press.
- Wachs, T. & Desai, S. (1993). Parent-report measures of toddler temperament and attachment: Their relation to each other and to the social microenvironment. *Infant Behavior and Development*, 16, 391-396.
- Wachs, T. & Kohnstam, G. (Eds). (2001). *Temperament in context*. Mahwah, NJ: Erlbaum.
- Warren, S., Gunnar, M., Kagan, J., Anders, T., Simmens, S., Rones, M., Wease, S., Arron, E., Dahl, R. & Sroufe, A. (2003). Maternal panic disorder: Infant temperament, neurophysiology, and parenting behaviors. *Journal American Academy Child Adolescent Psychiatry*, 42(7), 814-825.
- Waters, E. & Cummings, M. (2000). A secure base from which to explore close relationships. *Child Development (in press), Special Millenium Issue*.
- Weber, R., Levitt, M. & Clark, C. (1986). Individual variation in attachment security and strange situation behavior: The role of maternal and infant temperament. *Child Development*, 57, 56-65.
- Winnicott, D. (1984). *The maturational processes and the facilitating environment: Studies in the theory of emotional development*. Connecticut: International Universities Press.

Woodward, S, McManis, M, Kagan J., Deldin, P., Snidman, N., Lewis, M. & Kahn, V. (2001). Infant temperament and the brainstem auditory evoked response in later childhood. *Developmental Psychology*, 37(4), 533-538.